UNIVERSITY OF
MARYLAND

University of Maryland, College Park

NextGen Energy Program

Presolicitation Report

Prepared in Compliance with
Maryland Code
State Finance and Procurement Article §10A-201

January 31, 2020

INTRODUCTION

In accordance with State Finance and Procurement Article §10A-201 and the University System of Maryland's Policy VIII-17.00 – *Policy on Public-Private Partnerships* §IV-C, the University System of Maryland respectfully submits this public-private partnership presolicitation report for the NextGen Energy Program ("NextGen Program") at the University of Maryland, College Park ("UMD" or "University") to the Comptroller, State Treasurer, the Budget Committees (Senate Budget and Taxation Committee, the House Committee on Ways and Means, and the House Appropriations Committee), and the Department of Legislative Services. The NextGen Program continues UMD's 20-year policy initiative for securing high-quality, reliable, efficient, resilient, and sustainable energy services for its campus through a public-private partnership ("P3").

UMD's P3 policy initiative began in 1995, when the University was faced with serious deficiencies in its aging steam generation and electric distribution systems. As the result of a competitive procurement, UMD, in conjunction with the Maryland Economic Development Corporation ("MEDCO"), entered into a P3 with a leading private sector energy provider to make capital improvements to the campus energy systems and to manage, operate, and maintain the systems through August 31, 2019.

Beginning in 2015, UMD assessed the energy systems' condition, examined the campus's long-term energy requirements and goals related to reducing carbon emissions and assembled a team of engineering, financial, and legal professionals who, working alongside the UMD Facilities Management Department's staff and in consultation with key members of the UMD and University System of Maryland administration, performed the technical, financial, and legal analysis necessary to identify the technical and commercial delivery options available to UMD for the NextGen Program. UMD respectfully presents this report to summarize the team's conclusions, to seek the NextGen Program's designation as a P3, and to request approval of the solicitation process set forth in Section 9 below.

1. Executive Summary

UMD envisions the NextGen Program as a means for ensuring that it receives reliable, efficient, and affordable energy services over the next 30 years while also serving as a platform for meeting UMD-wide sustainability goals for energy production and usage. The NextGen Program has three objectives:

- Meeting UMD's long-term energy requirements holistically and in a manner that advances UMD's strategic and operational goals;
- Improving long-term resiliency of energy services and seeking opportunities to implement innovative energy systems that can advance the University's carbon reduction goals such as micro-grids, hot water districts, and renewable energy systems; and
- Responsibly stewarding the University's financial resources and maximizing the value of UMD's available funds for energy services by pursuing commercial structures that will incentivize performance and take advantage of time-limited tax incentives and historically low interest rates.

UMD has determined that these objectives can best be achieved with a P3 for the following reasons:

- **Strong performance incentives**: A P3 increases UMD's likelihood of securing long-term high-quality, reliable, efficient, resilient, and sustainable energy services by selecting a private sector partner with extensive experience that can be held accountable for service deficiencies through performance guarantees and the monitoring of key performance indicators ("KPIs"). Energy reliability and energy system resiliency are critical for an institution like UMD where a failure of energy service may cause the loss of many years of research or endanger students, faculty, and staff. A structure of guarantees and liquidated damages – which would not be available if the University operated the system itself – holds the private operator accountable for its quality of performance and encourages the achievement of best-in-class service availability.
- **Risk transfer**: One of the fundamental purposes of a P3 is the development of an agreement that outlines the optimal risk allocation between the public and private entities based on the principle of transferring risk to the entity that is best able to cost-effectively manage that risk.
- **Whole life-cycle planning and cost optimization**: A P3 enables UMD to realize the best value for its energy expenditure through a holistic approach to energy system planning that seeks the optimal balance of energy generation and consumption, thereby "right-sizing" energy facilities and avoiding overbuilding and wasting capacity.
- **Enhanced opportunities for innovative technologies and best in class operations**: A P3 with an experienced district energy provider provides UMD access to field-tested new

technologies, particularly in relation to renewable energy and energy efficiency, as well as global, high-quality operating practices.

- **Potential financial benefit**: Going back to in-house operations of the plant would be costly for the UMD, as there would be significant costs to hiring and training a UMD-employed facility workforce. In addition, by employing private capital, financing risks could be shifted to the private sector.

Program Structure. The University, in consultation with stakeholders, has undertaken a thorough analysis and careful consideration of the commercial solutions available for the continued delivery of thermal and electric loads in a sustainable manner. After a detailed review of project delivery risks, as well as alignment with UMD stakeholder goals, UMD recommends that the NextGen Program to be structured as a P3 using either a 501(c)(3)-type structure or a Concession (Availability Payment) Structure.

The 501(c)(3)-type Structure is similar to the 1999 Program's structure. UMD would finance energy system capital improvements through a tax-exempt entity (such as MEDCO) and contract with a private sector entity to design, engineer, and install those improvements and manage, operate, and maintain UMD's energy systems. Under the Concession Structure, a private sector concessionaire would finance capital improvements using a mixture of equity and taxable debt, design and build those improvements, and manage, operate, and maintain the energy systems.

The University is open to considering other commercial structures. It also anticipates considering a variety of payment models, such as an availability payment for the central energy generation facility and a "rate base" model for the distribution system. The University will also consider an incentive-based compensation model for a continuing program of energy use reductions in campus buildings and facilities.

Market Sounding. UMD has conducted market soundings with recognized leaders in the district energy industry and has concluded that either of the base commercial structures is commercially viable. Preliminary results under the Base Case assumptions indicate that the 501(c)(3)-type Structure and the Concession agreement structure have relatively similar economic cost for UMD over an assumed 33 years contractual term (30 years of operations plus 3 years of construction) should the private partner be able to fully utilize currently available tax benefits. The University is prepared to commence a transparent and fair competitive solicitation process for the selection of delivery of the NextGen Program once the required approvals are obtained.

2. BACKGROUND

The NextGen Program represents the second phase of a policy initiative by the State to partner with the private sector to meet UMD's long-term requirements for heating and cooling service. This section describes the origin and structure of this initiative, which became known as UMD's Energy and Utility Infrastructure Program ("1999 Program"), identifies the initiative's achievements, and discusses its lessons for the NextGen Program.

2.1 The 1999 Program

Origins

UMD's P3 initiative began in 1995 when the University faced serious deficiencies in its aging steam generation and electric distribution systems. At that time, the estimated cost of the capital improvements necessary to assure the long-term availability and reliability of heating and cooling services exceeded $50 million. The University applied to the Maryland Department of Budget and Management ("DBM") for a commitment of capital funds, but DBM rejected the request and encouraged UMD to explore alternatives, including a P3.

In June 1997, UMD issued a Request for Proposals seeking comprehensive private sector proposals for capital improvements to its steam, chilled water, and electric systems and for managing, operating, and maintaining these systems. Three entities submitted technical and financial proposals. The initial evaluation, which was conducted in early 1998, concluded that the three proposals should be further clarified through discussions with each offeror. Following those discussions and the submission of final proposals in February 1999, UMD's Procurement Officer recommended award of the program to College Park Energy LLC ("CPE") (now a subsidiary of Engie North America, N.A.), which was approved by the University System's Board of Regents on April 9, 1999 and by the State's Board of Public Works on April 21, 1999. Final contracts were signed on August 31, 1999.

Scope

The 1999 Program's scope was unprecedented at the time. Other institutions of higher education had utilized P3s to modernize and operate their central energy plants, but the 1999 Program's partnership also extended to UMD's steam, electric, and chilled water distribution systems, its electric and natural gas supply procurements, and building energy conservation measures. This broad scope offered the possibility of meeting UMD's energy requirements holistically, taking advantage of the private sector's skills in energy planning and procurement to deliver reliable energy services at the lowest reasonable overall cost.

Structure

To achieve its objective of financing capital improvements with tax-exempt, off-balance sheet debt, UMD leased its existing steam and electric systems to the Maryland Economic Development Corporation ("MEDCO"). MEDCO in turn entered into management and construction agreements with CPE. Concurrently, UMD entered into an energy services agreement with MEDCO, as well as agreements with CPE that (i) governed the transition of its central plant employees to CPE and (ii) retained CPE as its agent for fuel and electric supply procurement.

CPE assumed responsibility for UMD's steam and electric systems in September 1999. Capital improvements focused on the central generation facility and constructing a new electric distribution system and a new central chilled water generation and distribution system. The steam distribution system was not rebuilt and improvements focused on lengthening the existing system's service life.

Accomplishments

The 1999 Program set a benchmark for higher education energy infrastructure renewal projects by demonstrating that:

- A P3 can successfully and reliably deliver steam, electricity, and chilled water over the long term to support an institution's educational and research mission even during periods of rapid growth in energy demand. The 1999 Program provided steam, electricity, and chilled water to UMD for 20 years, even as campus demand for those services increased by 38%, 35%, and 35%, respectively.
- Performance guarantees, backed by substantial liquidated damages for failure to meet the required performance levels, can provide effective incentives and accountability measures.
- Significant environmental benefits and operational efficiencies can be achieved by relying on "trigeneration" technology to recover useful heat for the generation of steam, electricity, and chilled water. Upon the completion of UMD's Central Energy Plant ("CEP") capital improvements, the U.S. Department of Energy and the EPA determined that the plant's efficiency had increased to 68% (more than double that of a traditional steam generation plant) and had reduced UMD's carbon emissions by an estimated 53,000 tons per year from pre-1999 levels. As a result, they recognized UMD with the 2005 Energy Star CHP Award.
- Onsite electric generation can produce significant financial benefits for an institution, not only in reducing the cost of electric supply by displacing electricity purchased from the grid, but also in generating electricity to lower peak electric consumption and thereby decreasing transmission and distribution costs.

Lessons Learned

The 1999 Program also taught UMD lessons for the NextGen Program:

- Reliable operation of an energy system requires constant improvement, not just at the program's beginning, and the private sector operator should have a stake in the energy systems' condition throughout its term. The 1999 Program was based on a "once and done" approach to capital improvements. The NextGen Program should incentivize the operator to identify capital improvements proactively to anticipate problems, enhance the systems' reliability and sustainability, and take advantage of new energy conservation, distribution, and generation technologies.
- Performance guarantees help ensure service reliability at the delivery points, but do not guarantee that the operator will implement preventative maintenance and quality

control programs. In addition to securing performance guarantees, the NextGen Program should require such programs and establish such KPIs as necessary to hold the operator accountable for the energy systems' condition throughout the Program's term.

- Monthly and annual reports are insufficient for UMD's monitoring of the private operator's performance and the energy systems' condition. The NextGen Program should authorize UMD to monitor the KPIs in real time by accessing the operator's operating data and metering systems and its computerized maintenance and management system.

2.2 Energy Service Changes Since 1999

Since 1999, the energy industry as a whole and UMD specifically have experienced numerous major changes that directly affect the NextGen Program. Among these changes are:

- ***UMD Energy System Personnel****:* A key aspect of the 1999 Program was the transfer of responsibility for UMD's energy system staff to CPE. As those staff members retired or otherwise left UMD employment, CPE replaced them with its own employees. Consequently, UMD no longer possesses either the staff or institutional knowledge to manage, operate, and maintain the energy systems effectively.
- ***Climate Change*****:** Reducing carbon emissions has become a major focus of global energy policy. Both the State and UMD have committed to achieving carbon neutrality.
- ***Technological Change*****:** Energy generation, transmission, lighting, motor, and control technology has made revolutionary advances since 1999. Electricity generated by renewable resources has become commonplace, conventional generation has become more efficient, and large baseload power plants that cannot follow electric loads are being replaced by highly efficient, load-following facilities.
- ***Financing Change:*** UMD's only avenue for financing the 1999 Program's capital improvements while retaining ownership of the energy systems was the issuance of debt by the University System, MEDCO, or another State entity. Now, large district energy companies (often working with private equity firms) have access to capital sufficient to finance all or a substantial portion of capital improvements themselves and to recover their investment (plus a return) through payment mechanisms such as availability payments. Additionally, federal tax law and accounting changes make off-balance sheet financing of public sector infrastructure projects more difficult than in the past.
- ***Availability of Tax Incentives:*** Federal law has created time-limited tax incentives for certain capital projects. These incentives (such as the Cogeneration Investment Tax Credit and Bonus Depreciation) are only available for entities with taxable income but can substantially reduce costs for public sector capital improvements undertaken by P3's.

2.3 The Interim Energy Bridging Program

The MEDCO bonds that financed the 1999 Program's capital improvements were retired in July 2019 and the contracts that governed the program expired on August 31, 2019. To ensure that UMD's energy services continue uninterrupted, UMD, MEDCO, and CPE negotiated service agreements to preserve the status quo during the NextGen Program's development and procurement phases. These agreements differ from their predecessors in the following ways:

- ***Term*:** The Interim Program's primary term expires on June 30, 2024 but can be terminated with six-months' notice
- ***No Performance Guarantees*:** The 1999 Program's capital improvements are nearly twenty years old, which precludes meaningful performance guarantees to assure energy system reliability
- ***Financial Risk*:** Unlike the 1999 Program's contracts, the Interim Program's contracts shift virtually all operational and financial risk for the energy systems to MEDCO and ultimately, UMD

2.4 Summary

The 1999 Program showed that a P3 works to supply reliable steam, chilled water, and electric service to support UMD's educational and research mission. The NextGen Program Team proposes to continue and improve upon that model, relying on lessons learned and taking advantage of new technology, maturing energy markets, and financing opportunities. The next section of this report explores in depth the reasons why the P3 model continues to be the best vehicle for delivering long-term energy services to UMD.

3. REASONS FOR USING A P3 TO DELIVER ENERGY SERVICES

3.1 Policy Reasons and Core Mission Focus

The strategic goal of UMD's energy infrastructure procurement is to ensure that it obtains high-quality, reliable, efficient, resilient, and affordable energy services over the next 30 years while also serving as a platform to meet its sustainability goals. The key policy drivers are described below:

- **Assets at end of useful life:** Components of UMD's energy system are aging and approaching the end of their useful life. The CEP is increasingly experiencing significant technical issues with its two aged combustion turbines, which require frequent servicing, thus contributing to suboptimal plant efficiency.
- **Deferred maintenance:** Deferred maintenance, particularly with respect to the steam distribution, has reduced the system's overall operating efficiency, thus increasing operating costs and carbon emissions. The Steam distribution and condensate return system has a 29% system loss rate compared to peer benchmark losses of 10% to 15%.
- **Sustainability focus**: UMD is committed to ensuring sustainability and achieving targeted goals for carbon reduction and energy efficiency.
- **Ensuring world-class operations and maintenance services:** The 1999 Program's operations and maintenance contract expired on August 31, 2019 and a new interim agreement provides for continued third party management of the campus energy infrastructure over the next five years. UMD, however, is taking on a higher degree of risk, and there is an opportunity to reconsider the optimal commercial structure to address its strategic priorities, particularly regarding operations and maintenance services.

Ultimately, the modernization of campus energy assets is well aligned with UMD's policy objectives, and encompasses the development of a holistic strategy based on a careful evaluation of the operational profile of existing energy assets, commercial mechanisms to improve day-to-day management and operations of these assets, and the structuring of delivery options that account for budget limitations.

In addition to the policy goals, UMD's objectives align with the core values and building blocks described in its 2016 strategic plan, thus facilitating its aim to provide a world-class education while extending preeminence in research and scholarship.

Building Blocks	Core Values	Energy Infrastructure Goals
Infrastructure and Academic Support: **"**We will build an infrastructure and academic support system essential to a world-class university"	**Act with Entrepreneurial Spirit:** "Tackle big issues, seize opportunities and adapt quickly to changing circumstances; [including] partnering with others, locally and globally"	**Address University's Energy Requirements** • Select optimal technology that meets strategic and operational goals
Resources and administrative efficiency : "We will be disciplined in allocating existing resources in support of our priorities, generating additional revenue, and relentlessly seeking greater efficiency in everything we do"	**Embrace Technology:** "We will embrace the power of technology to advance our teaching, research, and service missions"	**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
Implement a better budget model Continuing state budget shortfalls have heightened awareness of the need for a better budget model	**Take Responsibility for the Future:** "Enhancing the quality of life of all people, sustaining the natural environment and reinforcing the capacity of Maryland's citizens to thrive and prosper in a diverse, ever-changing, globally competitive environment.	**Account for Affordability Limitations** Develop/Scope for commercial structure options that maximize value for money

By addressing these goals through a P3 structure, the University will be able to focus less on the reliability issues and asset failures associated with the current energy systems, and more on fulfilling its core mission of advancing knowledge through education and research in areas of importance to the State, the nation, and the world.

3.2 Operational and Financial Considerations

Operational and financial performance are directly related. Key objectives to help facilitate operational improvement, which will translate into real cost savings, are as follows:

- Optimize Satellite Central Utility Buildings ("SCUB") and Chiller Plant Operations
- Develop KPIs
- Strengthen energy performance data collection to improve operations and preventive maintenance
- Renew the steam distribution and condensate return systems
- Optimize plant controls to achieve energy savings
- Focus on maintaining the value of assets beyond the end of the commercial arrangement through targeted life-cycle investment and preventive maintenance

To better understand the economic losses associated with some of these operational inefficiencies, the University commissioned a utility condition assessment in 2015, which was updated in 2018. This analysis was supplemented with further operational and financial analysis in 2019. The table below presents the range of estimated costs that may be avoided through modernization of the campus energy infrastructure and addressing related deferred maintenance.

	Costs Avoided Through Modernization	
Opportunity	**2018 Condition Assessment Report**	**2019 Business Case Analysis**
Repower Central Energy Plant	Up to $4-6m reduction in purchased energy (primarily electricity) per year[1]	Up to a $11m reduction in purchased energy (primarily electricity) per year[1]
Renew Steam Distribution System	Up to $4m reduction in water purchasing costs per year, based on current losses of approximately 700 million gallons of water per year, due to leaks[2] Up $1.5m in additional fuel cost as a result of system losses of 29%	Up to $2m[3] p.a. reduction of water and chemical purchasing costs Up $1.5m p.a. reduction in additional fuel costs

[1] "Utility Condition Assessment- Final Submission". 2018 Jan. Page 9 of 158. *Note, this report indicates $10m/year in energy costs, however this figure was revised downward to $4-6m range due to lower commodity prices"

[1] Business Case Analysis. 2019.

[2] Interview with engineering consultants on 9/4/18

[3] Business Case Analysis- 2031 figures when the distribution upgrade is fully complete

	compared to 10%-15% seen at peer universities	
Cost Avoided[4]	Up to $9.5 m - $11.5m per annum	Up to $14.5m per annum

3.3 Market Attractiveness for Private Sector Partners

Robust market interest and competition from the private sector during a P3 bidding process is important for achieving value to UMD. In early 2019, market sounding interviews with industry were undertaken to assist the University in evaluating industry perspectives on options for the modernization of its campus energy infrastructure. The University specifically sought to (a) gauge market interest in participating in a procurement process related to the project; (b) understand participants' views on the optimal procurement, commercial and financial structure to meet the needs of the campus; and (c) obtain feedback to further inform the evaluation of alternatives and the structure of a potential procurement process. After conversations with 11 firms, it was confirmed that the NextGen Program is one in which the private sector has significant interest in potentially partnering. Additional themes which emerged out of the market sounding are as follows:

- Participants recommended a 25-30+ year term, and many were comfortable with up to 50 years, to secure beneficial pricing to the university
- Either a 501(c)(3)-type Structure or the Concession Structure would be acceptable to participants, with a few interested in an asset purchase agreement
- Private sector capital was readily available to finance capital investment, and other UMD requirements, if requested

Within the broader higher education energy market, there are many recent P3s and substantial interest in this asset class. Examples of completed and contemplated projects include those at The Ohio State University, University of North Dakota, Iowa State University, Dartmouth University, and Fresno State University.

[4] Note that these figures are preliminary in nature and represent an estimate of potential cost avoidance

4. DECISION TO RE-AUTHORIZE A P3 MODEL

4.1 UMD Campus Infrastructure, the 1999 Agreement and 2019 Interim Agreement

UMD's energy infrastructure systems consists primarily of the CEP, steam and electric distribution systems, and multiple district chilled water systems with the chillers located in SCUBs. The CEP includes a cogeneration system that generates electric power and utilizes the waste heat to produce steam which is distributed to campus. The CEP, the campus high pressure steam distribution system, the electric distribution system, and the SCUB 4 chilled water system were operated by a third party under an agreement with MEDCO, which expired at the end of August 2019 and was replaced with an interim agreement with a primary term that ends in 2024, subject to a six-month termination for convenience provision.

4.2 Analysis Undertaken by UMD

UMD has taken a series of steps over the past several years to prepare for potential re-authorization of the P3 model to improve, operate, manage, and maintain its energy infrastructure. Key steps in the process are outlined below:

- **Asset condition assessment and report:** In preparation for the 1999 agreement expiration, UMD commissioned a condition assessment of the CEP and steam distribution system as well as a review of the electrical and chilled water systems. The condition assessment included a survey and inspection of the major equipment within the CEP to identify short term repairs and estimate remaining life. The assessment of the distribution systems was based upon pipe age, installation type, historical repairs, thermal aerial survey, multiple test pits, inspection of the steam manholes and a review of metered energy use. A sampling of electrical manholes and transformers were surveyed as well. The cooling load and energy use for each of the SCUBs were evaluated from the available meter data. A chiller capital renewal and improvement plan was developed based upon unit age and service.
- **Energy systems operational and financial due diligence:** UMD undertook financial and operational due diligence analysis of the campus energy system that summarized information in relation to asset condition, sustainability and environmental considerations, historical consumption and utility related energy spend, forecasted load, forecasted pricing for key commodities, and affordability considerations. Using this data, UMD developed a base scope to serve as the baseline for financial evaluation of alternative commercial options. The University, however, intends to invite potential P3 partners to propose alternatives to the base case that incorporate innovative technologies and alternative energy sources and facilitate achievement of the NextGen Program's objectives.
- **Commercial Delivery Options Analysis:** Two P3 commercial structures were considered by UMD and evaluated based on their compatibility with UMD's strategic objectives. One is the 501(c)(3)-type Structure, which is similar to the original 1999 P3 arrangement with MEDCO. The second structure analyzed was the Concession Structure, which involves a P3 concessionaire managing UMD's energy and utility

systems under a Design-Build-Finance-Operate-Maintain ("DBFOM") structure. Further discussion on the commercial structures analyzed is presented in Section 6.

During this analysis, UMD solicited feedback from stakeholders. This outreach included student groups, the UMD Sustainability Council, and the UMD Steering Committee, among others. Their feedback has been instrumental in shaping UMD's analysis and will continue to play an important role in the procurement process.

5. BENEFITS TO UMD OF CONTINUING THE P3 DELIVERY MODEL FOR ENERGY SERVICE DELIVERY

5.1 Key Benefits

Continuing with a P3 model offers UMD significant benefits, including the integration of the design, construction, and operations phases of the project thus reducing the risk of cost and schedule overruns. A renewed P3 program will also allow for multiple facets of the project to be coordinated and managed under a single entity. Finally, financial penalties and scrupulous oversight on behalf of UMD by project lenders and/or bond holders can help to ensure that the private developer is incentivized to comply with standards and specifications.

The key benefits of continuing the use of a P3 structure for UMD energy infrastructure are as follows:

- **Operations with strong performance incentives:** A P3 structure can provide for contractual incentives and disincentives, as payments to the private entity are subject to operator performance and KPIs. A performance-based agreement is used to help ensure the long-term operational integrity of the asset. Energy reliability and energy system resiliency are critical for an institution like UMD where a failure of energy service may cause the loss of many years of research or endanger students, faculty, and staff. A structure of guarantees and liquidated damages – which would not be available if the University operated the system itself – holds the private operator accountable for its quality of performance and encourages the achievement of best-in-class service availability.
- **Whole life-cycle planning and cost optimization:** Developing resilient, reliable, and sustainable campus energy infrastructure requires considerably planning that incorporates not only the initial design, build and associated financing, but also significant diligence on the long-term operations and maintenance lifecycle and the mitigating the inherent risks associated with each development and operational phase. Under a P3 structure, the private sector will be required to develop pricing that considers the costs needed to operate and maintain the asset over its entire lifecycle, Thus promoting better build quality to ensure the integrity of the asset through the contract period through to hand-back.
- **Risk transfer:** One of the fundamental tenets of a P3 is the development of an agreement that outlines the optimal risk allocation between the public and private entities, based on the principle of transferring risk to the entity that is best able to cost-effectively manage and mitigate that risk. Key risks that would be transferred to the private entity in the context of UMD's energy infrastructure are providing improved funding certainty for future required capital expenditures and reducing the risk of suboptimal technology selection and poor-quality materials that adversely impact performance.

- **Enhanced opportunities for innovative technologies and best in class operations:** Better preventive maintenance over the life of the project will reduce system losses for both the steam distribution system (reducing both water and fuel purchases, as well as carbon emissions) and the steam generation system (as cogeneration equipment downtime necessitates the use of less efficient boilers). A P3 entity could also be more incentivized to take advantage of emerging technologies to address UMD's energy needs through leveraging international best practices related to energy efficiency and capitalizing on newer trends, particularly in the renewable energy space.
- **Financial benefit:** Going back to self-financed and operated energy infrastructure would be costly for UMD, as it would be required to hire and train a UMD-employed workforce. By continuing to use a P3 approach, UMD has the option of utilizing private sector equity. The financing risks are shifted to the private sector, allowing for additional flexibility with the use of project financing, including capital markets solutions, private placements, and bank solutions, as well as the possible use of the various financial incentives such as the Investment Tax Credit ("ITC") and bonus depreciation in the Concessionaire case which would limit the cost of capital differential between tax exempt and private sector financing.

5.2 P3 Risk Mitigation

As previously noted, a central P3 concept is that risks are allocated to the party best able to manage them in a cost-effective way. Since risk transfer to the private sector is priced by the market, certain risk transfers may not offer value if the private sector cannot price them effectively. To better inform the magnitude of potential project risks, possible risk mitigation, and possible transfer of risks inherent in UMD's energy infrastructure renewal under different commercial options, a risk workshop was held in May 2019. The risk analysis included an evaluation of the following:

- Perceived risks relevant to the project for the 501(c)(3)-type and Concession structures
- Categorization based on the following project risk elements: Design, Construction, Demand, Operational, Commercial, Capacity, Financial, and Governance Risks
- Responsibility for each risk to either the asset owner or the third-party contractor/operator under both the 501(c)(3)-type and Concession structures
- The estimated probability of each risk occurring under the 501(c)(3)-type and Concession structures
- An allocation of the cost associated with each risk under the 501(c)(3)-type and Concession structures

UMD developed a risk adjusted contingency, comprised of the product of the probability of the risk occurrence and the likely cost impact of the risk. The 501(c)(3)-type Structure had slightly less risk transfer to the private sector than the Concession Structure, but both cases had much less risk exposure to UMD than the current interim agreement, under which UMD retained risk

particularly with respect to capital expenditures and major maintenance during operations. Additional risk mitigation benefits under the P3 arrangements included:

- **Reliability of service:** Because of the more stringent performance requirements inherent in the P3 structures and the greater penalties for nonperformance throughout the program term, there is a greater emphasis on reliability of service. This could help mitigate the risk of unplanned outages, and other unexpected costs that the University has been exposed to over the past several years.
- **Financing risks:** The financing and funding risks are shifted to the private sector, thus allowing for additional financing structures, while mitigating the life-cycle investment risk to the University, particularly in later years.
- **Environmental Risks:** The NextGen Program incorporates the implementation of renewable energy districts and cogeneration technology that allows for the flexibility of using renewable natural gas or other fuels to power the facility. Future environmental risks will be mitigated by a potential P3 arrangement through the shared goals of deploying newer and more sustainability focused technologies throughout the term. Higher efficiency through steam distribution and condensate system renewals will reduce carbon emissions, as will making buildings and facilities more energy efficient. UMD expects to benefit from obtaining the perspective of a private entity that has successfully implemented these emerging technologies at a variety of locations.

5.3 Potential P3 Implications

Continuation of the P3 model at UMD avoids adverse implications often associated with P3s while providing positive implications, including the following:

- **Workforce Implications:** None of the jobs in managing, operating, and maintaining UMD's energy systems are held by public sector employees. Therefore, there will be no State jobs lost as the result of continuing the P3 model. Adding the operation and maintenance of all SCUBs to the NextGen Program's scope of work will have little or no impact on State employees since these services are currently outsourced to a third party.

- **Economic Development:** Renewal of the campus energy infrastructure will create construction jobs not only over the 3-year construction period, but also over the program term as capital improvements are made to create new renewable energy districts and maintain and enhance the efficiency of the energy systems. Furthermore, UMD expects current district energy internships to continue into the NextGen Program, which will train engineers and managers in renewable technologies and energy efficiencies, thereby supporting UMD's education mission and developing personnel for the new global energy industry.

- **Environmental Implications:** UMD expects that the NextGen Program will be an integral part of achieving UMD's sustainability objectives, not only through its installation of advanced energy technology, but also through gaining access via the P3 partner to best-in-class environmental operation and management practices.

6. PROPOSED P3 COMMERCIAL DELIVERY OPTIONS

Two base P3 commercial structure options are being considered by UMD for the NextGen Program's procurement based on their compatibility with UMD's strategic objectives. The first is a 501(c)(3)-type Structure, in which UMD would utilize tax-exempt financing through a tax-exempt entity (such as MEDCO) to finance capital improvements to its energy systems, and would enter into an agreement with a private sector provider to design, engineer, construct, and install capital improvements to the energy systems and to manage, maintain, and operate those systems for the program term. Substandard performance by the provider would results in reduction of its operation and maintenance compensation.

The second commercial structure option is a Concession Structure, in which a P3 concessionaire would manage UMD's energy systems as a Design-Build-Finance-Operate-Maintain project. The Concessionaire (i.e. Developer/Investor) would finance capital improvements using a mixture of taxable debt and its own (or an equity partner's) equity. Deductions for substandard performance would reduce the Concessionaire's recovery of its equity investment as well as its expected return. .

6.1 Initial Observations

UMD's analysis identified similar benefits to be obtained from each P3 approach compared to retaining full control in a "self-invest and operate" scenario:

6.1.1 **Pros:**

- Transfer of risk (additional funding/financing for future capital expenditures, technology selection and risk of poor-quality materials adversely impacting performance particularly for the Concession Structure)
- Investor/Developer potentially incentivized to innovate
- Payments subject to operator performance and KPIs
- No significant increase in operational costs compared to the status quo option
- Meets goal for efficiency, resiliency and growth

6.1.2 **Cons:**

- For the 501(c)(3)-type Structure, there are higher interface risks because it is somewhat more difficult to coordinate contract management to ensure UMD receives expected benefits

6.2 Results

Analysis indicates that the lifecycle costs of entering into a renewed P3 for its campus energy infrastructure would be comparable under either a 501(c)(3)-type Structure or Concession Structure, assuming that the full benefit of tax incentives available to the private sector are

considered (i.e. the investment tax credit, and bonus depreciation). There are several qualitative differences that favor a Concession P3 structure, including:

- Greater performance incentives as a result of equity commitments;
- The ability to improve security for the asset handback at end of life;
- Major maintenance funding availability of the contract term;
- More incentives and funding for campus wide improvements over time; and
- The potential for third party customers that could be leveraged to lower the cost to the University

Since the financial impact of these structures was similar, UMD intends to allow for flexibility in its procurement that would allow it to evaluate the value of each structure as part of the selection process. Further, the University is considering the possibility of structuring the NextGen Program as a hybrid approach that would incorporate some elements of a 501(c)(3)-type Structure with a Concession Structure, thus allowing for the utilization of a more creative financial approach (i.e. a 501(c)(3)-type structure with tax exempt debt for the distribution network and a Concession Structure with taxable debt for the generation renewal).

7. PRELIMINARY CONTRACT CONCEPTS/WORKING ASSUMPTIONS

7.1 Term Length

UMD currently envisions the NextGen Program having a 30-year operations term, with 3 years of construction. This term may be increased up to 50 years, the statutory maximum for P3s, or decreased to 20 years depending on offeror proposals and discussions throughout the solicitation process.

7.2 MEDCO Ground Lease

MEDCO's Ground and Equipment Lease of UMD's central plant and other pre-1999 energy infrastructure expires on June 29, 2029 but its termination can be accelerated by UMD and MEDCO's agreement.

7.3 Program Structure

UMD anticipates that the successful offeror will manage, operate, maintain, and improve all campus energy generation and distribution systems. For financing purposes, UMD may pursue a hybrid program structure in which the successful offeror finances capital improvements to, and assumes full responsibility for, only the steam, electricity, and chilled water production facilities. MEDCO (or other 501(c)(3) entity) would issue tax-exempt bonds for capital improvements to the distribution systems and retain the offeror as the systems' operator and construction manager.

7.4 Asset Ownership

UMD expects that following termination of MEDCO's Ground and Equipment Lease, the State would retain ownership of all portions of the energy systems existing prior to the NextGen Program's effective date. For financing purposes, UMD may lease those systems to the successful offeror. The offeror would finance and own all capital improvements, which would become State property at the end of the lease's term.

If UMD follows the hybrid program structure, the State would lease the steam, electric, and chilled water production facilities to the successful offeror, which would finance and own all capital improvements. Concurrently, UMD would amend the existing, or enter into a new, Ground and Equipment Lease with MEDCO (or other 501(c)(3) entity) for the steam, electric, and chilled water distribution systems. The tax-exempt entity would finance and own all capital improvements to those systems. At the end of both leases' term, all capital improvements would become State property.

7.5 Performance Guarantees

UMD intends to solicit proposals that include performance guarantees of energy service quality, efficiency, and reliability. UMD expects that all performance guarantees will be backed by

substantial liquidated damages/ performance deductions, or other consequences if the guarantees are not met.

UMD anticipates that the NextGen Program will include a process by which UMD can request its P3 partner to install energy conservation measures and make building improvements to reduce the University's energy requirements and decrease its carbon footprint. UMD expects that offerors will guarantee the efficacy of such measures and back that guarantee with liquidated damages/performance deductions.

7.6 Performance Metrics

UMD expects that offerors will propose a detailed set of KPIs as a means for evaluating the energy systems' operation and maintenance and the quality of the operator's performance. Specific KPIs will be developed during the solicitation process. UMD anticipates that at a minimum, such KPIs will fall within the following general categories:

- Repair and maintenance activities
- Service call response and service restoration times
- Safety (trainings, accidents)
- Service reductions or outages
- Condensate returned to central plant
- Temperature differential between chilled water delivery and return points
- Electric distribution system feeder loading
- Steam pressure at point farthest from central plant
- Delivery pressures and temperatures
- Fuel conversion
- Fuel and electric supply hedging and management
- Reductions of Greenhouse Gas emissions

UMD expects to have the capability to monitor KPIs in real time by accessing the operator's operating data and metering systems and its computerized maintenance and management system.

7.7 Sustainability

The NextGen Program is essential to meeting UMD's commitment to carbon neutrality. UMD expects that offerors will articulate a clear pathway to energy system sustainability through utilization of highly efficient equipment and continuing evaluation and deployment (as feasible) of new technologies throughout the term. UMD also expects offerors to propose a plan to implement one or more renewable resource hot water demonstration districts during the NextGen Program's initial phase.

7.8 Technical Approach

UMD anticipates that the NextGen RFP will describe a base technical case upon which offerors will submit proposals. UMD may also provide offerors the opportunity to propose an alternative technical approach that can meet UMD's reliability, affordability, and sustainability requirements.

7.9 Additional Scope

Under the 1999 Program, UMD retained ownership, maintenance, and operating responsibility for all except one of the 13 SCUBS. UMD intends to seek proposals for adding all SCUBs to the NextGen Program's scope.

7.10 Mandatory Contract Provisions

UMD intends for the NextGen Program contracts to contain terms and conditions that require compliance with the following provisions of the Maryland State Finance and Procurement Code:

- Section 3-602.1 (High Performance Buildings)
- Section 11-205 (Collusion)
- Section 11-205.1 (Falsification, Concealment of Material Facts)
- Section 13-219 (Required clauses – Nondiscrimination clause)
- Section 13-225 (Retainage)
- Sections 14-301 – 14-309 (Minority Business Enterprises)
- Sections 15-101 – 15-112 (Procurement Contract Administration)
- Section 15-226 (Payments to Subcontractors)
- Sections 16-101 – 10-312 (Suspension and Debarment of Contractors)
- Sections 17-101 - 17-111 (Security for Construction Contracts
- Sections 17-201 – 17-226 (Prevailing Wage Rates – Public Works Contracts)
- Sections 18-101 – 18-109 (Living Wage)

Contracts will also contain terms and conditions to require compliance with the Maryland State Environmental Code.

Examples of standard provisions utilized in UMD contracts to comply with several of these statutes are set forth in the University System of Maryland Procurement Policies and Procedures ("USM Policies") (available at https://www.usmd.edu/regents/bylaws/SectionVIII/VIII300.pdf).

In addition, the P3agreement will contain the provisions required by Section 10A-401 (a) of the Maryland State Finance and Procurement Code:

- The method and terms for approval of any assignment, reassignment, or other transfer of interest related to the public-private partnership agreement;
- The methods and terms for setting and adjusting charges related to the public infrastructure asset;
- The method and terms for revenue-sharing or other sharing in fees or charges, in which the public participates in the financial upside of asset performance of the public infrastructure asset;
- Minimum quality standards, performance criteria, incentives, and disincentives;
- Operations and maintenance standards;
- Rights for inspection by the State;
- Terms and conditions under which USM/UMD may provide services for a fee sufficient to cover both direct and indirect costs;
- Provisions for oversight and remedies and penalties for default;
- Terms and conditions under which the USM/UMD will be responsible for oversight;
- Terms and conditions for audits by the State, including the Office of Legislative Audits, related to the agreement's financial records and performance;
- Terms and conditions under which the public infrastructure assets shall be returned to the State at the expiration or termination of the agreement;
- Requirements for the private entity to provide performance security and payment security in a form and in an amount determined according to statute.

8. Preliminary Debt Affordability Analysis and Budgetary Impact

8.1 Debt Affordability

Under either P3 structure, UMD would not directly be issuing debt. The 501(c)(3)-type Structure would involve the issuance of tax-exempt debt while under the Concession Structure, the private entity would source taxable debt via a sale of securities such as a private placement. The University would pay the private entity using availability payments.

The Governmental Accounting Standards Board is current developing implementation guidelines for GASB 87, while also engaging in a project that could change recognition and measurement for various commercial structures under GASB 60.

It is expected that both commercial options will be considered on credit to the University.

8.2 UMD Operating Budgetary Impact

The University anticipates that the NextGen Program (capital improvements and management, operations, and maintenance) will be implemented within its current utility services budget (as escalated for inflation). Based upon its financial model for both potential commercial structures, the University estimates that the P3 approach could produce as much as $178 million dollars in savings over the NextGen Program's term as compared to continuing current operations and making repairs only when necessary.

9. PROPOSED SOLICITATION PROCESS

Please see below the preliminary procurement schedule, including key steps and anticipated dates.

Preliminary Procurement Schedule	
Procurement Step	**Milestone Dates**
Board Regents Approval	December 2019
Board of Public Works Approval	April 2020
Request for Qualifications Issuance	April 2020
Request for Qualification Response	June 2020
Shortlist Qualified Service Providers	June/July 2020
Issue Draft Request for Proposals to Shortlisted Providers	July 2020
Receipt of Provider Comments on Draft Request for Proposals	July/August 2020
Issue Final Request for Proposals	October 2020
Deadline for Receipt of Proposals	March 2021
Evaluation of Proposals	March – May 2021
Selection of 2 Finalists	May 2021
Best and Final Offers from Finalists	June 2021
Evaluation of Best and Final Offers	June 2021
Preferred Proposer Selected	June 2021
Contract Negotiation	June – December 2021
Submission of Final Agreement(s) to UMS Board of Regents	January 2022
Approval of Final Agreement(s) by USM Board of Regents' Finance Committee	February 2022
Approval of Final Agreement(s) by USM Board of Regents	February 2022

Submission of Final Agreement(s) to the Comptroller, the State Treasurer, the General Assembly's Budget Committees, and Department of Legislative Services	March 2022
BPW Approval	April – May 2022
Financial Close	June 2022
NextGen Program Commencement	July 2022

10. Statement of Intent to Rely on Section 11-203 Exemption from the University System's Procurement Policies and Procedures

Pursuant to the University System's Policy VIII-17.00 – *Policy on Public-Private Partnerships* and Section 11-203(h) of the State Finance and Procurement Article, UMD intends to rely on the exemption from the University System's Procurement Policies and Procedures for the solicitation and award of State-supported public/private partnerships for academic facilities. UMD will comply with all legal requirements set forth in Section 11-203(h)(2) of that Article, as well as all other applicable legal requirements.