November 4, 2019

James D.Fielder, Jr., PhD
Secretary
Maryland Higher Education Commission
6 N. Liberty Street, 10th Floor
Baltimore, MD 21201

Dear Dr. Fielder:

On behalf of Provost Sunil Kumar, Dean Eliot Cohen and our School of Advanced International Studies, I write to request your review and endorsement of the enclosed proposals. The School of Advanced International Studies proposes a new **Master of Arts in Sustainable Energy.**

The proposed program offers students an opportunity to pursue an advanced credential tailored for experienced and aspiring practitioners in the field of sustainable energy. The curriculum focuses on the challenge of sustainability in the energy sector and introduces students to issues such as climate change, energy poverty, electricity markets, and oil/gas markets.

The proposed program is consistent with the Johns Hopkins mission and the State of Maryland's Plan for Postsecondary Education. The proposal is fully endorsed by The Johns Hopkins University.

A business check (#11817704) for the review of this proposal has been sent to the Commission. Should you have any questions or need further information, please do not hesitate to contact Natalie Lopez at (410) 516-6430 or nlopez13@jhu.edu. Thank you for your support of Johns Hopkins. University.

Sincerely,

Janet Simon Schreck, PhD
Associate Vice Provost for Education

cc: Dr. Sunil Kumar
    Ms. Natalie Lopez

Enclosures

Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	Johns Hopkins University

Each _action_ below requires a separate proposal and cover sheet.

- ◉ New Academic Program
- ○ New Area of Concentration
- ○ New Degree Level Approval
- ○ New Stand-Alone Certificate
- ○ Off Campus Program

- ○ Substantial Change to a Degree Program
- ○ Substantial Change to an Area of Concentration
- ○ Substantial Change to a Certificate Program
- ○ Cooperative Degree Program
- ○ Offer Program at Regional Higher Education Center

Payment Submitted:	◉ Yes ○ No	Payment Type:	○ R*STARS ◉ Check	Date Submitted:	11/13/2019

Department Proposing Program	School of Advanced International Studies
Degree Level and Degree Type	MA
Title of Proposed Program	Sustainable Energy
Total Number of Credits	40
Suggested Codes	HEGIS:	CIP: 30
Program Modality	○ On-campus ○ Distance Education (_fully online_) ◉ Both
Program Resources	◉ Using Existing Resources ○ Requiring New Resources
Projected Implementation Date	○ Fall ◉ Spring ○ Summer Year: 2020
Provide Link to Most Recent Academic Catalog	URL: https://sais.jhu.edu/current-students/student-and-academic-handbook

Preferred Contact for this Proposal	Name:	Natalie Lopez
	Title:	Senior Academic Compliance Specialist
	Phone:	(410) 516-6430
	Email:	nlopez13@jhu.edu

President/Chief Executive	Type Name: Sunil Kumar
	Signature: _Sunil Kumar K_ Date: 11/04/2019
	Date of Approval/Endorsement by Governing Board:

Revised 6/13/18

The Johns Hopkins University
School of Advanced International Studies
Proposal for New Academic Program

Master of Arts in Sustainable Energy

A. Centrality to Institutional Mission Statement and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

    The Johns Hopkins University School of Advanced International Studies (SAIS) is pleased to submit a proposal for a new Master of Arts in Sustainable Energy (MASE) for online delivery. The CIP code of this program is Sustainable Studies: 30.3301. The proposed program offers students an opportunity to pursue an advanced credential tailored for experienced and aspiring practitioners in the field of sustainable energy. The curriculum focuses on the challenge of sustainability in the energy sector and introduces students to issues such as climate change, energy poverty, electricity markets, and oil/gas markets. Students will complete the MASE on a part-time basis in approximately two years.

    The mission of Johns Hopkins University (JHU) is to educate its students and cultivate their capacity for life-long learning, to foster independent and original research, and to bring the benefits of discovery to the world. In addition, the mission of SAIS is to educate and prepare the next generation of global leaders in government, the private sector, multilateral institutions, and the nonprofit sector to solve multifaceted 21st century global challenges through a curriculum strongly rooted in a study of international relations, economics, and regional studies. The vision is to be the preeminent school of international affairs by providing our students with the most innovative and academically rigorous curriculum that prepares them for leadership, while also serving as the forum for novel ideas for solving the world's most pressing problems. We will strengthen our multidisciplinary approach to international affairs by training global leaders to emphasize the connections between intellectual excellence, innovation, entrepreneurship, and social engagement. The proposed degree program aligns with both JHU and SAIS's missions, as the structure of the program and its inclusion of experienced professionals contributes to life-long learning as well as to the preparation of global leaders in the field of sustainable energy.

2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.

    Three of the key objectives of the SAIS strategic goals are to (1) *attract the best students*, (2) *elevate the Johns Hopkins SAIS profile*, and (3) *grow resources available to the school*. The MASE program will attract experienced professionals from the field into its cohorts, which will in turn support the elevation of the SAIS profile. The program will

provide a new revenue stream to SAIS with the potential to reach a wide audience in its online format. It will also elevate the course offerings, research opportunities and expertise in this fast-growing field of sustainable energy.

At the institutional level, the proposed MASE program closely aligns with the JHU 10x2020 goals, the following two in particular: (1) *selectively invest in programs that support our core academic mission* and (2) *develop the resource base necessary to support investments in key academic priorities*. Through its development of the MASE, SAIS is investing in a program that supports JHU's academic mission while also contributing to the resource base necessary to support other SAIS programming. In turn, the MASE further positions JHU to realize the highest standards of academic excellence.

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L.)

   The majority of the curriculum will be housed in existing academic programs. As this is an online program, new financial resources will be needed for the design and development of online courses specific to the MASE program. An academic program director will be compensated for managing and leading the program, advising students, and providing general oversight of the capstone. Existing positions will provide administrative support. Additional funds will be made available for supporting the launch of this new online program (see section L.).

4. Provide a description of the institution's commitment to:

   a) ongoing administrative, financial, and technical support of the proposed program

      SAIS has committed resources for administrative and financial management for this graduate program. Administrative and faculty salary support exists within the current degree programs structure. SAIS will provide faculty salary support for all new courses. Technical support is provided through existing graduate school resources. The JHU SAIS Online and Distance Learning office, which consist of instructional designers, technologists, and a tech support team will be providing continued guidance and support to faculty and students in the online program.

   b) continuation of the program for a period of time sufficient to allow enrolled students complete the program.

      SAIS is committed to providing opportunities for completion of the MASE. Should the program be discontinued, SAIS will teach out the program and provide the necessary courses and resources so students will be conferred on a regular schedule.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following:

    a) The need for the advancement and evolution of knowledge

    The MASE program will meet an important need for both domestic and international students who want to obtain more education and research training beyond an undergraduate degree. The demand for highly skilled practitioners in the field of sustainable energy in the District of Columbia, Maryland, and Virginia region has increased the need for degree programs such as the MASE. JHU SAIS partnered with an educational market research firm to determine if there is a growing need for more educational opportunities in the field of sustainable energy in the Mid-Atlantic and the DMV region. As evidenced in this Market Analysts report, "[employment] for related occupation is projected to grow, and "green collar" should be in high demand in the coming years. Sustainable energy employment is expected to grow faster than average". As per the report, there is an estimated 10.5% growth in "projected national employment [...] for occupations related to sustainable energy".

    b) Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education

    For busy working professionals, flexibility is very important, as is the ability to continue their education in the face of work demands. The online modality of the program will create scheduling flexibility for students pursuing the MASE, which will enable them to continue being employed which can then potentially offset student loan debt. The online modality will also make the program accessible to students who must leave the area due to military deployment or relocation by their employer for work responsibilities within the U.S. and abroad. Additionally, the online modality will enable JHU SAIS to reach a wider national audience and an international audience to enable our students gain multiple perspectives on energy policy and governance on a global scale.

    c) The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs

    The proposed program does not directly address this issue. SAIS anticipates that the program will attract applicants from graduates of HBI's.

2. Provide evidence that the perceived need is consistent with the **Maryland State Plan for Postsecondary Education**.

Promote and implement practices and policies that will ensure student success.

Strategy 5: Ensure that statutes, regulations, policies, and practices that support students and encourage their success are designed to serve the respective needs of both traditional and non-traditional students.

The MASE will have policies and practices that are student-focused and ensure student success. Students will access and complete the MASE program in an online format and thus participate asynchronously and synchronously in the coursework. Relatedly, the program's online presence also has the potential to increase the diversity of the enrollment. SAIS will continue to collect data (e.g., student learning outcomes, enrollment, program budgets) internally on an annual basis as part of its ongoing program-level assessment and curriculum review initiatives.

The online modality of this program accommodates the varied needs of non-traditional students where such students have the flexibility to progress through the program successfully while being able to meet their professional and personal obligations.

Strategy 6: Improve the student experience by providing better options and services that are designed to facilitate prompt completion of degree requirements.

The MASE program is cohort-based. As the program is designed for working professionals, the administrative staff supporting the program will be guiding and supporting the students as they progress through the program. Each of the courses within the program will be designed such that the students and faculty have the ability to interact with one another through various means. Through the design of activities and assignments within the program, it will allow faculty to provide feedback through a variety of formats. The learning process is also enhanced by leveraging the power of student feedback whereby students will be able to synthesize and contribute to each other's learning. Courses will be structured in a way that build on one-another. Key faculty will be monitoring the initial base courses to make sure students are engaged, active and completing assignments. They will provide continual feedback and support. Students in the MASE program will be also be assigned an advisor who will monitor their overall progress and keep them on track to completion.

Strategy 7: Enhance career advising and planning services and integrate them explicitly into academic advising and planning.

Career-focused advising will complement the academic advising provided by the faculty. Students in the MASE program will have access to the SAIS Career Center, but beyond this, they will have access to highly qualified faculty with academic and practical expertise in the energy field. Faculty, practitioners and alumni will serve as de facto

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mentors to these students. The MASE program is intended to prepare highly trained energy policy practitioners to work in organizations where they can contribute to the needs of the sustainable energy field. The program will prepare energy policy practitioners to contribute to economic growth and vitality by providing continuing education that supports the skills needed to succeed in the growing industry of energy sustainability.

Foster innovation in all aspects of Maryland higher education to improve access and student success.

Strategy 8: Develop new partnerships between colleges and businesses to support workforce development and improve workforce readiness

The MASE is created for practitioners who will be working directly in the businesses related to sustainable energy. The capstone course in the program will allow JHU SAIS to forge partnerships with areas businesses and industries. These partnerships will provide insight into how to educate our future workforce JHU SAIS Career Services will create these relationships to funnel our graduates into area businesses related to sustainable energy. The current Energy, Resources and Environment program at SAIS has formalized relations that provide experiential opportunities within the private and public sector industries in sustainable energy. Through this program, JHU SAIS wanted to collaborate with businesses to identify the most pressing needs (skillsets) in the field in order prepare its future professionals.

Strategy 9: Strengthen and sustain development and collaboration in addressing teaching and learning challenges.

MASE faculty members will partner with instructional designers from the JHU SAIS Online and Distance Learning (ODL) office in the design and development of MASE online courses. They will also receive in-depth trainig in the pedagogy of teaching online. Faculty will be trained in meeting the expectations of students in the 21st century, with an emphasis on tapping skills such as critical thinking, independent learning, familiarity with relevant software and data, as well as entrepreneurialism. Faculty will equip students with the skills to manage their own learning, so they can continue to learn post-graduation.

While teaching online MASE courses, faculty and students will be supported by the JHU SAIS ODL instructional support team. In addition, through the duration of the program, faculty and students will have continued access to on-going training and support. JHU SAIS also has a series of online training and support resources. These resources are based on best practices in online pedagogy informed by research and other related sources. Faculty teaching in the MASE program will have continued access to these resources which are kept current and updated by the JHU SAIS ODL office. Students will also have access to the SAIS Writing Center and teaching assistants for certain courses.

Strategy 11: Encourage a culture of risk-taking and experimentation.

The proposed program will be one of the few graduate-level programs with a focus on energy sustainability to be offered in an online format in the Maryland or Washington, D.C. areas. It is an innovative approach to solve a demonstrable industry and student need. Courses are designed by faculty who understand the specific needs of learners in an online environment. Its structure blends the proven aptitudes of the SAIS graduate student experience with innovative approaches toward teaching, learning, and research.

The field of sustainable energy, a field of study which is trying to solve current issues without impacting the future, innately guides students towards solving existing problems in new and novel ways. Through the Capstone course in the program students will be creating new and unique solution to problems that they have identified. Which encourages entrepreneurial exploration, and growth of new ideas to solve current and future challenges.

C. **Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:**

1. Describe potential industry or industries, employment opportunities, and expected level of entry (*ex: mid-level management*) for graduates of the proposed program.

   Employment pathways for sustainable energy graduate are diverse and broad, and several distinct occupations pose promising opportunities for graduates. As per a JHU SAIS commission market needs report for MASE "Specific jobs relating to sustainable energy degree holders include compliance managers, financial analysts, green marketeers, and additional positions in government, non-profits, and private corporations". More niche positions include "environmental restoration Planners, Environmental Economists, Climate Change Analysts, Industrial Ecologists, all of which have been classified as in-demand occupations. Overall, these trends indicate that sustainable energy graduates may choose to pursue a wide variety of employment pathways, and green professionals will continue to be in high demand moving into the future."[1] Potential industries of employment include Department of Energy, Department of Defense, OPIC, and NASA along with other private and public energy consultancies.

2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.

   Employment in occupations related to sustainable energy is projected to grow at an annualized rate of 10.5 % from 2016 to 2026, faster than the growth of 7.4 % for all occupations nationally. EDF Climate Corps[2] notes that sustainability "collectively represents an estimated 4-4.5 million jobs in the US" as of 2015, compared to 3.4 million jobs in 2011. More specifically, the renewable energy sector and the public sector

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[1] https://www.onetonline.org/find/quick?s=19-2041
[2] EDF Climate Corp URL: http://edfclimatecorps.org/nowhiringreport#5

represents 769,000 jobs and the 890,000 jobs, respectively, which highlights the potential for employment related to the sustainable energy graduate degree"[3],[4].

3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.

   As per the market needs analysis report which is based on the projected market demand and the accessibility and convenience of an online program, we expect this program to be successful in terms of matriculation and employment outcomes.

Labor Market Analysis
MA in Sustainable Energy

National Current and Projected Job Availability
National MASE-related positions as of 2016 and 2026 (projected)

Legend: ■ 2016 ■ 2026

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[3] https://www.learnhowtobecome.org/career-resource-center/green-careers/
[4] https://www.energy.gov/eere/education/find-jobs
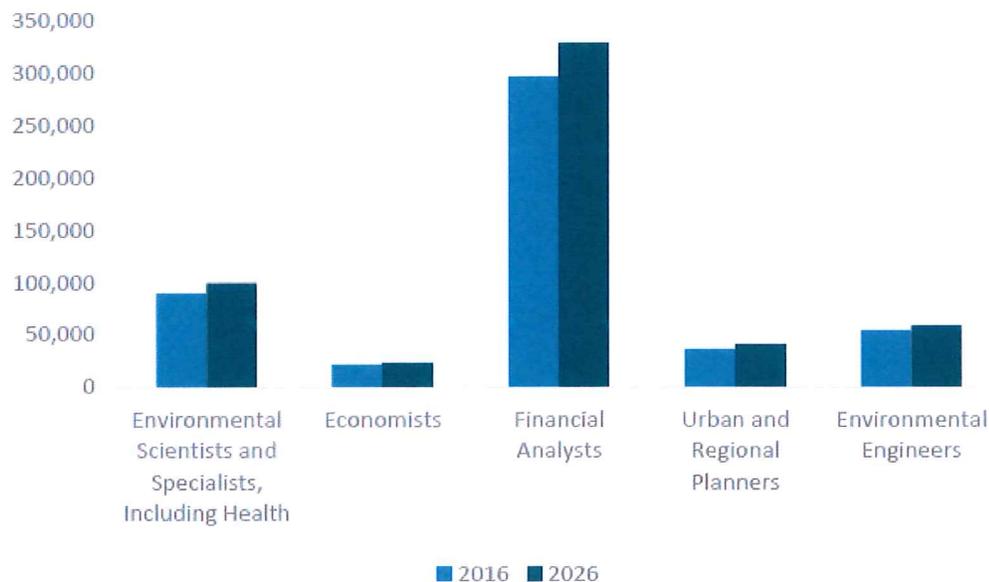
Total Labor Market

Aggregate MASE-related job availability by geographic level

	Maryland	Mid East	National
2016	10,940	123,570	496,700
2026	11,630	136,810	549,100
Growth Rate	6.3%	10.7%	10.5%
Total Annual Openings	970	11,850	47,600

Source: **Projections Central** 5

4. Provide data showing the current and projected supply of prospective graduates.

As per the MASE market analysis report, student Demand has been increasing for masters degrees related to sustainable energy. Within the United States, masters degree conferrals in fields related to sustainable energy grew at an annualized rate of 10.0 % from 2013 to 2017, compared to the aggregate 1.6% growth from all master's degrees in the country. Regional programs in the Mid-East saw similar growth. (MASE Market Analysis)

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[5] https://projectionscentral.com/Projections/LongTerm

National Degree Completions Volume

National distribution of MASE-related degree completions from 2013 to 2017

- ■ Energy, Environment, and Natural Resources Law
- ■ Environmental Studies
- ■ Sustainability Studies
- ■ Energy Management and Systems Technology/Technician
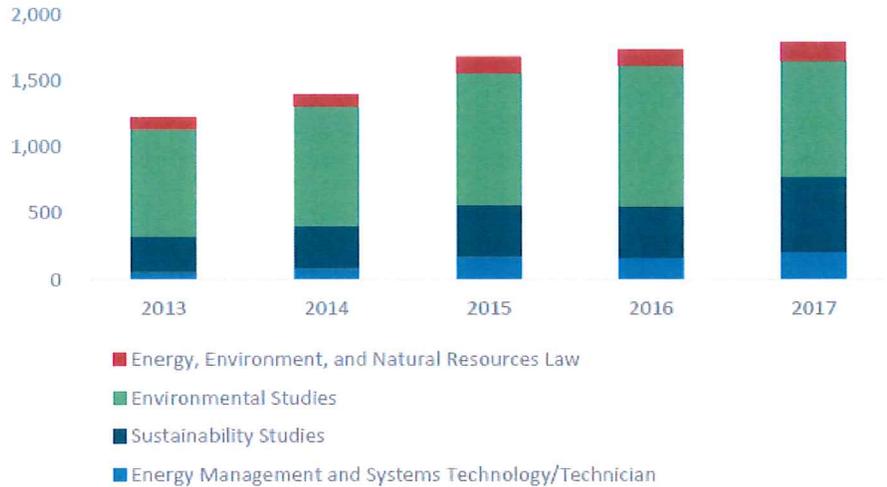
Total Degree Completions

Aggregate MASE-related degree completions by geographic level (2017)

	Maryland	Mid East	National
Energy Management and Systems Technology/Technician	0	66	210
Sustainability Studies	0	236	564
Environmental Studies	0	120	879
Energy, Environment, and Natural Resources Law	0	49	141
Total	0	471	1,794
Compound Annual Growth Rate	N/A	10.8%	10.0%

Source: **IPEDS**

As per the market analysis report, online programs are less common but growing faster than campus programs. Programs will online format are growing faster, from 380 degree completed in 2013 to 706 in 2017 at an annualized rate of over 16%.

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[6] https://nces.ed.gov/ipeds/use-the-data

Growth in Completions by Delivery Format

Bar and line chart showing Growth in Completions by Delivery Format for years 2013–2017. Y-axis from 0 to 2,000. Online, On-Campus bars and Total line.

Year	Online	On-Campus
2013	380	873
2014	526	931
2015	666	1,110
2016	658	1,183
2017	706	1,158

Legend: Online | On-Campus | Total
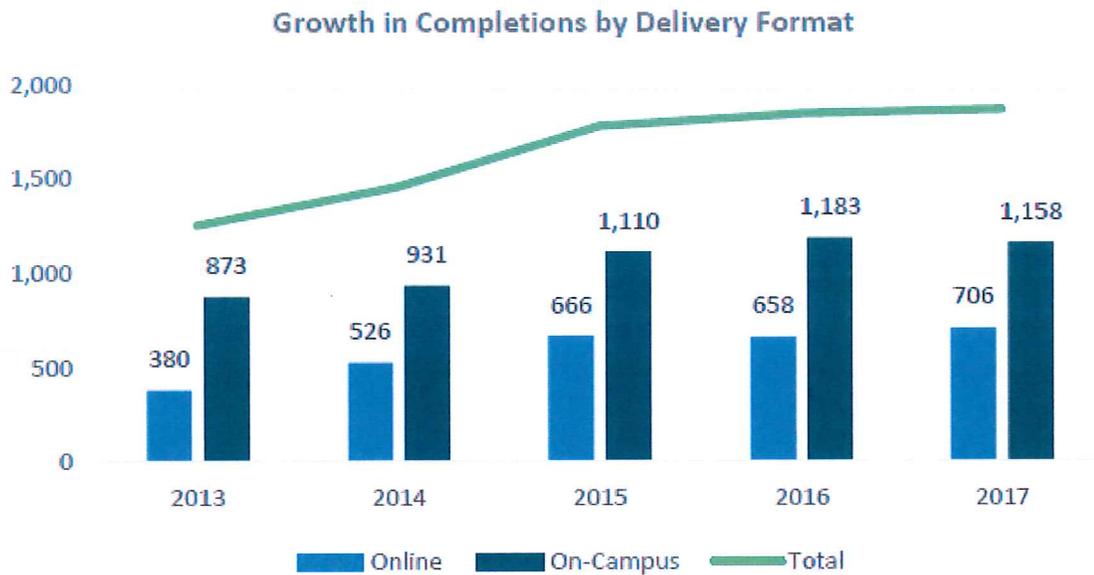
D. Reasonableness of Program Duplication:

1. Identify similar programs in the State and/or same geographical area. Discuss similarities and differences between the proposed program and others in the same degree to be awarded.

   An extensive web search revealed that there are other graduate-level programs with a focus in sustainable energy on an international scale offered in the District of Columbia (D.C.) and Maryland region. The difference is that they are more heavily focused on engineering and scientific analysis vs. a focus on energy policy and its role in government. Many of these programs do not use CIP 30.3301.

   For example, the Johns Hopkins University Krieger School of Arts & Sciences' Advanced Academic Programs offers a Master of Science in Energy Policy and Climate, George Washington University offers a Master of Arts in Environmental Resource Policy, and American University offers a Master of Science in Sustainability Management. However, these programs serve a different student demographic in part due to a non-international program focus, time to completion, and the career goals with which the programs align. These programs have a separate CIP code.

   Additionally, the MASE differentiates itself by offering students a deep knowledge of the sustainable energy field as it relates to policy, governance and finance. Incoming MASE students are not required to have a solid background in sciences, technology and engineering. In fact, many of these other programs require calculus, statistics and often chemistry, prior to enrollment. Instead, MASE students are expected to have a deeper knowledge of the fundamentals of political economy and their applications in policy analysis. MASE offers a strong comparative, global approach in all classes along with an

emphasis on systems analysis and finance, policy implication and an understanding of government systems and processes in order to prepare students for career outcomes specific to this focused area of sustainable energy.

2.   Provide justification for the proposed program.
There is no other MASE program with an international policy focus offered in the District of Columbia or Maryland. Given the market demand, the offering of this program meets an important need in the region.

E. Relevance to High-demand Programs at Historically Black Institutions (HBIs):

1. Discuss the program's potential impact on implementation or maintenance of high-demand programs at HBIs.

   There is no comparable degree program offered at any of the Historically Black Institutions in Maryland.

F. Relevance to the Identity of Historically Black Institutions (HBIs):

1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.

   By definition, an appropriate student for the MASE program would apply after attending and completing a baccalaureate degree at any undergraduate institution, including any of Maryland's Historically Black Institutions. The proposed program would not directly affect the implementation, maintenance, uniqueness, identity or mission of these institutions.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (as outlined in COMAR 13B.02.03.10):

1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.

   The program was established in order to meet the needs of a growing population who was interested in a graduate-level education that is tailored to practitioners and focused on pursuing an advanced credential in the field of sustainable energy. The initial draft proposal was created by the Director of the JHU SAIS Energy, Resources, and Environment program, with faculty input, followed by one round of discussions with the SAIS Curriculum and Standards Committee (CSC). The CSC voted to approve the degree and bring it formally to the SAIS Academic Board (AB). The AB, made up of tenured full-time faculty, voted unanimously to move the degree forward. It was then submitted to the JHU Council of Deans for final review and approval from the various academic divisions of JHU.

   The primary faculty who will oversee the direction of the program will be full-time. Students will enroll in courses with both our full-time and adjunct faculty members.

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Additionally, some courses will be taught by practioners so that students gain knowledge from those who are working directly in the industry.

2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.

The proposed program offers students an opportunity to pursue an advanced credential tailored for experienced and aspiring practitioners in the field of sustainable energy. The curriculum will provide students with a deep knowledge of the sustainable energy field, especially as it relates to policy, governance, and finance. Students will learn the challenges and opportunities of expanding sustainable energy and will gain the practical and analytical skills to design policies to meet this goal locally, regionally and globally.

The program educational objectives/goals are to:

- Provide students with advanced skills and knowledge to lead the global community to a de-carbonized energy sector to help mitigate climate change.
- Introduce students to the economics of sustainable energy sources and the financing options available in the sector.
- Lead students to explore and understand the impact of international institutions and global governance in promoting sustainable energy and mitigating climate change.
- Help students develop a systemic view of the various parts of sustainable energy systems and its functions

In the achievement of these educational objectives/goals, students will demonstrate the following learning outcomes.

- **The learning outcomes associated with providing students with advanced skills and knowledge to lead the global community to a de-carbonized energy sector to help mitigate climate change are:**
  - Understand the nature of sustainable energy, including challenges and opportunities
  - Identify the connections between sustainable energy, low-carbon development, and climate change
  - Describe the trade-offs between environmental conservation and economic growth in managing environmental problems in the energy sector
- **The learning outcomes associated with introducing students to the economics of sustainable energy sources and the financing options available in the sector are:**
  - Evaluate the sustainable energy market and the policy tools that drive investment
  - Describe the economics of sustainable energy sources, including renewable energy, and also energy efficiency and nuclear power
  - Explain the financial tools used by sustainable energy project developers, financiers and policy makers

- **The learning outcomes associated with leading students to explore and understand the impact of international institutions and global governance in promoting sustainable energy and mitigating climate change:**
  - Describe key challenges, opportunities, and policy options to promote renewable energy sources on a global scale
  - Explain the role of formal institutional, non-state and other transnational forms of global governance in sustainable energy
  - Analyze effective and feasible global policies to reduce the environmental impact of energy production and consumption
- **The learning outcomes associated with helping students develop a systemic view of the various parts of sustainable energy systems and its functions:**
  - Describe the complex cause and effect relationships in the global energy system between the physical hardware of the energy sector and society's interests
  - Explain the concepts of life cycle assessment, integrated assessment and socio-technical systems, and how they are used to assess sustainable energy alternatives
  - Analyze the technological advances in distributed and renewable energy and the potential and challenges of expanding them

3. Explain how the institution will:

   a) provide for assessment of student achievement of learning outcomes in the program

   The formal assessment in the course modules will involve a wide range of skills development that faculty will assess both directly (in the form of assigned work) and indirectly (in the form of interaction both synchronously and asynchronously in the online course). That assessment will be formative insofar as the faculty will provide opportunities for students to learn from feedback and improve upon their performance in specific assignments. It will also be summative insofar as the grading conventions will allow students to assess their own performance both relative to their contemporaries and in relation to a fixed set of criteria. Assignments include course examinations, papers, policy memos, small group projects, and presentations.

   b) document student achievement of learning outcomes in the program

   The course is designed to document the achievement of individual students through comprehensive record-collecting related to curricular activities and through the appointment of a faculty advisor for each student who will be able to review grades and performance, receive feedback from colleagues, and engage in frequent conversation with individual students. Documentation of student performance in more general terms will take place through frequent surveys of student feedback on individual courses, periodic surveys of student perceptions of

the degree program as a whole, feedback from faculty members of student performance in aggregate terms, and engagement during residencies and capstone, which is a culminating demonstration of what they have learned throughout the programs.

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements

Program Requirement: The MASE Curriculum requires the completion of 10 courses (*40 credit hours*). Below are the courses and their description.

Program Outline (40 credits)

Fall 1
--- Introduction to Sustainable Energy (4 credits)
--- Sustainable Energy Policy (4 credits)

Intersession 1, Spring 1, Summer 1
--- Economics of Sustainable Energy (4 credits)
--- Distributed and Renewable Energy (4 credits)
--- Sustainable Energy and Climate Change (4 credits)
--- Global Governance of Sustainable Energy (4 credits)
--- Summer Weekend Residency

Fall 2
--- Sustainable Energy and Economic Development (4 credits)
--- Systems Analysis for Sustainable Energy (4 credits)

Spring 2
--- Sustainable Energy Finance (4 credits)
--- Capstone (4 credits)
--- Capstone Presentation Residency

Introduction to Sustainable Energy
This course identifies the key issues and challenges confronting policymakers, civil society, and business leaders in global energy. It focuses on how oil, natural gas, coal, and electricity markets are organized and function, and on the major energy end-use sectors of transportation, buildings, and industry. Students will examine the sustainability challenges arising from current energy production and use, with a focus on the energy-climate change link. Students will evaluate the range of technology and policy options that could resolve these sustainability challenges, while considering government and private sector roles, regulatory and governance implications, geopolitical factors, technology trade-offs and commercialization challenges, and economic effects. Students will also assess the role and importance of emerging economies, in particular energy access in the poorest countries.

Sustainable Energy Policy

This course identifies the important linkages between energy and environment. It focuses on how the pollution abatement policies work and examines the use of market-based instruments. Students will analyze policy challenges in resource conservation and waste management, investigate how politics and political economy interfere with energy policy, and evaluate the role of energy policy in climate change mitigation. The use of policy tools to promote clean technology innovation in energy will be reviewed. Students will also assess trade-offs between environmental conservation and economic growth and apply principles of policy analysis to manage global environmental problems in the energy sector.

Economic of Sustainable Energy

This course introduces the economics of sustainable energy. Using a variety of graphical and analytical tools, the course introduces basic concepts and tools in the economic analysis of sustainable energy. Besides covering the basics of energy and environmental economics, the course pays particular attention to the economics of sustainable energy sources. Economics of renewable energy, energy efficiency, and nuclear power are also considered. Topics covered also include economics of positive and negative externalities, carbon pricing and markets, and other sustainable energy policies. Students learn through lectures, readings, and a number of individual and group assignments for hands-on experience.

Distributed and Renewable Energy

This course serves as an in-depth survey of distributed and renewable energy sources. Due to rapid technological advances, sustainable energy sources such as solar and wind power are increasingly competitive with fossil fuels and nuclear power. What is more, interest in distributed energy generation including rooftop solar, mini-grids, and home systems offers new opportunities for resilience and rural electrification in remote areas. These energy sources face a number of specific techno-economic, regulatory, and political challenges. Students gain detailed knowledge of distributed and renewable energy, their potential, and challenges to expanding them.

Sustainable Energy and Climate Change

This course aims to connect sustainable energy to the challenge of climate change. The energy sector is the most important source of greenhouse gases, and decarbonizing energy is necessary for effective climate mitigation. The course reviews the problem of climate change in the energy sector and opportunities for sustainable energy. The course covers not only the power sector, but also industrial energy and heating. In the class, students gain a broad overview of the challenge of low-carbon energy, potential technical solutions, and policy options for pursuing them.

Global Governance of Sustainable Energy

Environmental problems such as climate change are global in nature. Solving them requires global governance through international cooperation. In this course, students learn about the global governance of sustainable energy. The course explores the challenge of globalizing sustainable energy, introduces the most important global

institutions that govern sustainable energy, and offers students an opportunity to conduct global policy analysis. Besides formal international organizations, the course explores non-state, transnational forms of global governance in the area of sustainable energy.

Sustainable Energy in Economic Development
Energy is a necessity for economic development. Without abundant and affordable energy, economies cannot power their agriculture, industry, and services. In this course, students learn about the problem of energy for economic development, with a particular emphasis on the opportunities of sustainable energy. The course introduces key trade-offs between economic development and environmental protection in energy planning. The course emphasizes the opportunities and challenges of sustainable energy with comparative analysis of experiences in key emerging economies from Brazil to China and India.

Systems Analysis for Sustainable Energy
Energy systems consists of hardware, such as pipelines and power plants, and software, such as societal practices and institutions. This course introduces students to systems thinking in the field of sustainable energy. Students learn how to detect, understand, and analyze complex cause-effect relationships in the global energy system. The course covers topics such as life cycle assessment, socio-technical systems, the water-energy nexus, and integrated assessment.

Sustainable Energy Finance
In this course, students learn the basics of sustainable energy finance. The course introduces the problem of financing sustainable energy and how it has evolved over time. The student learns about typical financial arrangements in energy, with a particular emphasis on sustainable sources of energy. Students also gain direct exposure to basic financial tools used by project developers, financiers, and policymakers. Climate finance and green finance feature prominently in the class.

Capstone
The degree culminates in a capstone research project. The capstone research project focuses on a broad, common theme but allows students to choose a focus that reflects their interests and future career plans. The goal is to solve an important problem of practical importance in the field of sustainable energy. Where appropriate, the capstone project can be done in collaboration with a client organization from private, government, or civil society sectors. The capstone project begins with a residency led by a faculty advisor midway toward the degree. During the last semester of the degree, the student prepares a report, a PPT deck, an in-person presentation, and an executive summary. The capstone culminates in a closing session in Washington, DC with student presentations, panels, and detailed feedback from the faculty.

5. Discuss how general education requirements will be met, if applicable.

   Not applicable.

6. Identify any specialized accreditation or graduate certification requirements for this program and its students.

   Not applicable.

7. If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

   Not applicable.

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear complete and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

   A full description of the program, including its purpose and expected outcomes, admission requirements, course and degree requirements, tuition and fees, and links to additional SAIS and JHU resources and websites that will be offered. Students will have access to view academic, student and financial aid support services. They will also have access to the course search and catalog, Global Careers, FERPA, Student Right to Know, Registration and Records, school calendar, campus life, faculty search, cost of attendance and admission requirements and process. The program will be hosted with the other existing degree programs.

   Additionally, since MASE is an online program, The Higher Education Opportunity Act (HEOA) enacted in 2008 applies. This act requires that an academic institution that offers distance education opportunities to students 1) has a process established to verify that the student who registers is the same student who participates in and completes the offering and receives academic credit for it, 2) has a process established to verify that student privacy rights are protected, and 3) has a process established that notifies the student about any additional costs or charges that are associated with verification of student identity.

   In this graduate program, the following actions have been taken to satisfy these requirements: 1) students may only enter the academic website for the online courses they take by providing their unique student ID and password assigned upon admission, 2) all FERPA privacy rights are preserved by limiting access very specifically in the University student information system to only those permitted by law to have access to restricted student information, and 3) there are no additional costs assessed to the student for the measures we use to verify student identity.

9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

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The MASE will be located as a degree option within the Academic tab under Masters Degrees: https://sais.jhu.edu/academics/degree-programs/master-degrees. It will include an overview of the program as listed in Section A. 1. It will offer the curriculum noted in section G. as well as the intended student learning outcomes. Students will also be able to apply through the overall Admissions site: https://sais.jhu.edu/admissions/master-degrees-admissions. SAIS will use its current marketing and communications team to broadly advertise the degree locally and internationally on the website and through on-ground and online formats. The degree will be added to the Admissions portfolio and included in its information sessions and outreach.

H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

   Not applicable.

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of faculties with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faulty member will teach (in this program).

   Faculty, full-time and part-time, teaching at JHU SAIS, are world-class experts renowned for their scholarship, influence, and networks. Full-time faculty go through and extensive review process for tenure, tenure-track and non-ladder faculty positions. A global search is initiated, and the SAIS Academic Board must vote to approve them. In cases of tenure, final approval is required by the JHU Board of Trustees. SAIS has distinguished faculty in the field of energy, resources and environment. These faculty are academically trained and/or have been successful practitioners in the field.

First Name	Last Name	Terminal Degree	Field	Academic Title/Rank	Status	Courses taught
John	Banks	M.S.	Energy, Resources and Environment (ERE); International Relations (IR)	Practitioner-in-Residence	Full-time	Introduction to Sustainable Energy
Andrew	Cheon	Ph.D.	ERE; International Political Economy	Assistant Professor	Full-time	TBD

Douglas	Hengel	M.P.P.	ERE	Adjunct Lecturer	Part-time	TBD
Jonas	Nahm	Ph.D.	ERE	Assistant Professor	Full-time	Renewable and Distributed Energy Resources: Trends and Policies
Johannes	Urpelainen	Ph.D.	ERE	Professor	Full-time	Sustainable Energy Policy
Sarah	Jordaan	Ph.D.	ERE	Assistant Professor	Full-Time	Sustainable Energy and Climate Change

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:

a) Pedagogy that meets the needs of the students

Most MASE faculty will hold a PhD or advanced expertise as a practitioners in the field and have been trained in fields relevant to Energy Sustainability and international policy. They will have had sound research training and experience teaching at the graduate level. SAIS also offers faculty training seminars as well as personalized training sessions that include sessions on best teaching practices as well as instructional technology relevant to the online modality of instruction.

b) The learning management system

SAIS utilizes Blackboard (Bb) as the learning management system (LMS). All courses have a Bb site and house syllabi, course readings, and pre-recorded lectures. Faculty also use the LMS for discussion forums, class assignments, graded, interactive asynchronous support, as well as synchronous sessions.

c) Evidenced-based best practices for distance education, if distance education is offered.

New JHU SAIS online instructors receive one-on-one coaching from instructional designers on online pedagogy and strategies to integrating educational technologies into online teaching and learning. JHU SAIS also has a series of online teaching strategies resources. These resources are based on best practices from research and other related sources.

The development of online courses is supported by JHU SAIS Online and Distance Learning staff, which includes instructional designers, instructional

technologist, online support specialists and other information technology and administrative staff. Each online course will be assigned an instructional designer. The course instructor(s) will consult with the instructional designer during the course design process to determine the most effective learning technologies and strategies needed to meet the course learning objectives. The course design will go through multiple reviews by the instructional designer and program administrators. The program chairs will be responsible for making sure the course design meets the program's expectations for online courses and that the course learning objectives reflect what the program expects students to achieve after completing this course. Once the online course launches, the assigned instructional designer will continually monitor the courses, and consult with the instructor(s) to make adjustments to the course, if needed. All new online courses will participate in a mid-term and end-of-term course evaluation process. The mid-term feedback will be used to determine if any mid-point term corrections are needed. The end-of-term feedback will be used to assess whether further course refinements are needed prior to the next time the course is offered.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12).

1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program. **If the program is to be implemented within existing institutional resources**, include a supportive statement by the President for library resources to meet the program's needs.

   Students have access to the JHU SAIS <u>Mason Library</u> located in Washington, D.C. Through the library website, students can access databases and academic journals as well as submit inquiries to SAIS research librarians. Additionally, students have remote access to the Milton S. Eisenhower Library on the Homewood campus, which is ranked as one of the nation's top library facilities for research and scholarship. The interlibrary loan department makes the research collection available to faculty and students. The library also provides easy access to a wide selection of electronic information resources, including the online catalog as well as numerous electronic abstracting and indexing tools. Students also have remote access to many of the databases. The library maintains an extensive web site to guide visitors through all of its services and materials.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)

1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences. If the program is to be implemented within existing institutional resources, include a supportive statement by the President for adequate equipment and facilities to meet the program's needs.

Courses in the proposed program will be offered online. In terms of technology infrastructure, this program will be delivered via the Blackboard course management system and the ZOOM video conferencing system. Both of these systems are supported by SAIS and the university's IT infrastructure. These systems provide password-protected online course sites and community management systems that enable ongoing collaborative exchange and provide convenient channels for synchronous and asynchronous learning. Blackboard is one of the world's leading providers of e-learning systems for higher education institutions. This software focuses on educational outcomes and provides a highly flexible learning environment for students.

In terms of support staff, JHU SAIS Online and Distance Learning office, led by the Executive Director of Online Learning who oversees a team of instructional designers and instructional technologists and collaborates with academic programs to develop and deliver engaging hybrid and online courses and programs that ensure alignment with the school's mission. The school is also outfitted with suitable technical and professional staff and a technical help desk to provide technical assistance to the students taking online courses.

Student services such as application processes, course registration, bookstore, ID service, and advising are currently provided online as well. JHU SAIS maintains numerous resources to inform students on the information they may need as an online student. These resources include the JHU SAIS main website (http://www.sais-jhu.edu), the online course catalog (https://sis.jhu.edu/classes/), and remote access to a help desk. As new online students are admitted and enrolled, they receive timely emails with important information to help them prepare to become an online student. These emails include information on how to create their JHU login account for the course management systems, technical requirements, and available academic support services. Before students are eligible to take an online course, they must successfully pass an Online Student Orientation course led by instructional designers from the JHU SAIS Online and Distance Learning office.

2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:

   a) An institutional electronic mailing system, and

      Each student and faculty member receive a Johns Hopkins email address and account.

   b) A learning management system that provides the necessary technological support for distance education

      The Master of Arts in Sustainable Energy (MASE) will be delivered via Blackboard, JHU's learning management system. This platform supports asynchronous and synchronous interaction between faculty and students. Students and faculty also have the option to participate in optional 'real-time'

(synchronous) interaction through weekly web-conference office hours, supported by Zoom.

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

1. Complete **Table 1: Resources and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

TABLE 1: PROGRAM RESOURCES								
(All dollar figures are shown in thousands)								
				YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
REALLOCATED				$0	$0	$0	$0	$0
TUITION & FEE				$ 1,110	$ 1,770	$ 1,888	$ 1,888	$ 1,888
	NUMBER OF F/T STUDENTS							
	ANNUAL TUITION/FEE							
	TOTAL F/T REV							
	NUMBER OF P/T STUDENTS			37	59	59	59	59
	CREDIT HOUR			$ 1.50	$ 1.50	$ 1.60	$ 1.60	$ 1.60
	ANNUAL CREDIT HOUR			20	20	20	20	20
	TOTAL P/T REV			$ 1,110	$ 1,770	$ 1,888	$ 1,888	$ 1,888
GRANTS, CONTRACTS, & OTHER				0	0	0	0	0
OTHER SOURCES				$0	$0	$0	$0	$0
TOTAL				$ 1,110	$ 1,770	$ 1,888	$ 1,888	$ 1,888

Reallocated Funds

No funds will be reallocated from existing programs to support this new program

Tuition and Fee Revenue

Students who enter this online cohort-based program will be able to complete the degree in two years.

A new cohort will be launched every fall and spring every academic year. Tuition and fee revenue are based on moderate enrolment projections.

The program is expected to enroll 37 new students in the first year (combined enrollment numbers for Cohort 1 + Cohort 2) with a very modest increase in enrollment in the subsequent 5 years. The tuition per credit has been budgeted at $1500 per credit.

Enrollment projections are based on market analysis conducted by a contracted education market research firm.

The program is expected to admit 17 new students in cohort 1 and 20 in cohort 2 starting with Fall 2020 launch and the total enrolment numbers will conservatively level off at 20.

Grants and Contracts

This program will have no income from grants or contracts

Other Sources

No other financial sources will come to this program

2. Complete **Table 2: Program Expenditures and Narrative Rationale**. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year.

Table 2: Program Expenditures					
(All dollar figures are shown in thousands)					
Expenditure Categories	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
1 Faculty (B+ C Below)	$ 670	$ 1,020	$ 722	$ 765	$ 811
Adjunct & Fulltime faculty Compensation for course development and teaching b Total Salary c Total Benefits	$ 585 $ 85	$ 870 $ 150	$ 588 $ 134	$ 623 $ 142	$ 660 $ 151
2 Admin, Staff (B + C below)	$ 232	$ 452	$ 447	$ 469	$ 491
Admin and staff salary, benefits, are calculated as part of the institutional overhead of 25% of all direct					
3 Support Staff (B + C Below)	$ 108	$ 216	$ 216	$ 216	$ 216

Teaching Assistants and Student Assistants					
b Total Salary	$ 60	$ 120	$ 120	$ 120	$ 120
c Total Benefits	$ 48	$ 96	$ 96	$ 96	$ 96
4 Equipment	$ 0	$ 0	$ 0	$ 0	$ 0
5 Library	$ 0	$ 0	$ 0	$ 0	$ 0
6 New or Renovated Spaces	$ 0	$ 0	$ 0	$ 0	$ 0
7 Other Expenses	$ 19	$ 39	$ 41	$ 42	$ 42
TOTAL	$ 1,029	$ 1,727	$ 1,426	$ 1,492	$ 1,560

Expenditures narrative:

1. Faculty: faculty will be compensated for developing the online courses and then for teaching the online courses. There is a total of 10 courses that faculty will be developing and teaching. A combination of adjunct and fulltime faculty will be developing and teaching these online courses and will be compensated will be as per contract terms.

2. Administrative: Administrative costs are considered part of Administrative overhead cost which is budgeted at 25% of all direct costs

3. Support Staff: A teaching assistant and team of part-time tech support comprising of 3 Students assistants will be assigned to the program at $15/hour

4. Equipment: included in the 25% administrative overhead cost

5. Library: included in the 25% administrative overhead cost

6. New or Renovated Space: Not needed

7. Other Expenses: Students are required to attend 2 residencies and costs of attending residency per student is $1039

M. Adequacy of Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15).

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.

   Once the MASE is launched, the program and courses will be evaluated through the use of student evaluations on a regular basis. For example, mid-semester and end-of-semester feedback regarding the appropriateness of course content will be solicited from students through the use of mid-semester and end-of-semester course evaluation survey. Staff from Academic Affairs and the Office of Online and Distance Learning will meet regularly to review course evaluations and other feedback provided by students, faculty, and other stakeholders and use these finding to inform programmatic improvements

accordingly. On an annual basis, the Assistant Dean for Academic Affairs and the Manager of Assessment, Data and Research will collaborate with program faculty and staff to collect and analyze student learning outcomes data. Based on these data, recommendations will be made to implement changes to the program (in terms of curriculum content, course delivery mechanisms, etc.) as necessary. Staff from Academic Affairs will also collect and analyze data on student retention and the cost-effectiveness of the program, aided by the use of SAIS databases.

As part of the online course design process, course assessments are required to be aligned with stated course learning outcomes. Faculty and administrators will also establish program-level learning outcomes that align with those at the course level. The MASE program will be assessed on an ongoing basis through a faculty evaluation of student artifacts (e.g., essays, portfolios, problem sets) collected from students enrolled in the program. In addition, student interaction and engagement data generated by the various educational technologies and hosting platforms will be included in the analysis. The results of such evaluations will be used to continuously improve the program through changes to the curriculum, teaching practices, etc.

2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

Academic Affairs meets regularly to review all program assessments provided by students, faculty, and other stakeholders and implement programmatic improvements accordingly. On an annual basis, the Assistant Dean for Academic Affairs and other staff will collaborate with faculty supervisors to evaluate the MASE program, including student progress report reviews and student learning outcomes data analysis. Based on the data, recommendations will be made to implement changes to the program (in terms of curriculum content, course delivery mechanisms, etc.). Staff from Academic Affairs will collect and analyze data on student retention and the cost-effectiveness of the program, aided by the use of SAIS databases. Academic Affairs will regularly present the data to the CSC for further analysis. On an annual basis, Academic Affairs will meet with Finance and Administration to view the budget and plan for the following year's class in order to determine additional funding needs to maintain and enhance the program.

N. Consistency with the State's Minority Student Achievement Goals (as outlined in COMAR13B.02.03.05).

1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.

Any student meeting the admissions requirements can apply to the MASE program. The program will work to help all accepted students improve their workplace competitiveness and reach their professional goals; an aim consistent with the State's minority student achievement goals.

O. Relationship to Low Productivity Programs Identified by the Commission:

1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.

   Not applicable.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.

   The Johns Hopkins University is a fully eligible to provide distance education. The university has a long history of providing high-quality distance education whose programs have been reviewed and approved by the MHEC.

   The Johns Hopkins University (JHU) School of Advanced International Studies (SAIS) has a well-established site-based program in Energy, Resources and Environment. This area of study is one of the largest concentrations at SAIS. Many of the faculty and practitioners (both full-time and part-time) teaching in the on-site program also serve as online instructors. Any new instructor recruited to teach online would be required to meet the same qualifications as those teaching in the traditional site-based program.

   Many of the courses and/or topics offered in the online program have been and/or are offered in traditional, site-based programs. A formal online course development process is used to support the course conversion from in-class to online. The online course development process incorporates principles of sound online course design to ensure the academic rigor of the online course is comparable or better to the traditionally offered course.

2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.

   The Johns Hopkins University has a long history of providing high quality distance education/online learning that complies with the Council of Regional Accrediting Commissions (C-RAC) Interregional Guidelines for the Evaluation of Distance Education. The University will also continue to comply with the C-RAC guidelines with the proposed MA in Sustainable Energy.

   a. **Council of Regional Accrediting Commission (C-RAC) Interregional Guideline for the Evaluation of Distance Education.**

      1. **Online learning is appropriate to the institution's mission and purposes.**

Online learning is appropriate to the institution's mission and purpose. Please see Section A of this proposal

2. **The institution's plans for developing, sustaining and, if appropriate, expanding on-line learning offerings are integrated into its regular planning and evaluation processes.**

   All programs at the University – online, hybrid, and on-ground – are subject to the same regular planning, assessment, and evaluation processes. Please see Section M of this proposal for the detailed process.

3. **Online learning is incorporated into the institution's systems of governance and academic oversight.**

   All programs at the University – online, hybrid, and on-ground – are subject to the same systems of governance and academic oversight. Please refer to Section G and Section M of this proposal.

4. **Curricula for the institution's online learning offerings are coherent, cohesive, and comparable in academic rigor to programs offered in traditional instructional formats**

   Online programs/courses meet the same accreditation standards, goals, objectives, and outcomes as traditional instruction at the university. The online course development process is a rigorous design process where a team of instructional designers and technologists work win conjunction with faculty to ensure academic rigor comparable to tradition on-ground university courses. Online courses and programs go through the same approval, evaluation, and review process as traditional on-ground university courses and programs. Courses are evaluated and reviewed at the end of each term of course delivery. This process applies to online and traditional courses.

5. **The institution evaluates the effectiveness of its online learning offerings, including the extent to which the online learning goals are achieved, and uses the results of its evaluations to enhance the attainment of the goals.**

   Online programs and courses follow the same process of ensuring effectiveness and academic rigor as traditional university program and courses. Online programs and courses are evaluated through the use of student evaluations on a regular basis. For example, mid-semester and end-of-semester feedback regarding the appropriateness of course content is solicited from students through the use of mid-semester and end-of-semester course evaluation survey. Academic Dean, department chairs, and faculty meet regularly to review course evaluations and other

feedback provided by students, faculty, and other stakeholders and use these findings to inform programmatic improvements accordingly. Academic deans collaborate with program faculty and staff to collect and analyze student learning outcomes data. Based on these data, recommendations are made to implement changes to the program (in terms of curriculum content, course delivery mechanisms, etc.) as necessary.

6. **Faculty responsible for delivering the online learning curricula and evaluating the students' success in achieving the online learning goals are appropriately qualified and effectively supported.**

   Energy Resources Environment program at SAIS are staffed by faculty will hold a PhD or advanced expertise as a practitioner in the field and have been trained in fields relevant to Energy Sustainability and international policy. They will have had sound research training and experience teaching at the graduate level. SAIS also offers faculty training seminars as well as personalized training sessions that include sessions on best teaching practices as well as instructional technology relevant to the online modality of instruction

7. **The institution provides effective student and academic services to support students enrolled in online learning offerings**

   The school is also outfitted with suitable technical and professional staff and a technical help desk to provide technical assistance to the students taking online courses. The Online and Distance Learning office help desk is set-up specifically to support students in online programs and courses. In addition, this online program has a dedicated teaching assistant who will be able to support and guide students, in terms of academics and technology, as they progress through the online program.

   Students enrolled in an online program are required to complete an online orientation where they are trained by instructional designers from the Online and Distance Learning office on way to leverage technology effectively as an online student as well as lessons on how to be a successful online student.

   Students have access to the JHU SAIS Mason Library located in Washington, D.C. Through the library website, students can access databases and academic journals as well as submit inquiries to SAIS research librarians. Additionally, students have remote access to the Milton S. Eisenhower Library on the Homewood campus, which is ranked as one of the nation's top library facilities for research and scholarship. The interlibrary loan department makes the research

collection available to faculty and students. The library also provides easy access to a wide selection of electronic information resources, including the online catalog as well as numerous electronic abstracting and indexing tools. Students also have remote access to many of the databases. The library maintains an extensive web site to guide visitors through all of its services and materials.

8. **The institution provides sufficient resources to support and, if appropriate, expand its online learning offerings.**

JHU SAIS has made significant financial commitment to offering and supporting this online program. Please see section L. In addition, the university has a proven track record in offering high quality and academically rigorous online programs.

9. **The institution assures the integrity of its online offerings**

The program learning outcomes for MA in Sustainable Energy online program are in-line with those of on-site programs. The program learning outcomes were developed with input from the director of the Energy, Resources and Environment program as well as from the program faculty and other stakeholders.

The program has established a process for identifying the appropriate faculty to design an online course. All faculty members are selected based on domain expertise, program-related teaching experience, and completion of required online course development training. An instructional designer works directly with a faculty member to build the course, focusing first on overall learning goals and objectives and then weekly goals and objectives. The faculty member will work with a qualified instructional designer and instructional technologist to design and develop online courses. The Executive Director of Distance and Online Learning will review and approve all courses prior to delivery.

Faculty support for the development of online courses is provided by JHU SAIS Online and Distance Learning Office. Faculty receive individual training in the learning management system, and pedagogy of online learning – these opportunities are presented on an ongoing basis. Faculty are provided web-based resources that cover a broad range of topics on online pedagogy, use of instructional technologies and learning management system tutorials. Throughout the online course development, the instructor receives direct support and guidance from their assigned instructional designer on the design and delivery of online courses.