As part of the West Virginia University Board of Governor’s Rule 2.2 Program Review process, the WVU Provost’s Office required that a single Program Review Self-Study Form be completed on behalf of all identified programs in the department or unit. This Program Review Self-Study Form was to be submitted to the Provost’s Office by end of day on August 1, 2023. The Provost’s Office reviewed the submitted Program Review Self-Study Forms in early August.

Self-Study content is unvetted by the Provost's Office. As such, the WVU Provost’s Office cannot attest to the accuracy of any data, analyses, or statements provided within. Also, redactions were made where warranted for the protection of individual identities around sensitive information.
Q1.1. 
BOG Program Review Self-Study Form

This is the self-study form that will be completed in support of the summer 2023 academic transformation program portfolio review.

Only one program review self-study is to be submitted per unit; all of the unit's programs will be covered by one self-study.

Q1.2. Select the appropriate academic unit under review.

<table>
<thead>
<tr>
<th>College</th>
<th>Davis College of Agriculture, Natural Resources, and Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department or School</td>
<td>Resource Economics and Management</td>
</tr>
</tbody>
</table>

Q1.3. List all of the unit's programs.

Example:

BA Biology
BS Biology
MS Biology
PhD Biology
Q1.4. Name and Email of the person completing the self-study

Name: Alan Collins
Email Address: alan.collins@mail.wvu.edu

Q1.5. How were faculty given the opportunity to contribute to, review and provide feedback on this self-study?

July 11 – Faculty were informed of self-study along with the Academic Transformation Public Data Table. July 12 – Director met with undergraduate and graduate coordinators to get their input and assistance in materials to be used in self-study responses. July 14-19 – Proposed program changes sent around by email with subsequent email discussions among the faculty occurring thereafter. July 20 – Draft responses for REM self-study were distributed to faculty by the Director for a five-day response period (through July 25). Faculty feedback was accepted via the online comment form or direct email reply to the Director. All REM faculty provided feedback. July 28 – A zoom meeting for REM Faculty was set up to receive comments and a second draft was distributed for final comments prior to July 31.

Q2.1. Explain how the unit and its programs contributes to WVU's mission.

This response is limited to 7500 characters, approximately 2 single spaced pages.
Q3.1. Resources, Revenue, and Expenses

The purpose of this section is to ensure the accessibility and adequacy of the unit's infrastructure and resources and its financial viability.

Responses in this section are limited to 7500 characters or approximately 2 single spaced pages.

Q3.2. Has the unit experienced significant issues with any of the following during the past five years?

By "significant," we mean issues that interfere with either the unit's ability to deliver its programs to its students or the students' ability to complete those programs in a timely manner.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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Q3.3. Describe the issues the program has faced in the area(s) identified above.

*This question was not displayed to the respondent.*

Q3.4. Data have been provided on the unit's last three years of tuition revenue, expenses, and net revenue. Address any negative net revenue or any significant changes (positive or negative) to unit's net position.

Revenue by department is the actual tuition revenue, net of any discounting, paid by students taking courses in course subject codes affiliated with the department.

Expense by department is the actual unrestricted, operating expenditures by department within the functions of instruction and academic support.

Net revenue is the revenue minus the expense.
Revenue net expenses for the Division of Resource Economics and Management (REM) show net numbers all three years (2020 to 2022) with an average of $581,234. As a positive note, total expenses declined more than net tuition revenue during this period for REM, largely due to non-replacement of faculty along with adjustments in instructional assignments to adjuncts, graduate students, and staff. As described in faculty productivity response, during the 2020-22 time period, 24.5% of faculty salaries in REM were paid for out of federal funds. Additional cost saving actions are being taken within the Division in response to this negative revenue net expenses. The Director position in REM has been combined with the Director position for Forestry and Natural Resources to create a Director position for the School of Natural Resources, saving administrative costs within the College. This self-study outlines curricula plans in the enrollment trends response that involve undergraduate degree mergers and instructional adjustments that will enable the Division to withstand non-replacement of an announced faculty retirement in order to accommodate the instructional needs of our undergraduate and graduate programs. Thus, there will be cost savings from one REM faculty position will not be replaced upon retirement. Teaching responsibilities from this position will be re-allocated to existing faculty in order to maintain existing graduate programs and merged undergraduate programs.

Q4.1.

Faculty Composition and Productivity

Responses should be concise but also specific and supported by evidence. Responses in this section are limited to 7500 characters or approximately 2 single spaced pages.

Specific data definitions for these metrics are available on the Academic Transformation webpage.

Q4.2. Data have been provided on the unit's faculty full-time equivalency (FTE) to the median of all majors for fall 18 to fall 22.

Address any differences in the unit's student to FTE ratio and the institution's student-to-faculty ratio of 18-to-1 per IPEDS reporting for academic year 2021-2022.
Make-up of Division of Resource Economics and Management faculty and their assignments for Academic Year 2023/24 are shown in Table 1 (attached as additional evidence). There are nine tenure-track position (eight in REM and one in Extension) and two non-tenure-track – one Teaching Associate Professor (Byrd) and one Research Assistant Professor (Kinder). Dr. Michael Dougherty is formally part of the School of Design and Community Development, but he is listed below as Dr. Dougherty teaches courses under the RESM subject code, which is managed by the Division. Since 2020, REM faculty numbers are down by two faculty retirements (not replaced). Other changes include two new assistant professors (Bora and Hwang) to replace experienced faculty members who secured positions elsewhere and one faculty position change to 100% administration (Stephens appointed Director of Regional Research Institute) – the cost saving from this appointment change was used by the College to cover spending reductions in FY23 and FY24 within the College and not to hire additional faculty or adjunct instructors. Based upon current faculty assignments, 4.45 FTE of instructional resources exists within the Division (Table 1). This number of FTE reflects the minimum instructional resources needed to offer current undergraduate and graduate programs. Curricula changes described in Q5.2 are being put in place to ensure that a reduced FTE below 4.45 will be sufficient to continue to offer undergraduate and graduate programs that complement the expertise of REM faculty. Table 1 shows that there is about 3 FTE of research appointments in REM. All REM faculty with research appointments are on federally funded Hatch or Hatch multi-state research projects so that a portion of their research appointment is paid by federal funds. During the period of FY2020 to FY2022, federal Hatch funds paid 24.5% of faculty salaries in REM based upon budget data provided by Tom Green, Assistant Dean of Business Affairs in the Davis College Davis College budget. Table 2 (attached as additional evidence) illustrates the productivity of the Natural Resource Analysis Center (NRAC) in supporting graduate student participation over the last three years by documenting 23 graduate student years of effort contributing to over $5.27 million in externally supported projects. Again, without a larger number of permanent NRAC staff (currently at 2.0 FTE), the externally funded projects brought in by NRAC depend upon graduate students in not only to assist in securing this funding, but more importantly in the execution of deliverables. This linkage between MS Energy Environments students and NRAC arguably helps these graduate students to develop the knowledge-base, professional networks, and project related experience to become successful natural resource professionals. For Division of Resource Economics and Management (REM), an undergraduate student to FTE ratio of 21.5 was computed using median enrollments for the three majors (172) divided by eight FTE reported in 2023. This ratio is above non-HSC WVU median of 15. One way to interpret this ratio is that it demonstrates efficiency in REM’s use of instructional resources to deliver undergraduate programs. Differences between the ratio for REM and WVU median are explained by loss of REM faculty members due to retirement with the resulting non-replacement of these faculty positions leading to increased use of adjunct and graduate student instructors as replacements.

Q4.3. This question is optional and required only if a unit’s doctoral programs are under review.

Data have been provided on the unit’s tenure-track / tenured FTE to doctoral student headcount ratio across all of the unit’s doctoral programs.

Address any differences in the unit’s doctoral student to tenure-track and tenured faculty FTE ratio to the institutional expectation of 2-to-1.
Based upon data provided by academic transformation public data table, the Division of Resource Economics and Management (REM) has a doctoral student and tenure-track and tenured FTE ratio of very close to the institutional expectation with a 2.1-to-1 ratio. REM has been able to maintain a high student per FTE ratio by formulating creative solutions for instructional needs of the PhD program. For example, we have taken advantage of cross unit and cross college collaboration in instruction. PhD students in Natural Resource Economics (NRE) take core courses in microeconomic theory and econometrics from the Economics Department within the Chambers College of Business and Economics. Advanced field courses for the PhD in NRE are taught by REM faculty. These courses include Advanced Environmental Economics, Advanced Natural Resource Economics, and Spatial Analysis. Previous faculty retirements and departures to other universities or administrative positions within WVU have not been replaced. This non-placement has decreased the Division's capacity to mentor graduate students and to attract external grants that would support additional graduate student assistantships lines. The Division has been able to find creative solutions to maintain graduate instruction with decreased FTEs. However, fewer faculty numbers have increased the workload of individual graduate faculty mentoring. Nonetheless, significant success was achieved despite decreased FTEs per student with graduate student output, graduation, and job placement in academia (including R1 schools) and industry.

Q4.4. Data have been provided that show the changes to the unit's total number of faculty over the review period. Data have also been provided that show the total student headcount enrolled in all of the unit's programs over the same period of time as well as a three-year trend in student credit hour (SCH) production. Explain the relationship between the change in the number of faculty in the unit and the change in the units total headcount enrollment and SCH production trends.
SCH production within the Division of Resource Economics and Management (REM) declined between 2020 and 2022 at about 17%. This percentage reduction mirrors reductions in undergraduate majors of Environmental and Energy Resources Management (EERM) and Environmental and Natural Resource Economics (ENRE) but does not reflect the slight enrollment growth in the Agribusiness Management (AGBM) major. Other factors going on within REM include courses no longer being taught within the Division (ARE 360, 401, 445, and Special Topics courses, like Social Entrepreneurship) attributed to reduced faculty numbers. Reduced course offerings mean that SCH are being filled with courses outside of REM, but perhaps within Davis College. Other changes include reducing the capstone requirement from 5 to 3 credit hours in Environmental and Energy Resources Management major with students are filling those credit hours outside of REM. Finally, individual classes (like ARE 110, ARE 431, ARE 450, and ARE 461) are producing fewer SCH due to lower enrollment in courses. This trend seems to be mostly affecting courses in the Agribusiness Management major. One potential explanation is that this major is getting a lot of transfer students from within WVU (e.g. Potomac State or the Business and Economics College) who are bringing in transfer credits from elsewhere and so don't need to take REM courses.

Q4.5. Data have been provided that shows the unit's research expenditures per the Higher Education Research and Development Survey (HERD).

Does this data capture all of the unit's research expenditures? If not, explain the difference here and provide evidence of additional research expenditures below.
Q4.6. Upload evidence of research expenditures here.

Q5.1.  
Student Enrollment and Graduation History

Responses in this section are limited to 7500 characters (approximately 1.5 single spaced pages). Responses should be concise but also specific and supported by evidence.

Specific data definitions for these metrics are available on the Academic Transformation webpage.

Q5.2. Data have been provided on all of the unit's program's student enrollment trends.

That data includes:

4-year median fall enrollment (fall 18 through fall 21);
Fall 2022 change from 4-year median (in headcount and in percentage).

Units should address any programs with enrollment below the median for the program level or which has experienced a negative change in enrollment.
Q5.3. Data have been provided on the unit's three-year trend in student credit hour (SCH) production.

Units should address any programs with a negative trend in SCH production.
SCH in the Division have been declining between 2020 and 2022. Explanations for these declines are outlined in response to explaining the relationship between the change in number of faculty and total headcount and SCH production trends. Division plans as part of this self-study are described in the enrollment trends response. No additional SCH responses are planned for REM.

Q6.1.
Assessment of Learning and Program Improvement

The Provost's Office will review the self-studies from the most recent Board of Governor's five-year program reviews for this section.

Units may provide updated information below if they so choose.

Q6.2. Provide the unit's plans or ideas to make significant changes to its operations, structure, offerings, or personnel in order to reduce its costs or improve its efficiency.

Provide any significant changes to the department's program curricula, its assessment of learning practices, or any other improvements that have been made since the department's programs completed their most recent Board of Governor's five-year review.
A review for the PhD program in NRE was completed in 2020-2021 and covered the period of 2015-2019. No major issues were identified besides the need to clarify learning outcomes and to implement assessment mechanisms. Both issues were addressed with input from Louis Slimak, Associate Provost for Curriculum and Assessment, and appropriate revisions have been implemented. A review for the B.S. in Resource Management was submitted in 2020 covering the period of 2015-2019. A follow-up report was required showing evidence of assessment and post graduate outcomes as well as identifying areas for improvement which was submitted in January of 2022. We have implemented some of those changes and have suggested others in this self-study (e.g. use of a capstone course for more consistent and holistic assessment). Summarized below are the REM plans for significant changes to operations, structure, offerings, and/or personnel which are designed to reduce costs and improve efficiency into the future. The Director position for REM has been combined with the Director position for Forestry and Natural Resources to create a Director position for the School of Natural Resources, saving administrative costs. In enrollment trends response, this self-study describes the following curricula plans in detail which consist of: (1) merging the Environmental and Energy Resources (EERM) major with the Energy Land Management (ELM) degree program; (2) merging the Agribusiness Management (AGBM) and Environmental and Natural Resource Economics (ENRE) majors into one major; (3) make the necessary instructional adjustments within the Division to ensure that undergraduate and graduate courses are taught to support all programs; and (4) re-structure the M.S. in Energy Environments (MS-EE). These curricula changes will enable the Division to withstand non-replacement of an announced faculty retirement and maintain its undergraduate and graduate programs. Thus, one REM faculty position will not be replaced upon retirement.

Q6.3. The program may provide additional evidence of program improvement here.

REM Program Improvement.docx  18.9KB  
application/vnd.openxmlformats-officedocument.wordprocessingml.document

Q7.1. The unit may provide any additional context or information about the unit’s programs here.
It is important to discuss the potential for undergrad and grad REM programs. Demand for the degrees environmental economics and sustainability is growing and will continue to grow as concerns and public awareness of environmental quality problems, sustainability, and climate change at national and international scales intensify. These problems are rooted in economic systems and social structures and therefore require solutions that are firmly grounded in economic principles. REM is the only unit on campus that focuses on these problems as “externalities” of market systems. Gen Z students are highly concerned about environmental sustainability and climate change. However, there is also recognition that economic growth and development requires proper policies and regulations that balance environmental quality objectives with economic growth. It is our duty as land grant university to ensure that future policy makers and leaders understand the frameworks, incentives, instruments, that are critical for addressing these problems effectively. Environmental economics focuses on understanding the economic impact of environmental policies, natural resource management, and the evaluation of environmental goods and services. Several factors contribute to the increasing demand for environmental economic degrees: • Environmental Awareness: There is a heightened awareness of environmental challenges such as climate change, resource depletion, and pollution. This awareness has led to an increased demand for professionals who can analyze and address these issues from an economic perspective. • Sustainability initiatives: Governments, organizations, and businesses are implementing sustainability initiatives to minimize their environmental impact. This has created a demand for individuals with expertise in environmental economics to design and implement effective strategies. • Policy Development: Environmental policies and regulations play a crucial role in addressing environmental challenges. Professionals with environmental economic expertise are needed to develop and evaluate these policies, assess their economic implications, and propose efficient solutions. • Green Technology and Renewable Energy: The growth of green technology and renewable energy sectors requires individuals who can assess the economic viability of these technologies, analyze their impact on markets and industries, and identify opportunities for sustainable development. Job Market Opportunities: The demand for environmental economists is driven by various sectors such as government agencies, non-profit organizations, research institutions, consulting firms, and private companies that focus on sustainability and environmental management. Overall, the increasing global concern for the environment, combined with the recognition of the economic dimensions of environmental issues, has contributed to a growing demand for professionals with environmental economics degrees. The discussion above provides additional reasons why the REM faculty believe it is vital that West Virginia University continues to offer undergraduate and graduate degrees within the disciplines of environmental economics and natural resource economics.

Q7.2. You may use this section to provide any additional evidence referenced in the program review.

Supplemental Materials REM.docx
155.6KB
application/vnd.openxmlformats-officedocument.wordprocessingml.document

Q7.3. You may use this section to provide any additional evidence referenced in the program review.

Proposed Curricula.docx
38.7KB
application/vnd.openxmlformats-officedocument.wordprocessingml.document

Q7.4. You may use this section to provide any additional evidence referenced in the program review.
Q8.1.
Thank you for completing your self-study for the West Virginia University Board of Governors program review. You may now submit the survey and your self-study will be passed on to the Provost's Office for review.

Location Data

Location:  
Source: GeoIP Estimation

[Map showing location]