

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.

College
Department or School

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

Example:

- BA Biology
- BS Biology
- MS Biology
- PhD Biology

Ph.D. Natural Resources (previously, PhD. In Forest Resources) MS Forestry MS Recreation, Parks and Tourism – discontinued in 2023. MS Wildlife and Fisheries BS Energy Land Management BSF Forest Resources Management BS Recreation Parks and Tourism Resources BS Wildlife and Fisheries BS Wood Science and Technology – Moving to BSF 2024-25 academic year.

Q1.4. Name and Email of the person completing the self-study

Name

Kyle Hartman/Alan Collins

Email Address

kyle.hartman@mail.wvu.edu

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

The Program Coordinators for the FNR programs provided text for the self-study with input from faculty mentors in their programs. A draft self-study was provided to faculty on the morning of 24 July 2023 and feedback was requested from faculty via an internal (FNR) Qualtrics link. Faculty feedback was accepted via the online comment form or direct email reply to the Director. Faculty were also made aware of an external (Provost Office) Qualtrics links. The second draft of the self-study attempting to incorporate faculty input was provided to faculty prior to a Zoom meeting held on 28 July 2023.

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.

The Division of Forestry and Natural Resources (DFNR) within Davis College contributes significantly to WVU's stated mission of creating a diverse and inclusive culture that advances education, healthcare and prosperity for all by providing access and opportunity; by advancing high-impact research; and by leading transformation in West Virginia and the world through local, state and global engagement. Our faculty are respected internationally, domestically and locally, as evidenced by the high-quality teaching and service activities, and through our high level of research productivity. We have a strong alumni association that provide endowments and scholarships supporting students in DFNR fields. Programs: Energy Land Management (ELM) • This program is especially important in West Virginia, which is a net energy producer and exports more than half of produced energy out of state. The U.S. is the largest producer of natural gas in the world, and West Virginia is a top 5 producer in the United States. Thus, WVU is in a unique position to allow students the opportunity to gain an education in an industry that powers the world. The deep-rooted energy industry in the region has solidified the program's engagement of local, state and international energy stakeholders. These stakeholders have provided over \$500,000 of funding since the program's inception. This support has not only been garnered via monetary donations, but also a deep-rooted commitment to assist West Virginia University in making this a program provide educational and career opportunities, as well as a platform for continuing to make WV an energy leader in the United States and the global energy economy. Forestry and Wood Science Technology (FRM/WST) • West Virginia is ranked third in the nation in terms of the percentage of forested land area in the state. Approximately 78 percent of the state is forested. The wood products industry ranks second only to the coal industry in its economic contributions to the State, contributing more than \$3.4 billion annually and 19,219 jobs. According to the U.S. Census of Manufacturers, wood products manufacturers (not including logging, furniture, and paper making), account for 14% of the State's manufacturing employment and approximately nine percent of the State's value of shipments from manufacturing industries. West Virginia is a hardwood state. It is in the heart of the Appalachians, the location of the greatest temperate hardwood forest in the world. West Virginia ranks second in the nation to Pennsylvania with 22.3 billion cubic feet of hardwood growing stock. As a result, our FRM and WST programs focuses primarily upon the hardwood resource. The FRM and WST programs help educate future forestry and wood science professionals that manage our state and national forests and forest-related industries. • As the only 4-year degree program in West Virginia, our curriculum and extension serve the Land Grant mission by preparing students to manage forest resources across Appalachia. Furthermore, as WVU Recruiting develops the Extended State Strategy, FRM will be an attractive program for Midwest students. Recreation, Parks, and Tourism Resources (RPTR) • The Recreation, Parks, and Tourism Resources (RPTR) major prepares students for careers providing outdoor recreation and tourism opportunities for a wide range of public, commercial, and non-profit agencies. The BS program remains essential to the teaching, research, and extension missions of the University, as it relates to the state's federal, state, and local parks, protected areas, recreation programs, and tourism operations. The program's mission is to "enhance societal understanding, stewardship, and the sustainable use of recreational resources by educating students to become knowledgeable professionals and citizens, advancing and communicating research knowledge, and providing professional service". The RPTR curriculum and expertise align with the growing interest in outdoor recreation, tourism, and community nationally. Wildlife and Fisheries Resources (WFR) • The Wildlife and Fisheries Resources (WFR) program is our gold standard within DFNR. WFR faculty provide access and opportunity to students, advance education through comprehensive curricula, conduct high-impact research, lead transformational initiatives, and engage with local, state, and global communities. The Program provides access to quality education for students interested in pursuing careers in wildlife and fisheries management, and ecology and conservation biology. Our undergraduate and graduate programs provide opportunities for students from diverse backgrounds to gain knowledge and skills in these fields, promoting inclusivity and access to educational opportunities. • The WFR Program conducts cutting-edge research addressing critical issues in wildlife and fisheries management, ecology of populations, communities, and ecosystems, conservation genetics, and ecological modeling. The program contributions to the WVU mission of conducting high-impact research is demonstrated by data presented in Q4.1 Faculty Productivity. Contributions to high impact research are also evidenced by the WVU Wildlife and Fisheries program being ranked 9th nationally in research productivity, ahead of other regional programs at Ohio State, Virginia Tech, Penn State, Clemson, and Michigan State (Swihart et al. 2016. <https://doi.org/10.1371/journal.pone.0155097>). • The program actively addresses conservation challenges and promote positive changes in West Virginia, regionally and the world. Through collaborative partnerships with government agencies, non-profit organizations, and community groups, the program leads transformational initiatives in West Virginia and beyond. The WFR program has important connections with the West Virginia Division of Natural Resources (WVDNR), generating applied research to inform their management strategies. A WVDNR biologist is physically housed within the DFNR in our program, providing networking and job opportunities for our current students and recent graduates and we have three U.S. Geological Survey Cooperative Unit scientists housed in DFNR. These scientists contribute significantly to our research productivity and graduate education at little cost to WVU. This collaboration also provides additional networking and internship opportunities for our undergraduate students. The transformational power of these collaborations has been recognized by two of our faculty being identified as Recovery Champions by the U.S. Fish and Wildlife Service in 2022 for their leadership in the recovery of the endangered candy darter and one faculty member being selected for the International Leadership in Conservation Award from the Sustainable Forestry Initiative in 2022.

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.

	Yes	No
Ability to schedule required classrooms	<input checked="" type="radio"/>	<input type="radio"/>

Access to adequate technological infrastructure

Access to adequate technological support

Access to adequate physical infrastructure (labs, performance spaces, etc.)



Q3.3. Describe the issues the program has faced in the area(s) identified above.

Only one program within the Division (WFR) noted issues with inadequate spaces: The Wildlife and Fisheries Resources program is consistently the second largest undergraduate program in the Davis College. However, we continue to operate in teaching and research labs in Percival Hall, which was completed in 1965 and has not been adequately updated. Wildlife and Fisheries has two main lab rooms (Rooms 308 and 309 in Percival Hall). Each room is often too small to adequately accommodate our large lab sections. For instance, a plastic folding table with folding chairs is used in room 308 when labs are at capacity. There are no other teaching laboratory classrooms on the Evansdale campus that can accommodate our sections and, due to our already large Faculty: Student ratio, we do not have the human resources to be able to accommodate more numerous smaller lab sections. In room 309, we do not have a projector mounted to the ceiling nor a contemporary computer. Neither space is equipped with the usual operating systems that control lights, microphones, projectors, computers, etc. Additionally, for some courses we utilize a teaching collection consisting of specimens. Those collections are haphazardly organized in both classrooms and it should instead have a designated space. The spaces are cluttered, outdated, and too small to accommodate our growing student body.

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.

The data provided show the Division operating at a net negative position. However, cost saving actions are being taken within the Division: the Director position for Resource Economics and Management has been combined with the Director position for Forestry and Natural Resources to create a Director position for the School of Natural Resources. One pending faculty retirement will not be replaced within the Division. Teaching responsibilities from this position will be re-allocated to existing faculty in order to maintain existing academic programs. Further, we are proposing a merger of the Forest Management and Wood Science programs into a single major with two areas of emphasis and restructuring of the course offerings and schedule/frequency to increase efficiency (class size) for lower enrollment classes. Expected repositioning of RPTR program may allow for greater coursework (SCH) and major enrollment by partnering closely with the Adventure WV and OEDC programming. Finally, ELM has eliminated one adjunct instructor whose teaching responsibilities will be taken on by an existing ELM faculty member for Fall 2023. Additional cost savings will come from recent and anticipated faculty retirements and departures from programs falling below the median Faculty:Student ratios for the Division and College. During 2023, one FRM faculty moved to 100% administration, one WST faculty retired, and one WST faculty member will leave the university on 12-31-2023. We anticipate that none of these positions will be rehired. We also anticipate that at least one other faculty in WST will also retire who will likely not be replaced. Further savings may be made by combining the Appalachian Hardwood Center with other allied centers within the Davis College. Specifically, we recommend the merger of the Appalachian Hardwood Center (AHC), the proposed Appalachian Forestry and Entrepreneurship Center (AFEC) and the Center for Sustainable Bio-materials and Bioenergy (CSBio). Doing so would permit increased efficiencies by combining support staff. Beyond these strategies to reduce costs, additional savings would only be possible by eliminating faculty or staff positions. On the revenue side of the ledger, the Division of Forestry and Natural Resources is poised to grow enrollment in the following ways over the next several years. The merged ELM and Environmental Energy and Resource Management (EERM) programs will attract new students with its up-to-date changes, including investment into emerging energy technologies (wind, water, solar, etc.). The merged Forestry and Wood Science Technology program's new alignment will better utilize the faculty members associated with both majors. This will result in faculty efficiency which will enable faculty to continue building critical relationships with industry partners in West Virginia and surrounding states. With over \$1M in cutting edge wood science shop equipment committed to DFNR through a Congressionally Directed Spending Request the Wood Science is expected to draw additional students. The funding will allow Wood Science faculty to focus on real-life problem solutions, such as cross-laminated timber homes for low income communities in West Virginia and beyond. Recreation, Parks and Tourism Resources will become more relevant to programs in which the state of West Virginia and WVU are positioned to excel in. A re-orientation to focus on mountain biking use, trail use, adventure programs, and a stronger partnership with federal and state partners, the RPTR program will create benchmarks with other regional recreation, parks and tourism programs (Penn State, Virginia Tech, etc.) and will be held accountable for performing in ways that increase enrollment. Finally, the Wildlife and Fisheries program has the ability to increase its student numbers through additional faculty. The WFR program is healthy in all aspects (teaching, research and service) and can increase its student numbers with additional investment.

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.

The DFNR operated at a Median All Majors 18-22 / FY23 Faculty ratio of 21 versus the University average of 18 for non-HSC majors (17% higher than the University median). Two programs contributed to the increased ratio; (WFR=ratio of 36, ELM=ratio of 25). The extremely high ratio for the WFR program (twice the median) demonstrates that this program is under-resourced and has tremendous growth potential. Given the undergraduate enrollment in WFR, a total of 16 faculty would be needed to reach the university median. With a FTE ratio closer to the institution's ratio, we could offer more laboratory sections at a more reasonable capacity, resulting in more available laboratory spaces across campus for our use. The ELM program is 38% over ratio based on the median. This program has seen a decline, and much of this can be contributed to the extremely high student/FTE ratio the program has seen over the past 5 years. The ELM program ideal target is 80 students which is an FTE ratio of 27. This target is readily reachable as evidenced by Fall 2023 enrollment. These metrics suggest that ELM is nearing "right size" as defined by IPEDS reporting. FTE to student ratios for other programs in the Division are below this metric for FRM (8.5:1), RPTR (13.8:1), and WST (2.75:1).

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.

N/A

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.

Overall, the FTE in FNR has increased by 2 from 25 to 27 over the evaluation period while SCH has declined from 13,411 to 11,277. Much of this decrease in SCH is attributable to a decline in adjuncts offering online classes and a decline of about 80 students within the FRM and ELM programs. These trends in SCH can otherwise be misleading since faculty in FNR have a range of teaching appointments (5% to 70%) but the Provost's metrics consider each faculty member as an FTE even if they teach only 5% (per L. Slimak ZOOM meeting, 7-27-23). See Table 1 in the supplemental files (Q7). Considering the appointment percentage, FTE teaching equivalents were 1.35 (RPTR), 1.45 (WST), 2.0 (ELM), 2.9 (WFR) and 3.7 (FRM). Below are program-specific details. ELM The ELM program has seen a negative trend in enrollment over the past 3 years. However, ELM has a high fall to fall retention > 82 %. While enrollment was down over 20%, graduation rates were only down 9.9%, reflecting the high ELM retention rate. Much of the downturn in ELM program numbers can be attributed to dramatic fluctuations in US and regional energy sectors, and a change in the academic common market causing a loss in students. The program has since diversified and is teaching to target more land-centric roles for students. Over the past 5 years, the ELM program has taught significantly more student credit hours (167.5) than the Davis College average (148). Total SCH taught by ENLM ranged from 1301 in 2018 to 732 in 2021. This represented between 6-8 % of the total SCH taught within the SNR in this time range. It should be noted that while the ELM program taught a total of between 6-8% of SCH, the program only had 1 tenure-track (two total) faculty members. Median SCH trend for ELM has been down over the past 5 years along with enrollment; however, the numbers are now just approaching the averages for the Davis College. FRM & WST At the end of the 2022-2023 academic year, there were 8 FRM faculty members representing 3.7 teaching FTEs. The number of faculty and FRM student head counts have been steady over the last 3 years. Majors increased from 64 in 2020-21 to 67 in 2022-23. The FRM student head count has been steady with a minor increase of 2.3% over the 3-year period of 2020-21 (64 students), 2021-22 (63 students), and 2022-23 (67 students). The WST program consists of 4 faculty with a combine teaching FTE or 1.45 and between 10 and 13 students. It is more difficult to tease out patterns in undergraduate student credit hour production for FRM and WST separately due to the interconnectedness of the curriculum in the division reflected in the shared FOR subject code. For the 5 academic years from 2017-18 to 2021-22, the FRM program is affiliated with several different subject codes: FMAN, FHYD, and FOR. Similarly, the WST program was associated with the following subject codes: WDSC and FOR. For the period, the annual amount of student credit hours generated for FMAN, FHYD, and WDSC combined ranged from 1788 to 2518. For the same time period, the annual student credit hours for the FOR subject code ranged from 2254 to 2560. Furthermore, during the 2022-23 academic year, the FNRS subject code was introduced that combined the following subject codes: FOR, FMAN, FHYD, WDSC. Consequently, trends in student credit hours for 2022-23 academic year should be interpreted carefully since any lingering FOR, FMAN, FHYD, WDSC courses should have been coded as FNRS. RPTR The number of students in the RPTR major, and the corresponding SCHs have trended down in the last 3 years. The most recent large drop can be largely attributable to COVID-19 impacts and other external forces. Enrollment in the RPTR major has declined about 50% from Fall 2018 (78) to Fall 2022 (38) but most of the decline has been since Fall-2020. The number of full-time RPTR faculty has declined by about 33% over the last 6 years. WFR The SCH production for WFR has ranged from 6,116 SCH in 2020-21, 5,321 in in 2021-22, and 4,738 in 2022-23 (representing 42-46% of the FNR total SCH production) for both in-person and online courses. SCH production for the WFR program has increased through the years for in-person instruction, starting at 3,130 SCH in 2020-21, 3,446 in 2021-22, and ending in 3,952 in 2022-23. For example, enrollment in WMAN 100 has increased from 122 in 2020-21 to 186 in 2022-23, suggesting the observed decline in overall SCH production in the WFR program is not due to decreased course enrollment for in-person courses, but is due to decreased online offerings in the WFR program due to changes in the pay structure for online courses, the departure of one faculty member, and changes to course assignments. For example, WMAN 200 was only taught during winter- and May-mesters, representing a significant decrease in SCH production, and WMAN 421 (also online) was cross listed with FNRS 421, generating 294 SCH for WFR in 2020-21 and 237 SCH in 2021-22. After that academic year, the course is now taught solely by faculty in FRM as FNRS 421. Data provided by the Provost's office show that FTE in DFNR rose from 21 – 23. However, the number of Tenure and Tenure Track Faculty within the WFR program was reduced from 8 in 2020 to 7 currently. We note that a new tenure-track assistant professor will begin in fall 2023. This drop in the number of faculty occurred despite an increase in undergraduate enrollment of 3% and high SCH production over the same period.

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.

The FY2022 research expenditure data for DFNR was provided by the Davis College business office (Table 2, supplemental files). (Note the HERD data show a slightly higher total research expenditure for FNR). These data are provided below and total \$4.733M. Of these, \$4.228M were grant expenditures which make up 59.1% of all grant expenditures for the entire Davis College illustrating the outstanding contribution Forestry and Natural Resources makes towards the WVU mission and R1 status.

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.

Four DFNR programs fell below the fall 2018-2021 enrollment median. (ELM, FRM, RPTR, and WST. The WFR program increased 3% over the median. FRM declined by 2.5 students (-4%). The WDST program fall 2022 enrollment dropped 3.5 students (-23%). Enrollment in RPTR declined by 48% (72,5 to 38). The ELM program data was calculated as a median fall value of 97.5 students to 50 students in Fall 2022 (-48.7%). ELM It should be noted that while the ELM program declined to 50 students in 2022, the FTS Ratio exceeded the University median of 18 (50 / 2.5 FTE = 20). Enrollment in this program increased for Fall 2023. A plan is in place to address enrollment trends and increase efficiencies by merging the Environmental Energy and Resource Management (EERM) major with the ELM program, also in the School of Natural Resources. Merging undergraduate programs will positively impact enrollment/revenue, simplify recruiting and marketing by consolidating one energy/environmental management degree making it easier for potential students/parents to find one energy/environmental management program at WVU. The merger will also reduce instructional expenses and increase efficient delivery of curriculum by streamlining course offerings and reducing redundancy. Sharing faculty across two units will reduce reliance on part-time instructors and reduce barriers to student retention and timely degree completion. There is projected improvement in assessment of student learning by adding the option of capstone course instead of required internship for EERM along with improved assessment of student learning with capstone course. A merged program will lead to a robust degree program able to better weather downturns in the economy/associated industry. Enrollment in environmental (management) majors is likely to continue to increase given the national focus on environmental issues and renewable energy sources. RPTR The RPTR program has numerous ongoing collaborations with multiple units across WVU that will lead to higher enrollment and SCH generation. We outline a potential pathway for reorganizing the various recreation and tourism opportunities across all WVU campuses. The RPTR program would strengthen its commitment to the outdoor economy by focusing on the recreation industry, community development, natural resource management, and public lands. From 2021-2023, as part of the first phase in the AT process, RPTR, HTOR, and the Wildlife and Fisheries Resources (WFR) programs formed the core of the new WVU Tourism Alliance. The purpose of alliance was to change and build on our undergraduate curriculums to create efficiencies and new opportunities for our students. This led to course sharing between the RPTR and HTOR program. It also led to the creation of a new Multidisciplinary Studies (MDS) degree which can lead to more potential career opportunities. Building on this commitment to the outdoor economy would strengthen existing coordination, collaboration, and shared courses with several across Davis College and throughout the University, and across its campuses. These changes and collaborations will result in an increased efficiency and increased enrollment and SCH generation by faculty in the RPTR program. WDST With low student enrollment and highly specialized classes, the WDST program must be adjusted to continue to meet the demands of the forest products sector for our graduates. To improve efficiency, enrollment, and cost effectiveness we propose to merge the WDST and FRM programs and make each an area of emphasis within the FRM program. As part of this transformation, the FRM program will be tasked with developing a curriculum for the WDST emphasis area that effectively matches the current and future needs of industry and employers with reimagined courses and the capacity of faculty instruction.

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.

Q5.3 Data have been provided on the unit's three-year trend in student credit hour (SCH) production Except for the prefixes in in the FRM program (all FMAN, FHYD, and most FOR and FNRS classes), the programs in the FNR Division have generated fewer student credit hours over the last three years (Table 3-supplemental files). Some of this decline is related to declining enrollment at the University and in several programs in the Division. However, some reduction in SCHs has been as a result of changes in the revenue stream for off-campus and online classes. Previously faculty had been incentivized to create and teach off campus and online classes. However, over the last 3 years the incentives have been removed and as a result these additional, out-of-load classes have decreased rapidly. The FOR/FNRS prefix has been steady at 2558-2748 SCHs over the 3 years. The RPTR program has declined from 1,203 to 824 SCHs. This has been largely attributed to the hands-on nature of the program and a decline in students related to the COVID pandemic. The WST program has declined from 1218 SCH in 2019-20 to 930 SCH in 2020-21 before increasing to 1006 in 2021-22. Despite the low number of students in this major, WDSC generated 641-841 SCH per FTE over the three-year period. The WFR program under the WMAN prefix generates 50-54% of the SCHs in the Division of Forestry and Natural Resources. WMAN SCHs declined from 7071 to 6116 to 5321 over the last 3 years-largely due to declines in the online class schedule. Despite this, WMAN produces 1835-2438 SCH/FTE. Student credit hours generated by ELM have declined from 1018 to 782 to 711 over the 3-year period. We present the metric of SCH/FTE as an additional metric to consider with the FNR programs (Table 4-supplemental files). The rationale is that some programs may be under enrolled, but they also offer service classes to other programs and GEF classes that serve the entire University. For example, the WST program enrolls only 11-13 students in its degree program. However, through classes such as WDSC 100 (now FNRS 100 and a GEF) the 1.45 FTEs generates 641-841 SCH per year. Under the new funding model this SCH per FTE metric may be a better measure of revenue generated by a program. A benchmark for the equivalent SCHs that one FTE would be expected to teach can be generated by assuming eight 3 credit hour classes per year, each with 25 students. This results in 570 SCH generated per 1.0 FTE. Based on this metric the SCH/FTE were calculated and provided in Table 4. Over the period from 2017-18 to 2021-22 all programs in FNR generated more SCHs per FTE than expected. The exception was for the ELM program from 2019-20 through 2021-22. Based upon the available data and metrics, and except for ELM, the academic programs in the Division of Forestry and Natural Resources appear to be meeting or exceeding SCH generation expectations. Planning is underway to improve efficiency in the ELM program by merging it with EERM program in the Division of Resource Management (see Q5.2).

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.

The ENLM program completed a BOG follow-up report related to program assessment in January 2023. The assessment was approved by the undergraduate student council and went to BOG for June 2023 meeting. We have not received the results from this assessment. The ELM program was identified as a program with growth opportunities in the Davis College. This included majors that had growth potential with the right attention and possibly with additional resources. Other opportunities include new majors/programs that were identified through a review of external data (student interest, job demand, competitive landscape, etc.). The WVU ELM program submitted follow-up reports specifying needed resources and was selected for further development (see information in attached below in the following section). The program has also received over \$1,000,000 in financial support from industry partners since its inception in 2014. These funds help support the ELM program, students, and WVU in general. For instance, they help support diversity and inclusion efforts at WVU by allowing ELM to host the E3 Camp and E3 Academy. This unique summer camp program recently hosted 24 minority students from Baltimore and surrounding areas to learn about energy, and energy development, which most have never been exposed to. The E3 Camp is also an excellent recruiting tool for ELM and WVU. Without an engaged industry support network, programs such as these would not be available. FRM/WST The FRM faculty restructured the FRM curriculum for the 2021-2022 Catalogue year to appeal more to prospective and current forestry students by allowing them to declare an area of emphasis in one of three areas: 1) Forest Management; 2) Forest Ecosystem Science and Sustainability; 3) Arboriculture and Urban Forestry. The WST faculty updated their curriculum which has been approved to launch for the 2023-2024 Catalogue year. This updated WST curriculum consists of 90 credit hours and offers a general education in basic sciences, math, engineering, communications, business, and forestry. Flexibility is built in through the selection of a minor (15 credit hours) and elective courses (16 credit hours) that complement the Major. The other significant change is that the WST major has been moved under the Bachelor of Science of Forestry where FRM is already located. This will allow for better integration of the FRM and WST programs. A future plan is to have one major with two AoE (Forestry Management (all forestry academic offerings) and Forest Science (all wood science academic offerings)). RPTR RPTR was identified as a Program or Opportunity as earlier in the WVU Academic Transformation process. The RPTR program has made several curriculum changes to create efficiencies and student opportunities. As part of our transformation, we decided not to renew our Accreditation with Society of American Foresters (SAF), and instead pursue future Accreditation with the Council on Accreditation of Parks, Recreation, Tourism and Related Professions (COAPRT), a better fit with our curriculum. As part of the AT process, RPTR partnered with Hospitality and Tourism Management (HTOR) to share courses, and provide cross-curricular classes, benefiting both majors (e.g., HTOR courses will help RPTR attain accreditation). Our BSR curriculum changes were approved in late 2022, which also entailed modifying our Learning Outcomes. In doing this, we modified them to reflect COAPRT requirements, setting ourselves up for the Accreditation process (to be undertaken in the near future). Over 2021-2023, RPTR, HTOR, and the Wildlife and Fisheries Resources programs also formed the core of the new WVU Tourism Alliance. This led to the creation of a new Multidisciplinary Studies (MDS) degree which can be an opportunity for all students within FNR. The next step of the Tourism Alliance is to partner with other state, community, and other stakeholders (e.g., the WVU Institute of Technology Adventure Recreation Management B.S. and Hospitality/Culinary A.A.S.). These efforts all link directly to the WV State Tourism mission to increase tourism visitation, grow community economies, and provide training opportunities for the hospitality and tourism workforce (<https://wvtourism.com/TourismWorks/>). RPTR classes are required by multiple programs and Colleges—including HTOR, Landscape Architecture, & Forestry (all potential homes for RPTR during this restructuring process). Our faculty also helped develop and now teach classes in the recently launched (2021-22) Sustainable Trails Management Certificate and minor (interdisciplinary program within the Davis College). WFR The Wildlife and Fisheries Resources program recently revised its B.S. degree curriculum to optimize instructional efficiencies, clarify degree requirements for students, and conform to certification requirements for our associated professional societies. The ability of students to be certifiable by The Wildlife Society and the American Fisheries Society has been appealing to prospective students and a key recruitment tool. Faculty Senate approved the new curriculum May 2023 and it will be effective for the 2024-25 academic year. With the new curriculum in place, the WFR program is now working on its assessment plan, which will be completed by December 2023.

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

Q7.1. The unit may provide any additional context or information about the unit's programs here.

ELM – please see attached ELM report. FRM/WST The FRM program is the only four-year forestry program in the state of West Virginia that is accredited by the Society of American Foresters (SAF). FRM received continued SAF reaccreditation effective January 1, 2020 through December 31, 2029. The Wood Science and Technology (WST) major is the only wood science program in the state of West Virginia. The Society of Wood Science & Technology (SWST) recently reaccredited the WST program for 10 years beginning July 2019. The WST program at WVU is only 1 of 10 nationally accredited by SWST. The Appalachian Hardwood Center (AHC) is a jointly supported center of the WVU Extension Service and the WVU Davis College of Agriculture, Natural Resources and Design. The AHC was established in 1987 by the West Virginia Legislature to provide technical and research support for the state's thriving wood products sector and has served the state in that capacity since its establishment. The AHC is a recognized center of excellence for outreach, professional development, and applied research. The Appalachian Forest Entrepreneur Center (AFEC) currently being launched, will promote opportunities that will empower innovators from all forestry and natural resources sectors in WV and Appalachia. Once fully launched, this center will serve as a catalyst to attracting industry and government funding and increasing student enrollment in both FRM and WST. The WVU DFNR Alumni Association and the affiliated Forestry Endowed Trust provide a significant amount of financial support to students in the Wood Science and Forestry Programs at WVU. For example, the total value of Forestry Endowed Trust scholarships awarded in 2022 was \$45,750. These scholarships are provided through several industry-based endowment funds under management by the Forestry Endowed Trust. The total value of this privately managed endowment totals about \$1.6 million and comprises the largest source of scholarship funding in the Davis College for Wood Science and Forestry students. RPTR The RPTR program exists at the nexus of intersecting current trends and is poised to grow with them. COVID-19 brought renewed attention and interest to the many health and economic benefits of outdoor recreation. In 2021 the U.S. Bureau of Economic Analysis (BEA) noted outdoor recreation produced \$454 billion in economic activity, accounting for 1.9% of the nation's gross domestic product. The BEA also found that employment in outdoor recreation grew by 13% from 2020 to 2021, supporting over 6 million jobs directly nationwide. Tourism has been a growing industry in WV for 20 years, and in 2022 travel spending in West Virginia was \$4.9 billion dollars, supporting 44,000 jobs with earnings of \$1.3 billion, and generating over \$750 million in state government revenues. Overall, the field of outdoor recreation in West Virginia is the second largest industry, generates over \$9 billion, and supports over 91,000 jobs (Outdoor Industry Association, 2017). Thus, outdoor recreation and tourism are important economic drivers not just in West Virginia, but nationally. Governor Jim Justice has made significant investments in tourism and recreation—over \$150 million invested in state parks and forests since he took office. More recently (2023), Gov. Justice, recognizing the growing importance of tourism, hospitality, and recreation, launched a new education program focused on these topics in all 55 counties (<https://wvtourism.com/TourismWorks/>). Our alumni have gone on to successful careers both locally and nationally. For example, Brett McMillion (RPTR program alumnus) is the current leader (Commissioner) of the WV state DNR—and another alumnus (Brett Meldrum) is the current Chief of the Social Science Program for the National Park Service. The RPTR program has forged strong connections to multiple academic units, as well as program units at WVU. Our work, and our students, have been at the forefront of the growth of every major initiative undertaken by the Adventure WV program, through to the recently created Brad and Alys Smith Outdoor Economic Development Collaborative (OEDC). These include Greg Corio starting the ADV WV program as one of our Master's student over 20 years ago, to the development of the Outdoor Education Center and its world class facilities, to our work with the Boy Scouts at the Summit Bechtel Reserve, to the WVU Science Adventure School, and so on. Most recently we have continued this relationship as the OEDC has grown (including projects related to trail development, trail signage, etc.). Additionally, our connection to Adventure WV programs includes teaching—their full-time staff serve as adjunct instructors for the RPTR program. They teach RPTR classes as part of their work (thus at no cost to RPTR/Davis College). We also have strong collaborative efforts with WVU Extension, especially Tourism extension faculty and staff. We have grants with Extension, conduct trainings, and publish peer reviewed articles with them. As noted earlier, our restructuring leverages the extraordinary growth potential of the outdoor recreation economy and tourism sectors in WV and beyond. Since the RPTR program has numerous ongoing collaborations with multiple units across WVU, there are multiple potential pathways if reorganization is in the cards. Another more compelling reorganization could facilitate an even stronger linkage across the RPTR, HTOR, and Extension programs (especially their experts in tourism, and community development). Using the newly created Tourism Alliance, this could be the next step. This could also entail tightening our connection to the Recreation, Parks, and Tourism Associate degree program offered at Potomac State University, and the WVU Institute of Technology (specifically the Adventure Recreation Management B.S. and Hospitality/Culinary A.A.S. programs). We would also seek to forge an official link between the new WV state hospitality and tourism initiative, Tourism works (<https://wvtourism.com/TourismWorks/>). This new opportunity will begin offering H & T career pathways to link middle schoolers and high schoolers to institutions of higher education. ADV Rec Management in Beckley (we already have an AOE)—combine programs on main campus. WFR The Division of Forestry and Natural Resources and the Wildlife and Fisheries graduate programs benefit from the West Virginia Cooperative Fish and Wildlife Research Unit housed with the wildlife and fisheries faculty in Percival Hall. The three Federal Scientists from the Coop Unit are graduate faculty in the Wildlife and Fisheries Resources Program. They teach graduate classes, advise graduate students (MS and PhD) and are primary and co-investigators on research grants. Their salary is paid by USGS, they have 5 federal vehicles for research and various boats. The 3 scientists are an integral part of the WFR program and co-advise students, collaborate on research with the faculty and sit on various University Committees. During the past 3 years the Coop Unit scientists have brought in a combined \$4 million in external research funding. They have published a total of 39 publications in peer-reviewed journals, have advised 7 PhD students and 10 MS students. The Coop Unit also worked with the WV Division of Natural Resources (WVDNR) and OSP to add verbiage to the Coop Unit Annual Agreement that allows the WVDNR to fund research at WVU without needing a sole source designation. This has allowed the WVDNR to fund over \$800,000 in research to Coop Unit scientists and Wildlife and Fisheries faculty in 2023. • The WFR program has a leadership role in the creation of a more diverse and inclusive culture. Women are still underrepresented in our field and continue to experience biases and uncertain work environments when out in the field. To create a more inclusive culture for women in DFNR, the Women in Natural Resources (WINR) group was established with leadership of WFR faculty in 2016. Since its inception, it has been an active group, bringing together students (undergraduate and graduate), faculty, and staff, promoting several activities to foster leadership and awareness on equality and inclusion, and foster feminist/queer/multiracial framework/lens in research, educational and work environments at WVU and DFNR. Among activities, WINR hosts an Annual Women in Natural Resources Symposium, a seminar series, multiple discussions to promote gender equality and inclusion, and trainings (e.g., undergraduate mentorship events). • The WFR program advances education by providing a comprehensive curriculum focused on wildlife and fisheries management, conservation biology, and related disciplines. Through innovative teaching methods, experiential learning opportunities, and engagement with practitioners, the program equips students with the knowledge and practical skills needed to address conservation challenges effectively. About 80% of the program's courses have laboratory and intense field activities that expose students to a wide range of experiences connecting theory with practice that provide students with the skills, knowledge, and experiences necessary to become effective conservationists and researchers in the field. WFR curricula is also designed to enhance the students' abilities in data management, analysis, and report writing. The WFR program also delivers a popular study abroad course annually that exposes students from across WVU to real-world conservation and ecological problems and different social-economic and cultural contexts in tropical regions, developing their global awareness. WFR curricula and activities benefit not only students in the WFR program but also students from across the university through their delivery of two high-enrollment GEF courses and their offering of two minors.

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

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

[ELM Documentation AT.pdf](#)

284.5KB
application/pdf

Q7.4. You may use this section to provide any additional evidence referenced in the program review.

[FRM WST Plan in Response to the BOG Report_FINALJuly31-go1.docx](#)

21.9KB
application/vnd.openxmlformats-officedocument.wordprocessingml.document


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: [REDACTED]

Source: GeoIP Estimation



The map displays a geographical area including parts of Ohio, Pennsylvania, and West Virginia. Key cities labeled include Akron, Columbus, Pittsburgh, Harrisburg, Frederick, Baltimore, Washington, and Charleston. A yellow diamond marker is positioned in the West Virginia region, west of Pittsburgh, indicating the location of the data source.