PURDUE UNIVERSITY BOARD OF TRUSTEES
EXECUTIVE SUMMARY DEGREE PROPOSAL TEMPLATE

PLEASE NOTE THAT THE FULL ACADEMIC DEGREE PROGRAM SUBMISSION DOCUMENT WILL NEED TO BE COMPLETED FOR THE INDIANA COMMISSION ON HIGHER EDUCATION (see https://www.in.gov/che/academic-affairs/academic-degree-programs/). Both this template and the Academic Degree Program Submission are submitted to the Purdue Board of Trustees. When this form is complete, please save and return to sdunk@purdue.edu with tables as separate attachment.

DATE: January 5, 2026
TO: Board of Trustees
FROM: Tamara Kinzer-Ursem, Associate Dean of Graduate and Professional Education, (765) 494-7330; tursem@purdue.edu; John Howarter, howarter@purdue.edu; Athanasios Tzempelikos, ttzempel@purdue.edu
CC: Bryan DeWitt, bdewitt@purdue.edu; John Fassnacht, johnf@purdue.edu
SUBJECT: M.S./M.S.E. Sustainability Engineering, including majors in Sustainable Engineering and Sustainable Building Design and Operation

CAMPUS OFFERING DEGREE: Purdue West Lafayette

ANTICIPATED START DATE: Fall 2026

1. IS THE DEGREE RESIDENTIAL, HYBRID, OR ONLINE?

IF ONLINE, RATIONALE FOR GOING THROUGH SPECIFIC PURDUE CAMPUS—PWL, PFW, PNW, PG

Online through Purdue West Lafayette. The faculty members are all located at the West Lafayette campus.

2. BRIEF OVERVIEW OF DEGREE/WHY IS THE DEGREE NEEDED?

The new M.S./M.S.E. in Sustainability Engineering includes two new majors in Sustainable Engineering and Sustainable Building Design and Operation. The 30-credit hour degree program includes two new core courses related to Life Cycle Assessment and Global Sustainable Engineering, a third core class with choices related to Environmental Engineering, 9 credit hours of technical electives, and 12 credit hours of professional and applied electives. Recognizing the breadth of the sustainability engineering field, this unique, customizable degree allows students to build a plan of study that accommodates their personal and professional goals. The program includes courses from Electrical and Computer Engineering, Environmental and Ecological Engineering, Civil Engineering, Biomedical Engineering, Agricultural and Biological Engineering, Mechanical Engineering, industrial Engineering, and Materials Engineering.

Industry demand is being driven by concerns over operational impact, regulatory uncertainty, increased insurance, reputational damage and consumer preference. These concerns and more have fueled discussions with the Purdue EEE External Advisory Council, other leading industrial professionals, and in consultation from faculty and leadership across Purdue College of Engineering and in collaborating units in College of Science, Agriculture, Business, and Purdue University Online. The need for expertise in sustainability engineering, with skills in energy transition, manufacturing, supply chain, modernized mobility, resiliency, adaptation and workforce development prove the need for a sustainability engineering degree that will provide students the opportunity to engage in a wide range of interdisciplinary topics focused on integrating sustainability into engineering practices, challenges and solutions.

3. BRIEF EVIDENCE OF FEDERAL, STATE, AND REGIONAL LABOR MARKET NEED

There is a large and growing job market for roles related to sustainability engineering and few online programs to meet the demand. There were over 1M positions related to sustainability engineering in 2023 with 89,235 annual openings and the market is expected to grow by 5.4% between 2023-2027 (Lightcast, 2025). Despite the demand, there were only 868 MS conferrals in 2023, 312 of which (36%) were online. Online conferrals have grown by 47% between 2012-2023 (Lightcast, 2025). The largest employers include several companies where Purdue University already has strategic relationships, including Northrop Grumman, Raytheon Technologies, Boeing, Amazon, and Deloitte. Graduates can assume a variety of roles,

often related to project and program coordination/management and leadership roles (directors, and managers). The top skills for graduates include project management, process improvement, data analysis, new product development, and change management; each of these skills are rapidly growing by 20% or more in job postings (Lightcast, 2025).

In Indiana, jobs lag 25% below the national average with 12,781 annual openings in 2023. Fortunately, the growth of this sector over the next five years is expected to be 6.7%, outpacing the national average by 1.3%. Median earnings in Indiana lag behind the national average ($63.8K vs. $71.6K) and there were 1,199 annual openings in 2023.

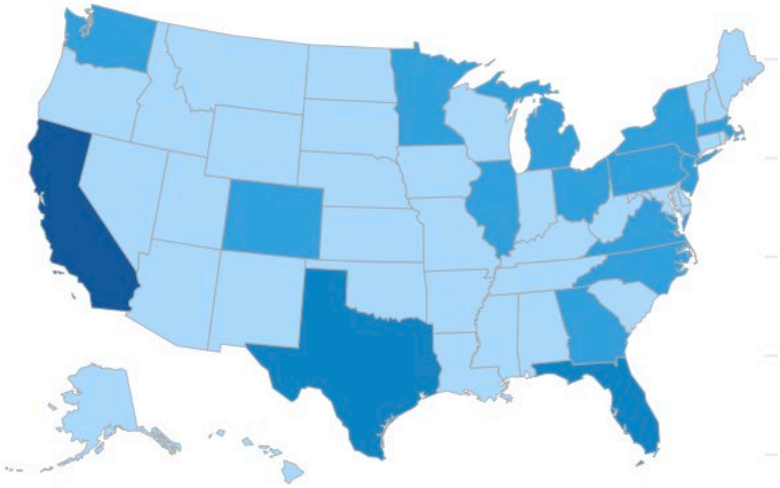

Figure 1. Job postings for environmental engineers. The darker the shade of blue, the larger number of job postings. California, Texas, and Florida have the greatest number of job postings. Regionally, Michigan, Illinois, and Ohio have a larger number of job postings than Indiana; however, the Mid-west has strong job prospects for program graduates.

4. COSTS

A. Tuition and Fees—In-state and out-of-state
   a. In-State: $1,139/CR
   b. Out-of-State: $1,459/CR
   c. Fees:
      i. Digital Education Fee: $50/CR
      ii. PUO Infrastructure Fee: $18.80/CR
      iii. College of Engineering Differential Fee: $46.83/CR
      iv. Facilities and Administration:
         1. In-State: $102.34/CR
         2. Out-of-State: $134.34/CR

B. Financial Projection Table
https://www.purdue.edu/provost/policies/iche.html (Tab 1)

C. Program Review and Expenditure Summary
https://www.purdue.edu/provost/policies/iche.html (Tab 2)

D. Enrollment Projection
https://www.purdue.edu/provost/policies/iche.html (Tab 3)

5. LIST OF SIMILAR DEGREES IN THE PURDUE SYSTEM AND DISTINCTIVE ELEMENTS FOR THIS DEGREE

Purdue University-West Lafayette currently offers a large, online Master's degree in Interdisciplinary Engineering that includes several majors. The new M.S./M.S.E. in Sustainability Engineering will be housed within the Interdisciplinary Engineering department. The rationale for creating a new degree program is to allow for program expansion so that additional majors and concentrations related to sustainability engineering can be added as the program grows.

6. COMPETITIVE DEGREES – BRIEF SUMMARY

There were 868 Master's degree conferrals in 2023 in environmental engineering and environmental control technologies. The below table includes the top-conferring institutions in the field of sustainability engineering (Lightcast, 2025). A conferral is a program graduate. The estimated headcount for each of the below programs is at least double the conferrals as it generally takes students 2-3 years to graduate with an engineering M.S. degree.

University	Conferrals (2023)
California State University – Fullerton	55
Johns Hopkins University	49
University of Florida	44
Columbia University – New York	37
Georgia Institute of Technology	30
University of Colorado – Boulder	29
University of Illinois – Urbana-Champaign	28
Arizona State University	23
University of Southern California	20

Recommended Approval:

Patrick J. Wolfe, Ph.D. — 01/07/2026
Provost &Miller Family Professor of Statistics and Computer Science — Date

Approved:

Mung Chiang, Ph.D. — 1/7/2026
President — Date
Roscoe H. George Distinguished Professor of Electrical and Computer Engineering

Table 1
Program Financial Projection
Financial Office Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

	Year #1 FY 2026	Year #2 FY 2027	Year #3 FY 2028	Year #4 FY 2029	Year #5 FY 2030
I. ENROLLMENT					
1. Program Credit Hours Generated (FTE * 30 for BS & FTE * 24 for masters/graduate)					
a. Existing Courses	46	194	384	581	670
b. New Courses	9	49	96	145	167
Total	**55**	**243**	**480**	**726**	**837**
2. Full-Time Equivalents (FTE)					
a. Full-Time FTEs					
b. Part-Time FTEs	7	17	20	22	22
Total Full/Part-Time FTE	**7**	**17**	**20**	**22**	**22**
c. On-Campus Transfer FTEs					
d. New-to-Campus FTEs	7	17	20	22	22
Total On/New-to-Campus FTE	**7**	**17**	**20**	**22**	**22**
3. Program Majors - Headcount					
a. Full-Time Students					
b. Part-Time Students	10	23	27	29	30
Total Full/Part-Time HC	**10**	**23**	**27**	**29**	**30**
c. In-State	2	6	6	6	6
d. Out-of-State	8	17	21	23	24
Total In/Out of State HC	**10**	**23**	**27**	**29**	**30**

Notes

For both undergraduate and graduate degree enrollment projections, please carefully consider competitive degree enrollments and how the Purdue program will be marketed in the calculation of enrollment and degree completion projections.

^ Enter footnotes in the last section of this table for to provide additional details (required for 'other' categories) and projection and/or calculation logic.

Table 1
Program Financial Projection
Financial Office Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

	Year #1 FY 2026	Year #2 FY 2027	Year #3 FY 2028	Year #4 FY 2029	Year #5 FY 2030
II. INCREMENTAL REVENUE					
1. Projected # of *New* Students [1]	7	17	20	22	22
2. General Tuition & Fees [2]					
a. General Service	1,176	1,176	1,176	1,176	1,176
b. PUO Infrastructure Fee	19	19	19	19	19
c. Facilities and Administration	136	136	136	136	136
d. College of Engineering Differential	47	47	47	47	47
e. Digital Education Fee	50	50	50	50	50
Total General Service T&F	**$ 1,427**	**$ 1,427**	**$ 1,427**	**$ 1,427**	**$ 1,427**
2. Additional Fees - *if applicable* [3]					
a. Differential Fees					
b. Course Fees					
c. Other Fees					
Total Additional Fees	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Total Incremental Revenue	**$ 78,510**	**$ 346,870**	**$ 685,176**	**$ 1,036,329**	**$ 1,194,776**

Notes

(1) New Students represents the anticipated number of *new* students to campus; transfers or existing students are ***not*** to be included. The Total is set equal to the 'New-to-Campus FTEs' completed in the Enrollment section (I2d).

(2) T&F must match approved Bursar rates (refer to Bursar website). The calculation should be based on the ***Full-Time/ Resident*** Student T&F. If the new degree program is primarily Part-Time students, then the T&F needs to be adjusted appropriately for this type of expected enrollment.

(3) If additional fees are applicable, then each fee must be individually listed above and match approved Bursar rates (refer to Bursar website).

Bursar T&F Website: https://www.purdue.edu/bursar/tuition/index.html

^ Enter footnotes in the last section of this table for to provide additional details (required for 'other' categories) and projection and/or calculation logic.

Table 1
Program Financial Projection
Financial Office Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

	Year #1 FY 2026		Year #2 FY 2027		Year #3 FY 2028		Year #4 FY 2029		Year #5 FY 2030	
III. EXPENDITURES										
1. Salary and Wages	**FTE**	**Cost**	**FTE**	**Cost**	**FTE**	**Cost**	**FTE**	**Cost**	**FTE**	**Cost**
a. Faculty		4,125		22,276		44,002		66,552		76,728
b. Limited Term Lecturers										
c. Graduate Students		4,725		25,515		50,400		76,230		87,885
d. Other (Post Doc/Staff)										
Total S&W	**0.00**	**$ 8,850**	**0.00**	**$ 47,791**	**0.00**	**$ 94,402**	**0.00**	**$ 142,782**	**0.00**	**$ 164,613**
2. Fringes and Fee Remissions										
a. Fringe Benefits										
b. Fee Remissions										
Total FB & FR		**$ -**		**$ -**		**$ -**		**$ -**		**$ -**
3. Supplies and Expenses										
a. General Supplies & Expenses										
b. Minor Equipment										
c. Recruiting & Marketing		80,091		84,200		95,643		106,724		117,632
d. Student Support		8,625		17,702		35,836		54,798		58,489
e. Other (Library, subscriptions, IT)										
Total Supplies and Expense		**$ 88,716**		**$ 101,902**		**$ 131,479**		**$ 161,522**		**$ 176,121**
4. Capital										
a. Capitalized Equipment										
b. Repair & Replacement										
Total Equipment		**$ -**		**$ -**		**$ -**		**$ -**		**$ -**
Total Expenditures		**$ 97,566**		**$ 149,693**		**$ 225,881**		**$ 304,304**		**$ 340,734**
Projected Program Surplus/(Deficit)*		**$ (19,056)**		**$ 197,177**		**$ 459,295**		**$ 732,025**		**$ 854,042**

***** For the CHE proposal, only identify the nature of the support. It is not necessary to note dollars in the report; however, it should be stated that there is sufficient revenue to cover expenses. Projected surplus/deficit is an aid to identify potential new University revenue, anticipated program costs, and degree substantiality. This does not represent any type of funding request.

^ Enter footnotes in the last section of this table for to provide additional details (required for 'other' categories) and projection and/or calculation logic.

Table 1
Program Financial Projection
Financial Office Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

FOOTNOTES

I. Enrollment Details

1. Program Credit Hours Generated
   Assumes students take 3 CR per semester for 10 semester.
2. Full-Time Equivalents (FTE)
   FTEs are the total anticipated new students multiplied by 0.75.
3. Program Majors - Headcount
   All new students will be majors.

II. Incremental Revenue Details

1. Projected # of New Students
   Lightcast and existing IDE and Civil Engineering programs were used for competitive benchmarking.
2. General Tuition & Fees
   $1,139 (IS) and $1,459 (OOS); assumed 90% of students are OOS based on current enrollments. A weighted average of $1,427/CR were used for the calculations.
3. Additional Fees - if applicable

III. Expenditure Details

1. Salary and Wages
   The College of Engineering uses a rate of $275/student/3CR course for faculty wages, which includes fringe. $105/CR is used for TA rates, which includes remission.
2. Fringes and Fee Remissions
   See III.1.
3. Supplies and Expenses

4. Capital

Table 2
Program Revenue and Expenditure Summary
Board of Trustees Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

	Year #1 FY 2026	Year #2 FY 2027	Year #3 FY 2028	Year #4 FY 2029	Year #5 FY 2030
Total Incremental Revenue*	$ 78,510	$ 346,870	$ 685,176	$ 1,036,329	$ 1,194,776
Total Expenditures	$ 97,566	$ 149,693	$ 225,881	$ 304,304	$ 340,734
Projected Program Surplus/(Deficit)**	**$ (19,056)**	**$ 197,177**	**$ 459,295**	**$ 732,025**	**$ 854,042**

*Based on the anticipated number of ***new*** students to campus; transfers or existing students are not included. Projected incremental revenue is based on the current ***full-time, resident*** tuition and fees approved by the Bursar.

**Projected surplus/deficit is an aid to identify potential new University revenue, anticipated program costs, and degree substantiality. This does not represent any type of funding request.

Additional Departmental Footnotes:

Table 3
Projected Headcount and FTE Enrollment and Degrees Conferred
Board of Trustees & ICHE Table
Purdue West Lafayette Campus
M.S./M.S.E. in Sustainability Engineering

	Year #1 FY 2026	Year # 2 FY 2027	Year # 3 FY 2028	Year # 4 FY 2029	Year # 5 FY 2030
Enrollment Projections (Headcount)	**10**	**23**	**27**	**29**	**30**
Enrollment Projections (FTE)	**7**	**17**	**20**	**22**	**22**
Degree Completions Projection	**0**	**10**	**23**	**27**	**29**