Board Office Use: **Legislative File Info.**	
File ID Number	25-0710A
Introduction Date	5/27/25
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Enactment Date	

OAKLAND UNIFIED SCHOOL DISTRICT
Community Schools, Thriving Students

Board Cover Memorandum

To Board of Education

From Kyla Johnson-Trammell, Superintendent
Sondra Aguilera, Chief Academic Officer
Claire Fisher, Executive Director, Secondary Instruction
Christopher Junsay, Coordinator, High School Science

Meeting Date May 27, 2025

Subject Curriculum Adoption for AP Environmental Science
- *Environmental Science for the AP Course (Bedford, Freeman & Worth (BFW) Publishing Group)*

Ask of the Board Adoption by the Board of Education of Resolution No. 2425-0044 - Selection and purchase of the following textbooks:

Environmental Science for the AP Course (Bedford, Freeman & Worth (BFW) Publishing Group) for High School

Background

Need for Updated AP Environmental textbook

OUSD currently offers four Advanced Placement (AP) courses for science: *AP Chemistry, AP Biology, AP Physics, and AP Environmental Science (APES)*. Of those classes, APES has the highest enrollment each year. As of the writing of this proposal, the number of students enrolled in *APES* was slightly more than the total enrollment of the other three classes combined.

OUSD initially adopted the textbook, *Living in the Environment (AP Edition)* by Miller and Spoolman (2008, Cengage) to support students taking AP Environmental Science (APES). Additional editions were purchased until 2018. In 2020, *College Board* updated their Course and Exam Descriptions (CEDs) for science, and that adopted textbook was no longer aligned to the new elements. Since then, APES teachers have been pulling together resources from multiple places and attempting to update existing materials. Last year, two of the five APES teachers requested updated materials. After reviewing options, including purchasing updated versions of the current adopted text, the teachers identified, ***Environmental Science for the AP Course*** by Friedland and Relyea (2023, BFW), as a strong program. It was getting positive reviews from teachers outside of the district because of strong alignment to College Board's CEDs for AP Environmental Science, supplemental resources, and

tools teachers could use to support students. We decided to pilot the textbook and online resource in fall 2024.

Discussion

Selection Process

Review of the updated AP Environmental Science curriculum began in Spring 2024. The selection team narrowed it down to one option to compare to the current version of the text that was previously adopted. There are currently five teachers across three school sites who teach *APES*, and each had an opportunity to review materials and provide feedback. Similar evaluation criteria from our adoptions and pilots in other science classes were used–those included: 1) Alignment to standards/framework; 2) Student Materials; and 3) Teacher Materials and Usability. The standards and framework in this context were the specific features outlined by *College Board* in their updated Course and Exam Description (*CED) for AP Environmental Science*. The lead teachers on the pilot teachers recommended we move forward with adopting *Environmental Science for the AP Course* by Friedland and Relyea *(BFW Publishers).*

Fiscal Impact

There is a one-time cost for adoption materials (books, teacher materials, platform licenses) and annual workbook refill expenditures. BFW also provides professional learning. The complete purchase of Environmental Science for the AP course for 3 years is estimated to be **$114,119.20.**

Summary of Instructional Materials Costs: Years 1-3, 2025-2028

Year	Summary of Materials to be Purchased	Costs
2025-26	Achieve portal Teacher Licenses Achieve portal Student Licenses Digital and print full-length APES texts Print student workbooks	**$69,619.20**
2026-27	Student workbooks	**$5,500.00**
2027-28	Student workbooks	**$5,500.00**
	TOTAL =	**$80,619.20**

Summary Table - Professional Learning: Years 1-3, 2025 - 2028

Year	Summary of Professional Learning Offerings	Costs
2025-26	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training	**$13, 500.00**

	Monthly 2nd Wednesday Series September & January PD Days	
2026-27	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training Monthly 2nd Wednesday Series September & January PD Days	**$10, 000.00**
2027-28	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training Monthly 2nd Wednesday Series September & January PD Days	**$10, 000.00**
	Cost for direct BFW Training	**$13, 000.00**
	OUSD costs for teacher stipends	**$20, 500.00**
	TOTAL =	**$33, 500.00**

SY 2025-2028 Total Amount Not to Exceed $114,119.20

Attachment(s)

- Resolution No. 2425-0044
- Attachment A: AP Environmental Textbook Adoption Proposal
- Attachment B: Budget Proposal for Instructional Materials
- Attachment C: Budget Proposal for Ongoing Professional Learning
- Services Agreement - Bedford, Freeman & Worth Publishing Group (pending)
- Presentation - AP Environmental Science Textbook Adoption

Legislative File Info.	
File ID Number:	25-0710
Introduction Date:	3/18/2025
Enactment Number:	
Enactment Date:	

RESOLUTION

OF THE

BOARD OF EDUCATION

OF THE

OAKLAND UNIFIED SCHOOL DISTRICT

NO. 2425-0044

Curriculum Adoption for Advanced Placement Environmental Science

WHEREAS, pursuant to Board Policy 6161.1, the Governing Board is responsible for selecting textbooks and other instructional materials for use in District schools;

WHEREAS, the State Board of Education has approved standards for curriculum, certain curriculum frameworks, and has approved a list of basic instructional materials for use in 9-12 Grade;

WHEREAS, the Governing Board shall select instructional materials for use in grades 9-12th or shall have otherwise determined which instructional materials align with the state academic and content standards;

WHEREAS, the Governing Board shall select instructional materials for grades 9-12th grade upon determining that the materials are:

- Aligned to applicable academic content standards;
- Are provided by publishers that comply with legal requirements;
- Do not reflect adversely upon persons because of their race or ethnicity, gender, religion, disability, nationality, sexual orientation, occupation, or other characteristic listed in Education Code 220, nor contain any sectarian or denominational doctrine or propaganda contrary to law;
- Reflective of California's multicultural society, avoid stereotyping, and contribute to a positive learning environment;
- Are accurate, objective, current , and suited to the needs and comprehension of district students at their respective grade levels;
- With the exception of literature and trade books, use proper grammar and spelling;
- Do not expose students to a commercial brand name, product, or corporate or company logo unless the Board makes a specific finding that the use is appropriate;
- Support the district's adopted courses of study and curricular goals;
- Contribute to a comprehensive, balanced curriculum;
- Provide for a wide range of materials at all levels of difficulty, with appeal to students of varied interests, abilities and developmental levels;
- Include materials that stimulate discussion of contemporary issues and improve students' thinking and decision-making skills;
- Contribute to the proper articulation of instruction through grade levels;
- Have corresponding versions available in languages other than English as appropriate;
- Include high-quality teacher's guides;

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- Meet high publishing standards in terms of the quality, durability and appearance of paper, binding, text and graphics;
- Upon adoption of standards by the SBE, not exceed maximum textbook weight standards;
- Meet the standards for social content that portray in a realistic manner democratic values, cultural pluralism, and the diversity of the state's population, and emphasize people in varied, positive, and contributing roles;

WHEREAS, as summarized in Attachments A-C, instructional review committees comprised of teachers, teachers on special assignment and district content specialists, with the majority of the participants being classroom teachers, reviewed instructional materials for potential use in District schools and found the following to meet the standards for adoption, therefore, the following instructional materials are recommended for adoption by the Governing Board:

- *Environmental Science for the AP Course (Bedford, Freeman & Worth (BFW) Publishing Group)*

WHEREAS, expenditures, pursuant to an Agreements by and between the District and Bedford, Freeman & Worth (BFW) Publishing Group shall not exceed the total amount of $114,119.20, for the period July 1, 2025 to June 30, 2028, for the purchase of Advanced Placement Environmental Science materials related thereto;

NOW , THEREFORE, BE IT RESOLVED that the Board of Education hereby finds that Bedford, Freeman & Worth (BFW) Publishing Group instructional materials meet the standards for adoption and hereby selects Environmental Science for the AP Course for use in District schools.

BE IT FURTHER RESOLVED that the Board approves the Agreement by and between the District and Bedford, Freeman & Worth (BFW) Publishing Group. This shall not exceed the total amount of $114,119.20, for the period July 1, 2025 to June 30, 2028, for the purchase of Advanced Placement Environmental Science materials.

Passed by the following vote:

PREFERENTIAL AYE:

PREFERENTIAL NOE:

PREFERENTIAL ABSTENTION:

PREFERENTIAL RECUSE:

AYES:

NOES:

ABSTAINED:

RECUSE:

ABSENT:

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CERTIFICATION

We hereby certify that the foregoing is a full, true and correct copy of a Resolution passed at a Regular Meeting of the Board of Education of the Oakland Unified School District, held on June 4, 2025.

OAKLAND UNIFIED SCHOOL DISTRICT

_____

Jennifer Brouhard
President, Board of Education

_____

Kyla Johnson-Trammell
Secretary, Board of Education

Attachment A:
AP Environmental Science (*APES*) Curriculum Proposal

Oakland Unified School District
February 2025

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Executive Summary

College Board updated the Course and Exam Descriptions (CEDs) for Advanced Placement science courses in the fall of 2020, which required revisions to class materials and potential selection of new textbooks. OUSD currently offers four Advanced Placement (AP) courses for science: *AP Chemistry, AP Biology, AP Physics, and AP Environmental Science (APES)*. Of those classes, APES has the highest enrollment each year. As of the writing of this proposal, the number of students enrolled in *APES* was slightly more than the total enrollment of the other three classes combined.

Review of updated AP Environmental Science curriculum began in Spring 2024. The selection team narrowed it down to one option to compare to the current version of the text that was previously adopted. There are currently five teachers across three school sites who teach *APES*, and each had an opportunity to review materials and provide feedback. Similar evaluation criteria from our adoptions and pilots in other science classes were used–those included: 1) Alignment to standards/framework; 2) Student Materials; and 3) Teacher Materials and Usability. The standards and framework in this context were the specific features outlined by *College Board* in their updated Course and Exam Description (*CED) for AP Environmental Science (reference Appendix A: College Board CEDs for APEs)*. Overall, 100% of the pilot teachers recommended we move forward with adopting *Environmental Science for the AP Course* by Friedland and Relyea *(BFW Publishers).*

Background and Curriculum Selection Process

OUSD currently offers four Advanced Placement (AP) courses for science: *AP Chemistry, AP Biology, AP Physics, and AP Environmental Science (APES)*. Of those classes, APES continues to have the largest enrollment. This year, the number of students enrolled in APES is slightly higher than the total enrollment across the other three AP science classes (Table 1). It is also a class that has increased in enrollment over the last two years. With growing interest in the class, teachers need materials that will support students to be successful with coursework and the AP exam.

Table 1: 24/25 Enrollment in AP Science Courses

AP Biology:	117
AP Chemistry:	106
AP Physics:	29
AP Environmental Science:	*267*
Total:	**519**

OUSD initially adopted the textbook, *Living in the Environment (AP Edition)* by Miller and Spoolman (2008, Cengage) to support students taking AP Environmental Science (APES). Additional editions were purchased until 2018. In 2020, *College Board* updated their Course and Exam Descriptions (CEDs) for science, and that adopted textbook was no longer aligned to the new elements. Since then, APES teachers have been pulling together resources from multiple places and attempting to update existing materials. Last year, two of the five APES teachers requested updated materials. After reviewing options, including purchasing updated versions of the current adopted text, the teachers identified, ***Environmental Science for the AP Course*** by Friedland and Relyea (2023, BFW), as a strong program. It was getting positive reviews from teachers outside of the district because of strong alignment to College Board's CEDs for AP Environmental Science, supplemental resources, and tools teachers could use to support students. We decided to pilot the textbook and online resource in fall 2024.

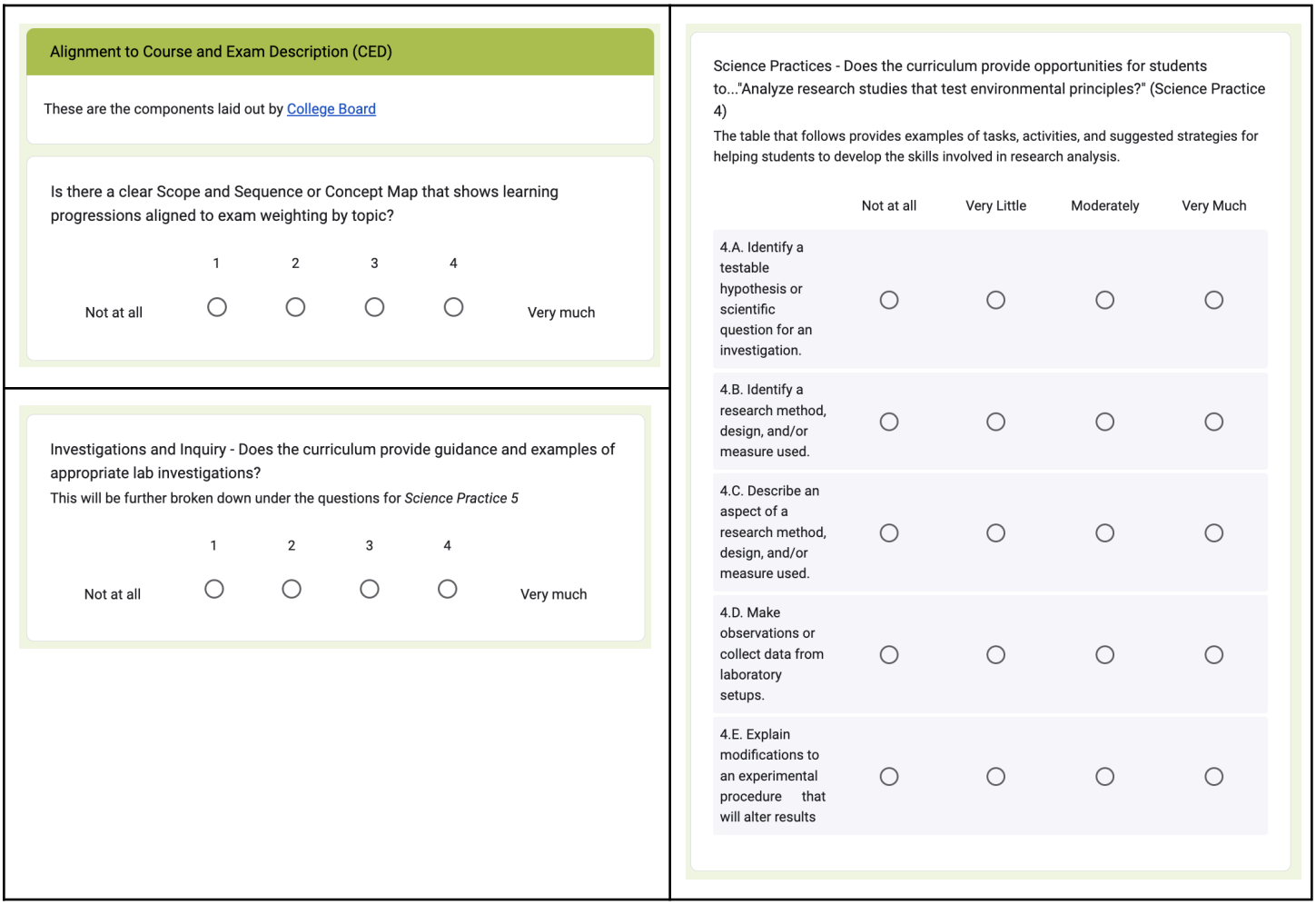
Pilot Process

AP Environmental Science (APEs) is offered across three school sites: Skyline HS, Oakland Tech, and CCPA. There are currently five teachers who have sections of APEs. The two lead teachers who initially identified the new program were provided with materials from the publisher, and all teachers were provided access to online resources, including full electronic copies of the textbook. To prepare for implementation, pilot teachers attended an online training in the summer/early fall. Throughout the pilot, they had access to support providers from the vendor and were supported by the HS Science Coordinator. In November, the pilot team convened to share progress, continued troubleshooting, and provide initial feedback around the program.

Selection Process

During the official deliberation process, teachers reviewed data from the feedback surveys that focused on: 1) Alignment to standards/framework; 2) Student Materials; and 3) Teacher Materials and Usability (*Reference Appendix B: Curriculum review and feedback survey*). Figure 1 provides a sample of The standards and framework in this context were the specific features outlined by *College Board* in their updated Course and Exam Description (*CED) for AP Environmental Science*.

Figure 1: Teacher Feedback Survey Samples



*(see **appendix B** for full survey)*

Overall, on a 4-point scale, Friedland and Relyea had a mean rating of 3.01. Teachers felt there was strong alignment to College Board CEDs and provided them with materials and guidance to support their students. The lowest mean rating was for the student facing materials (Table 2). In breaking down that factor further, it seems to be largely impacted by not having materials available in languages other than English.

Table 2: Mean rating factored on 4-point scale

	Overall	Factors		
		Alignment to Standards/framework (College Board CEDs)	Student Materials	Teacher Materials and Usability
Freidland and Relyea	**3.01**	**3.50**	**2.28***	**3.25**

** Score largely impacted by not having ready access to materials translated in different languages.*

Students were also surveyed during the pilot and were asked to rate their experiences in different areas on a similar 4-point scale (*Reference Appendix D: Student Survey).* The students had similar responses for how they gauged "interest level" of their readings and exposure to practice AP questions. Those who were in the classes where the teachers used the pilot materials rated their experience (mean value, $\bar{x}$) highest in the following factors as: Doing labs or other hands on investigations ($\bar{x}$ = 3.3); and being asked to write CERs ($\bar{x}$ = 3.5). These practices and skills are critical elements of instruction in our science courses. Student comments included the following:

- *I like the content that we learn, and that it connects to the real world.*
- *I liked learning about what are the biggest environmental impacts and how we can prevent/ mitigate them.*
- *I like the class because your able to learn more about your community and how making earth more sustainable which is something very important.*
- *I like the interactive activities and labs that we do*

The following are quotes from pilot teachers:

- *In my community of APES teachers, I have noticed that the majority of my peers are using (and enjoying) the [Freidland and Relyea] text. I trust my colleagues to make good decisions when it comes to student learning - if they're saying this text is effective and there is an opportunity to get new textbooks, why not use it ourselves?*
- *[Freidland and Relyea] is completely aligned with the redesigned AP Environmental Science curriculum content-wise, and the chapter structure follows the unit outline in the newly designed CED. The Miller text, while covering all necessary content, does not match the newly designed CED unit-by-unit. This can easily cause confusion in students.*
- *I STRONGLY recommend use of the Friedland book for AP Environmental Science as a curriculum support. It contains the most up-to-date and Collegeboard-aligned information for the APES test, as well as myriad amounts of test practice. Students cannot go wrong using this book to study.*

Final Recommendation

Our lead AP teachers represented on the survey and during deliberation recommended adopting ***Environmental Science for the AP Course*** by Friedland and Relyea. Given this feedback, the OUSD Science Department urges the Board of Education to approve the adoption of *this text* for high school AP Environmental Science (APES). Updated *College Board* requirements have been in place 4 years now, and the adoption of Friedland and Relyea would provide all high school students completing APES in Oakland the high quality AP-aligned curriculum they deserve.

Implementation Plan

Results of the pilot process will be shared with teachers and high school principals. Additional outreach can help the community gain a better understanding of how updated AP Science materials can support students to be successful on the exam and ensure connections to current issues and fields of research. This is also an opportunity to encourage more students to complete AP courses. Site team and community engagements are planned to take place during the remainder of the 2024-2025 school year.

Teachers will receive foundational training in the summer through vendor provided training, their respective AP Summer Institute, and our OUSD Standards and Equity Institute. During these sessions, teachers will develop an understanding around the AP requirements, curriculum design, receive teacher materials, and practice teaching and planning for a lesson. Ongoing training will take place throughout the year during 2nd Wednesday Professional Developments, Buy Back Days, and release days. These professional development sessions will focus on unpacking the curriculum and analyzing student work. The vendor also has office hours and online resources are built into the program to provide additional support to teachers.

Fiscal impact

There is a one-time cost for adoption materials (books, teacher materials, platform licenses) and annual workbook refill expenditures. BFW also provides professional learning. The complete purchase of Environmental Science for the AP course for 3 years is estimated to be **$114, 119.20.**

Table 3: Adoption of Environmental Science for the AP Course

One-time cost:		$69, 619.20
Workbook refills for AYs 2027 - 2028:		$11, 000
Professional learning	*OUSD Stipends*	$ 20, 500
	BFW training	$13, 000
Cost of 3-year adoption		**$114, 119.20**

Appendices:
APES Curriculum Proposal

Appendix A: College Board Course and Exam Description (CED) Excerpts

Introduction

The AP Environmental Science course outlined in this framework reflects learning that analyzes environmental concepts and processes to achieve understanding in order to propose and justify solutions to environmental problems. The course teaches students how to apply science to the solutions of important social problems. It also provides opportunities to practice applying scientific methods to practical, real-life problems.

The AP Environmental Science course provides students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course helps students identify and analyze natural and human-induced environmental problems. It enables them to learn how to assess the risks associated with these problems and evaluate alternative solutions for resolving and preventing them. To accomplish this goal, the *AP Environmental Science Course and Exam Description* defines concepts, skills, and understandings required by representative colleges and universities for granting college credit and placement.

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Course Framework Components

Overview

This course framework provides a clear and detailed description of the course requirements necessary for student success.

The course framework includes two essential components:

1 SCIENCE PRACTICES

The science practices are central to the study and practice of environmental science. Students should develop and apply the described practices on a regular basis over the span of the course.

2 COURSE CONTENT

The course content is organized into commonly taught units of study that provide a suggested sequence for the course. These units comprise the content and conceptual understandings that colleges and universities typically expect students to master to qualify for college credit and/or placement. This content is grounded in big ideas, which are cross-cutting concepts that build conceptual understanding and spiral throughout the course.

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AP ENVIRONMENTAL SCIENCE

Science Practices

Practice 1	Practice 2	Practice 3	Practice 4
Concept Explanation 1 Explain environmental concepts, processes, and models presented in written format.	***Visual Representations*** 2 Analyze visual representations of environmental concepts and processes.	***Text Analysis*** 3 Analyze sources of information about environmental issues	***Scientific Experiments*** 4 Analyze research studies that test environmental principles
SKILLS			
1.A Describe environmental concepts and processes. 1.B Explain environmental concepts and processes. 1.C Explain environmental concepts, processes, or models in applied contexts.	2.A Describe characteristics of an environmental concept, process, or model represented visually. 2.B Explain relationships between different characteristics of environmental concepts, processes, or models represented visually: ▪ In theoretical contexts ▪ In applied contexts 2.C Explain how environmental concepts and processes represented visually relate to broader environmental issues.	3.A Identify the author's claim. 3.B Describe the author's perspective and assumptions. 3.C Describe the author's reasoning (use of evidence to support a claim). 3.D Evaluate the credibility of a source *(not assessed)*: ▪ Recognize bias ▪ Scientific accuracy 3.E Evaluate the validity of conclusions of a source or research study *(not assessed)*.	4.A Identify a testable hypothesis or scientific question for an investigation. 4.B Identify a research method, design, and/or measure used. 4.C Describe an aspect of a research method, design, and/or measure used. 4.D Make observations or collect data from laboratory setups *(not assessed)*. 4.E Explain modifications to an experimental procedure that will alter results.

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2

AP ENVIRONMENTAL SCIENCE

Course Content

Based on the Understanding by Design® (Wiggins and McTighe) model, this course framework provides a clear and detailed description of the course requirements necessary for student success. The framework specifies what students must know, be able to do, and understand, with a focus on big ideas that encompass core principles and theories of the discipline. The framework also encourages instruction that prepares students for advanced environmental science coursework.

Big Ideas

The big ideas serve as the foundation of the course and allow students to create meaningful connections among concepts. They are often overarching concepts or themes that become threads that run throughout the course. Revisiting the big ideas and applying them in a variety of contexts allows students to develop deeper conceptual understanding. Below are the big ideas of the course and a brief description of each.

BIG IDEA 1: ENERGY TRANSFER (ENG)
Energy conversions underlie all ecological processes. Energy cannot be created; it must come from somewhere. As energy flows through systems, at each step, more of it becomes unusable.

BIG IDEA 2: INTERACTIONS BETWEEN EARTH SYSTEMS (ERT)
The Earth is one interconnected system. Natural systems change over time and space. Biogeochemical systems vary in ability to recover from disturbances.

BIG IDEA 3: INTERACTIONS BETWEEN DIFFERENT SPECIES AND THE ENVIRONMENT (EIN)
Humans alter natural systems and have had an impact on the environment for millions of years. Technology and population growth have enabled humans to increase both the rate and scale of their impact on the environment.

BIG IDEA 4: SUSTAINABILITY (STB)
Human survival depends on developing practices that will achieve sustainable systems. A suitable combination of conservation and development is required. The management of resources is essential. Understanding the role of cultural, social, and economic factors is vital to the development of solutions.

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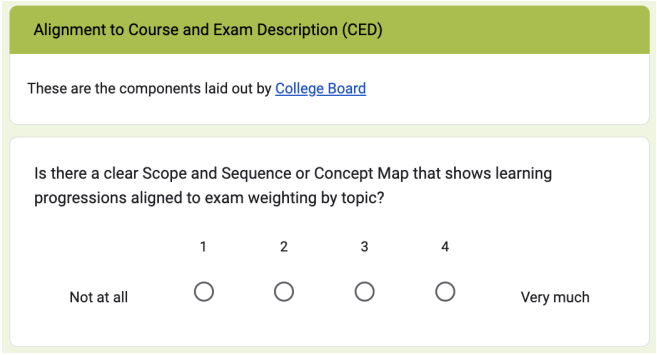
Appendix B: 2024/2025 Curriculum Review Feedback Survey

Section 1- Question 1:



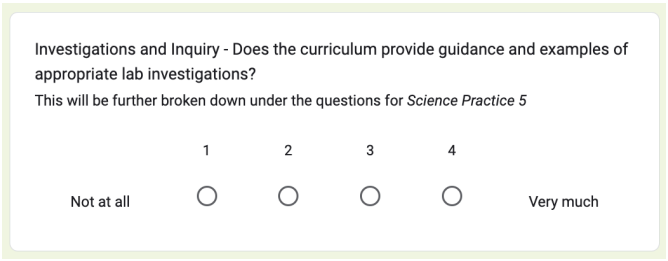
Alignment to Course and Exam Description (CED)

These are the components laid out by College Board

Is there a clear Scope and Sequence or Concept Map that shows learning progressions aligned to exam weighting by topic?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 2:



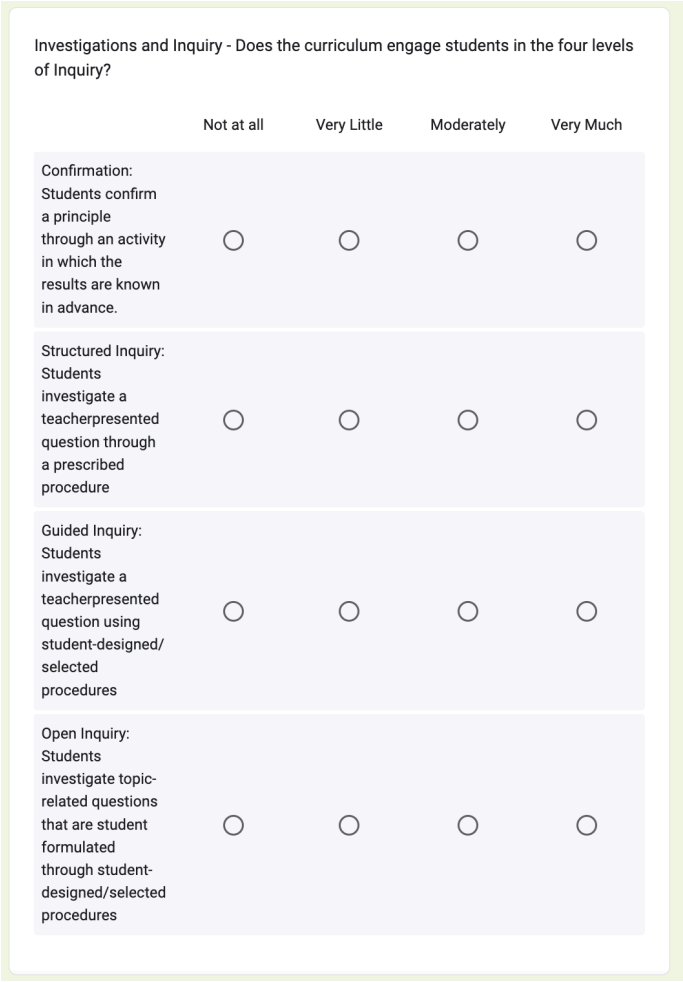
Investigations and Inquiry - Does the curriculum provide guidance and examples of appropriate lab investigations?

This will be further broken down under the questions for *Science Practice 5*

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 4:

Question 3:



Investigations and Inquiry - Does the curriculum engage students in the four levels of Inquiry?

	Not at all	Very Little	Moderately	Very Much
Confirmation: Students confirm a principle through an activity in which the results are known in advance.	○	○	○	○
Structured Inquiry: Students investigate a teacherpresented question through a prescribed procedure	○	○	○	○
Guided Inquiry: Students investigate a teacherpresented question using student-designed/ selected procedures	○	○	○	○
Open Inquiry: Students investigate topic-related questions that are student formulated through student-designed/selected procedures	○	○	○	○

Question 5:

Science Practices - Does the curriculum provide opportunities for students to..."Explain environmental concepts, processes, and models presented in written format?" (Science Practice 1)

The ability to use verbal and/or written explanations that describe environmental processes is an important learning outcome of the AP Environmental Science course. It is important to make clear the distinction between memorizing details and demonstrating an integrated understanding of how a concept or process connects to the overall function of the environment. Students should have a deep enough understanding of the overall processes to predict the effect of environmental changes on those processes and justify their prediction.

	Not at all	Very Little	Moderately	Very Much
1.A. Describe environmental concepts and/or processes.	○	○	○	○
1.B. Explain environmental concepts and/or processes.	○	○	○	○
1.C. Explain environmental concepts, processes, and/or models in applied contexts.	○	○	○	○

Question 6:

Science Practices - Does the curriculum provide opportunities for students to..."Analyze visual representations of environmental concepts and processes?" (Science Practice 2)

Visual representations are tools for learning and exploring scientific concepts and ideas. Examples of visual representations include, but are not limited to, biogeochemical cycles, food chains, food webs, trophic levels, wastewater treatment, integrated pest management, mining, maps, and soil composition diagrams.

	Not at all	Very Little	Moderately	Very Much
2.A. Describe characteristics of an environmental concept, process, or model represented visually.	○	○	○	○
2.B. Explain relationships between different characteristics of environmental concepts, processes, or models represented visually: • In theoretical contexts. • In applied contexts.	○	○	○	○
2.C. Explain how environmental concepts and processes represented visually relate to broader environmental issues.	○	○	○	○

Question 7:

Science Practices - Does the curriculum provide opportunities for students to..."Analyze sources of information about environmental issues?" (Science Practice 3)

Reading and analyzing information from a text is an important skill for students to master in the AP Environmental Science course. Considering the volume of information available on the internet, it is important that students can evaluate the validity and credibility of written text in order to make informed decisions about the solutions for environmental problems.

	Not at all	Very Little	Moderately	Very Much
3.A. Identify the author's claim.	○	○	○	○
3.B. Describe the author's perspective and assumptions.	○	○	○	○
3.C. Describe the author's reasoning (use of evidence to support a claim).	○	○	○	○
3.D. Evaluate the credibility of a source: • Recognize bias • Scientific accurac	○	○	○	○
3.E. Evaluate the validity of conclusions of a source or research study.	○	○	○	○

Science Practices - Does the curriculum provide opportunities for students to..."Analyze research studies that test environmental principles?" (Science Practice 4)

The table that follows provides examples of tasks, activities, and suggested strategies for helping students to develop the skills involved in research analysis.

	Not at all	Very Little	Moderately	Very Much
4.A. Identify a testable hypothesis or scientific question for an investigation.	○	○	○	○
4.B. Identify a research method, design, and/or measure used.	○	○	○	○
4.C. Describe an aspect of a research method, design, and/or measure used.	○	○	○	○
4.D. Make observations or collect data from laboratory setups.	○	○	○	○
4.E. Explain modifications to an experimental procedure that will alter results	○	○	○	○

Question 8:

Question 9:

Science Practices - Does the curriculum provide opportunities for students to..."Apply quantitative methods to address environmental concepts ?" (Science Practice 6)

The table that follows provides examples of questions, activities, and suggested strategies for helping students to develop the skills involved in the application of quantitative methods.

	Not at all	Very Little	Moderately	Very Much
6.A. Determine an approach or method aligned with the problem to be solved.	○	○	○	○
6.B. Apply appropriate mathematical relationships to solve a problem, with work shown (e.g., dimensional analysis).	○	○	○	○
6.C. Calculate an accurate numeric answer with appropriate units.	○	○	○	○

Science Practices - Does the curriculum provide opportunities for students to..."Analyze and interpret quantitative data represented in tables, charts, and graphs?" (Science Practice 5)

Students should be able to analyze data collected from an experimental procedure or from a given source to determine whether the data support or do not support a conclusion or hypothesis. They should be able to construct a graph based on the collected data and use the graph to formulate statements, conclusions, and possibly a hypothesis. Alternatively, students can draw conclusions from a provided data set. Students should also assess the validity of experimental evidence.

	Not at all	Very Little	Moderately	Very Much
5.A. Describe patterns or trends in data.	○	○	○	○
5.B. Describe relationships among variables in data represented.	○	○	○	○
5.C. Explain patterns and trends in data to draw conclusions.	○	○	○	○
5.D. Interpret experimental data and results in relation to a given hypothesis.	○	○	○	○
5.E. Explain what the data implies or illustrates about environmental issues.	○	○	○	○

Question 10:

Other comments/questions:

Science Practices - Does the curriculum provide opportunities for students to..."Propose and justify solutions to environmental problems?" (Science Practice 7)

Students should be able to write and evaluate scientific descriptions, explanations, and theories that describe environmental phenomena and processes. They should also be able to call upon current knowledge and historical experiments and draw inferences from their explorations to justify claims with evidence. In addition, the ability to analyze, interpret, and make predictions from a model or the data obtained in an experiment is essential, as is the ability to justify the reasoning for a prediction and/or an explanation. It is also important that they be able to evaluate the merits of alternative scientific explanations or conclusions.

	Not at all	Very Little	Moderately	Very Much
7.A. Describe environmental problems.	○	○	○	○
7.B. Describe potential responses or approaches to environmental problems.	○	○	○	○
7.C. Describe disadvantages, advantages, or unintended consequences for potential solutions.	○	○	○	○
7.D. Use data and evidence to support a potential solution.	○	○	○	○
7.E. Make a claim that proposes a solution to an environmental problem in an applied context.	○	○	○	○
7.F. Justify a proposed solution, by explaining potential advantages.	○	○	○	○

Prev

Section 2 - Question 1

Student Materials

Do the learning experiences allow for and support student access to information and expression of understanding in multiple ways?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 2

Are student materials available in languages other than English?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 3

Question 4

Are there multiple entry points in which students can engage with the materials, (i.e. are there videos, visual organizers, or UDL adaptations that support student learning)?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Does the curriculum include guidance for scaffolds to support students who may need them to access the content?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 5

Does the curriculum provide practice exams/problems aligned to current format and weighting of topic and question type?

	Not at all	Very little	Moderately	Very much
Multiple choice	○	○	○	○
Free response questions	○	○	○	○

Other comments/questions

Section 3 - Question 1

Teacher Materials and Usability

Are the teacher materials (print and digital) user-friendly and easy to navigate?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 2

Do teacher guides include information about safety and material preparation?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 3

Are the teacher materials available in languages other than English?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 4

Was the provided training sufficient to support implementation of the curriculum?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Question 5

Were there opportunities to follow-up with a trainer or support provider while implementing the curriculum?

	1	2	3	4	
Not at all	○	○	○	○	Very much

Adobe A

Other comments/questions

Appendix C - Pilot Teacher Roster

School Site	Teacher	Classes	Notes
Oakland Tech	Joseph Senn	AP Environmental Science	
Skyline HS	Luis Huertas	AP Environmental Science; Senior Capstone	
Oakland Tech	Peter Leahey	AP Environmental Science, Envrinmental Science, Physcis	Received and reviewed materials; did not fully test or pilot
CCPA	Emily Novick	AP Envrionmental Science, Chemistry	
CCPA	Stella Ray	AP Environmental Science, Chemistry	

Appendix D: [Student Feedback Survey]

Would you recommend that other students take this class?

	1	2	3	4	
Strongly DO NOT Recommend	○	○	○	○	Strongly Recommend

What do you like the MOST about the class?

Short answer text

What do you like the LEAST about the class?

Short answer text

Textbook and reading materials

These questions focus more on the readings that are assigned for this class.

The assigned readings are interesting

	1	2	3	4	
Not at all	○	○	○	○	Very much

When you are assigned readings, about how much do you actually read through?

- ○ I don't read
- ○ 25% or less
- ○ 50%
- ○ 75% or more
- ○ ALL of it

About how long does it take you to get through the assigned reading/chapter?

- ○ I don't read
- ○ Less than an hour
- ○ 1 - 2 hours
- ○ more than 2 hours

How often do you do the following?

Description (optional)

I am asked to read chapters or other text about important Environmental Science topics

The final section of the survey has more questions about the readings specifically

	1	2	3	4	
Not at all	○	○	○	○	Very often

I do labs or other hands-on investigations.

	1	2	3	4	
Not at all	○	○	○	○	Very often

I am asked to write *explanations, arguments, and claims that based on evidence and data.*

	1	2	3	4	
Not at all	○	○	○	○	Very often

I get to do practice AP test problems or full exams.

	1	2	3	4	
Not at all	○	○	○	○	Very often

Final thoughts

Description (optional)

Anything else you would like to share about your class or things that were asked in this survey?

Short answer text

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Email: highschool@mpsvirginia.com / Phone: (540) 672-7744

30 COPIES USED IN PILOT, ONLY SHIP 200 TEXTBOOKS BUT BILL FOR FULL 230 COPIES

Quote Number	00118497	Prepared By	Katrina Torres
Created Date	12/16/2024	Phone	(845) 337-8286
		Email	ktorres@bfwpub.com
Contact Name	Chris Junsay	Ship To	Oakland Unified School District Attn: STEM office, Chris Junsay 900 High Street Oakland, California 94601 United States
Bill To	Oakland Unified School District Attn: Accounts Payable 900 High Street Oakland, California 94601 United States		

Itemized Products

ISBN	EAN	Product	Edition	Author	Line Item Description	Sales Price	Quantity	Total Price
1319409288	9781319409289	Environmental Science for the AP® Course	4	Andrew Friedland;Rick Relyea		USD 160.98	230.00	USD 37,025.40
1319582486	9781319582487	Achieve for Environmental Science for AP® (Eight-Use Online; Add-On)	4	Andrew Friedland;Rick Relyea	#packageprice	USD 56.00	230.00	USD 12,880.00
1319582494	9781319582494	Achieve for Environmental Science for AP® (Eight-Use Online)	4	Andrew Friedland;Rick Relyea		USD 184.98	70.00	USD 12,948.60
1319533884	9781319533885	Strive for a 5: Preparing for the AP® Environmental Science Exam	4	Andrew Friedland;Rick Relyea	#packageprice	USD 15.00	230.00	USD 3,450.00

Itemized Product Total: USD 66,304.00

Free Product: Please include in your PO:

ISBN	EAN	Free Product	Edition	Author	Net Price	Quantity	Your Price
1319475426	9781319475420	Teacher's Edition with Online Teacher Resources for Environmental Science for the AP® Course	4	Andrew Friedland;Rick Relyea	USD 495.98	10	$0.00
131957517X	9781319575175	Test Bank for Environmental Science for the AP® Course	4	Andrew Friedland;Rick Relyea	USD 495.98	10	$0.00

Total Available for Purchase USD 0.00

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Shipping Location Continental US and Puerto Rico

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Special Shipping Fees:	USD 0.00
Total Shipping Fees:	USD 3,315.20

Grand Totals

Itemized Products + Shipping Fees:	USD 69,619.20

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Email: highschool@mpsvirginia.com / Phone: (540) 672-7744

Environmental Science for the AP Course 4e

Quote Number	00118855	Prepared By	Katrina Torres
Created Date	12/19/2024	Phone	(845) 337-8286
		Email	ktorres@bfwpub.com
Contact Name	Chris Junsay	Ship To	Oakland Unified School Dist 1025 2nd Ave Oakland, California 94606-2296 United States
Bill To	Oakland Unified School Dist 1025 2nd Ave Oakland, California 94606-2296 United States		

Itemized Products

ISBN	EAN	Product	Edition	Author	Sales Price	Quantity	Total Price
1319218040	9781319218041	Half Day On Campus Workshop (High School; Content Expert)	1	Professional Development	USD 6,000.00	1.00	USD 6,000.00
1319545726	9781319545727	Implementation Training (High School; Virtual)	1	Professional Development	USD 0.00	1.00	USD 0.00

Itemized Product Total: USD 6,000.00

Total Available for Purchase USD 0.00

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Shipping Location No Shipping

Shipping Fees: USD 0.00
Special Shipping Fees: USD 0.00
Total Shipping Fees: USD 0.00

Grand Totals

Itemized Products + Shipping Fees: USD 6,000.00

Instructor Resources

Digital Adopters: Instructor resources will be available within your product; no action needed
Print Only Adopters: Instructor resources can be unlocked by visiting www.bfwpub.com/AdopterTRM

Digital Subscription Terms

Attachment B:
High School AP Environmental Science (APES)
Budget Proposal for Instructional Materials

Oakland Unified School District

February 2025

Summary Table: Years 1-3, 2025-2028

Year	Summary of Materials to be Purchased	Costs
2025-26	Achieve portal Teacher Licenses Achieve portal Student Licenses Digital and print full-length APES texts Print student workbooks	**$69619.20**
2026-27	Student workbooks	**$5500**
2027-28	Student workbooks	**$5500**
	TOTAL =	**$80619.20**

Budget Proposal for 2025-26

AP Environmental Science BFW Curriculum Implementation			
Instructional Material	**Quantity**	**Price per unit**	**Total Cost**
Student textbooks (class sets)	230	$160.98	$37025.40
Student workbooks	230	$15.00	$3450
Online access (student portal)	230	$56.00	$12880
Online Access - (multi-year teacher portal)	70	$184.98	$12948.60
		SUB TOTAL	**$66304.00**
Estimated Tax + Shipping	1	-	$3315.20
		2025-26 TOTAL	**$69619.20**

Budget Proposal for 2026 - 2027

AP Environmental Science BFW Curriculum Implementation			
Instructional Material	**Quantity**	**Price per unit**	**Total Cost**
Student workbooks	275	$20	$5500
		2026-27 TOTAL	**$5500**

Budget Proposal for 2027 - 2028

AP Environmental Science BFW Curriculum Implementation			
Instructional Material	**Quantity**	**Price per unit**	**Total Cost**
Student workbooks	275	$20	$5500
		2027-28 TOTAL	**$5500**

Attachment C:
High School AP Environmental Science (APES) Budget Proposal for Ongoing Professional Learning

Oakland Unified School District

February 2025

Summary Table: Years 1-3, 2025 - 2028

Year	Summary of Professional Learning Offerings	Costs
2025-26	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training Monthly 2nd Wednesday Series September & January PD Days	**$13, 500** **(includes $6000 cost for BFW training)**
2026-27	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training Monthly 2nd Wednesday Series September & January PD Days	**$10, 000** **(includes $3500 cost for BFW training)**
2027-28	BFW professional Learning Standards & Equity Institute Foundational Curriculum Training Monthly 2nd Wednesday Series September & January PD Days	**$10, 000** **(includes $3500 cost for BFW training)**
	Cost for direct BFW Training	**$13, 000**
	OUSD costs for teacher stipends	**$20, 500**
	TOTAL =	**$33, 500**

Budget Proposal for 2025 - 2026

Professional Learning	Purpose	Quantity	Price per unit	Total Cost
July/August 2025: Focused Curriculum training	Prepare APES teachers to implement the BFW curriculum in 2025-26; technical + instructional support	1 session 5 Teachers	$6000/session + 1500 Teacher Stipends: $50/hour x 6 hrs = $300 per person	$7500 ($6000 BFW cost)
July/August 2025: Training embedded in 9-12 Standards & Equity Institutes	Prepare APES teachers to implement BFW curriculum in 2025-26 with fundamental mindsets and practices that will support their implementation of curriculum in future years.	5 teachers	**Teacher Stipends** + **cost of PL facilitators** **These costs are already reflected in annual planning for summer Standards and Equity institutes.*	$6000
Professional Learning Days in September and January: Cross-site collaboration facilitated by HS Science Coordinator	Backwards plan units and lessons. Engage in shared learning around instructional routines to foster student discourse, equitable participation, and AP prep	5 teachers and leads	$0	$0
2024 - 25: Monthly 2nd Weds Sessions	Best practices that support curriculum implementation.	5 teachers and leads	$0	$0
			TOTAL	**$13, 500**

Budget Proposal for 2026-27

Professional Learning	Purpose	Quantity	Price per unit	Total Cost
July/August 2026: Focused Curriculum training	Follow-up with APES teachers to implement the BFW curriculum in 2026-27; technical + instructional support	1 session 5 Teachers	$3500/session + 500 Teacher Stipends: $50/hour x 2 hrs = $100 per person	$4000 ($3500 BFW cost)
July/August 2025: Training embedded in 9-12	Prepare Biology teachers to implement LabAids curriculum in 2024-25. Prepare grades	5 teachers	**Teacher Stipends** + **cost of PL facilitators**	$6000

Standards & Equity Institutes	chemistry teachers with fundamental mindsets and practices that will support their implementation of curriculum in future years.		**These costs are already reflected in annual planning for summer Standards and Equity institutes.*	
Professional Learning Days in September and January: Cross-site collaboration facilitated by HS Science Coordinator	Backwards plan units and lessons. Engage in shared learning around instructional routines to foster student discourse, equitable participation, and AP prep	5 teachers and leads	$0	$0
2024 - 25: Monthly 2nd Weds Sessions	Best practices that support curriculum implementation.	5 teachers and leads	$0	$0
			TOTAL	**$10, 000**

Budget Proposal for 2027-28

Professional Learning	Purpose	Quantity	Price per unit	Total Cost
July/August 2026: Focused Curriculum training	Follow-up with APES teachers to implement the BFW curriculum in 2026-27; technical + instructional support	1 session 5 Teachers	$3500/session + 500 Teacher Stipends: $50/hour x 2 hrs = $100 per person	$4000 ($3500 BFW cost)
July/August 2025: Training embedded in 9-12 Standards & Equity Institutes	Prepare Biology teachers to implement LabAids curriculum in 2024-25. Prepare grades chemistry teachers with fundamental mindsets and practices that will support their implementation of curriculum in future years.	5 teachers	**Teacher Stipends** + **cost of PL facilitators** **These costs are already reflected in annual planning for summer Standards and Equity institutes.*	$6000
Professional Learning Days in September and January: Cross-site collaboration facilitated by HS Science Coordinator	Backwards plan units and lessons. Engage in shared learning around instructional routines to foster student discourse, equitable participation, and AP prep	5 teachers and leads	$0	$0
2024 - 25: Monthly 2nd Weds Sessions	Best practices that support curriculum implementation.	5 teachers and leads	$0	$0

TOTAL	**$10, 000**