Individual State Agency Fiscal Note

Bill Number: 2341 HB	Title: Offshore wind dev. study	Agency: 360-University of Washington

Part I: Estimates

☐ **No Fiscal Impact**

Estimated Cash Receipts to:

NONE

Estimated Operating Expenditures from:

	FY 2024	FY 2025	2023-25	2025-27	2027-29
FTE Staff Years	7.8	10.1	9.0	0.0	0.0
Account					
General Fund-State 001-1	0	976,320	976,320	1,150,000	0
Total $	0	976,320	976,320	1,150,000	0

Estimated Capital Budget Impact:

NONE

The cash receipts and expenditure estimates on this page represent the most likely fiscal impact. Factors impacting the precision of these estimates, and alternate ranges (if appropriate), are explained in Part II.

Check applicable boxes and follow corresponding instructions:

☒ If fiscal impact is greater than $50,000 per fiscal year in the current biennium or in subsequent biennia, complete entire fiscal note form Parts I-V.

☐ If fiscal impact is less than $50,000 per fiscal year in the current biennium or in subsequent biennia, complete this page only (Part I).

☐ Capital budget impact, complete Part IV.

☐ Requires new rule making, complete Part V.

Legislative Contact:	Robert Hatfield	Phone: 360-786-7117	Date: 01/14/2024
Agency Preparation:	Alexis Rinck	Phone: 2066858868	Date: 01/18/2024
Agency Approval:	Jed Bradley	Phone: 2066164684	Date: 01/18/2024
OFM Review:	Ramona Nabors	Phone: (360) 742-8948	Date: 01/22/2024

Part II: Narrative Explanation

II. A - Brief Description Of What The Measure Does That Has Fiscal Impact

Significant provisions of the bill and any related workload or policy assumptions that have revenue or expenditure impact on the responding agency by section number.

Section 1 of HB 2341 directs the UW School of Oceanography to study cumulative effects of offshore wind generation on the oceanographic processes of the Pacific Ocean.

Section 2 of HB 2341 defines this study to be "a comprehensive scientific study on the cumulative effects, both positive and negative, of offshore wind development on oceanographic processes such as tides, waves, and currents, and in turn how changes in those processes could affect the broader marine ecosystem." The bill goes on to note that the comprehensive study must include, at a minimum:
(a) The impact that full projected build-out of offshore wind generation along the western coast of the United States is likely to have on ocean upwelling;
(b) The capacity for offshore wind turbines to both attract and repel fish and marine life; and
(c) The physical effects associated with wind turbine construction and operation, including water cloudiness, noise, vibrations, and disruptions to electromagnetic fields.

The UW study would be due to the legislature by June 30, 2026.

II. B - Cash receipts Impact

Cash receipts impact of the legislation on the responding agency with the cash receipts provisions identified by section number and when appropriate, the detail of the revenue sources. Description of the factual basis of the assumptions and the method by which the cash receipts impact is derived. Explanation of how workload assumptions translate into estimates. Distinguished between one time and ongoing functions.

II. C - Expenditures

Agency expenditures necessary to implement this legislation (or savings resulting from this legislation), with the provisions of the legislation that result in the expenditures (or savings) identified by section number. Description of the factual basis of the assumptions and the method by which the expenditure impact is derived. Explanation of how workload assumptions translate into cost estimates. Distinguished between one time and ongoing functions.

For the purposes of this analysis, Sections 1 and 2 of this bill have the same financial impact and are not separated out since they both effectively direct the UW School of Oceanography to conduct a scientific study. Section 2 provides details on the minimum requirements of the study.

This fiscal note describes the UW expenditures necessary to implement a responsive (but not exhaustive) study that would 1) include a literature review, modeling, and synthesis, and 2) be achievable within the 2-year period defined by the bill (i.e., July 1, 2024 – June 30, 2026). A more comprehensive study that would validate the modeling through actual observations and include community and societal impacts could be considered with additional time and resources. Establishing a baseline dataset of 1-2 years and regional-scale monitoring, should off-shore wind development occur, will also be critical in assessing any impacts on oceanographic processes and the broader marine ecosystem since so little is known about some potential impacts. There are a number of existing, federally-supported monitoring efforts off of the west coast of the United States that could be leveraged with a modest investment of state resources to support this work.

In addition, it should be noted that ocean circulation and biogeochemical models used by the University of Washington only go to the Oregon-California border and so the request to evaluate "The impact that full projected build-out of offshore wind generation along the western coast of the United States" is beyond the scope of what can be done within the 2-year window provided by this bill.

The dynamics of physical and biological systems in off-shore marine ecosystems are complicated and are fundamentally interconnected. As a result, the ecosystem-wide impacts of installing and operating off-shore wind energy systems, a relatively new phenomenon, are poorly understood. The study has been broken into 9 inter-connected research themes that would collectively address the cumulative effects, both positive and negative, of offshore wind development on

oceanographic processes such as tides, waves, and currents, and in turn how changes in those processes could affect the broader marine ecosystem. They include:

1. Physical processes (ocean) – changes in coastal circulation, stratification, mixing, upwelling, ocean temperatures
2. Physical processes (atmosphere/ocean) – high-resolution forecasts of wind and wave fields at the air-sea interface for ocean modeling with wind-induced wave breaking/dissipation on coastal ocean circulation
3. Physical processes (geophysical) – changes in sediment transport, sediment resuspension, particle motion, turbidity, and substrate vibration
4. Biogeochemical processes – changes in chemical and biological fields, like sediment carbon content, dissolved oxygen, and ocean acidification properties like pH that can influence biological activity in both the ocean and on the sea bed
5. Primary biological processes – nutrient availability for primary productivity due to changes in physical and biochemical processes as well as the zooplankton distribution, abundance, and species composition due to changes in physical processes and phytoplankton community, along with potential impacts on biological energy transfer through the ecosystem
6. Fisheries – changes in distribution (including attraction and repulsion), abundance, and species composition of fish due to construction activities and subsequent biophysical processes, noise, vibration, and electromagnetic fields, as well as the potential displacement of fishing activities into other areas
7. Shellfish – changes in distribution, abundance, and species composition of shellfish due to construction activities and subsequent biophysical processes, noise, electromagnetic fields
8. Marine mammals – changes in distribution (including attraction and repulsion), abundance, and species composition of marine mammals due to possible changes in biophysical processes, effects on marine mammals from due to construction activities, displacement of essential activities due to the presence of wind turbines, and associated moorings/support structures, possible entanglement in mooring lines.
9. Birds – changes in distribution (including attraction and repulsion), abundance, and species composition due to construction activities, and subsequent biophysical processes, noise, electromagnetic fields, and impact.

SALARIES AND WAGES

We estimate that the work would require the following for the UW:

6.75 FTE Postdoc/RSE in FY25 and 9 FTE Postdoc/RSE in FY26 (annual salary: $98,080 benefits rate: 22.6%). 9 Postdocs would be assigned to work on one of the 9 aforementioned research areas.

- In FY25, work by the Postdocs will commence in the beginning of Q2, translating to 6.75FTE for the 9 positions.
- In FY26, each of the 9 Postdocs will be full-time, translating to 9FTE.

0.75 FTE Senior Research Scientist (annual salary: $168,000 benefits rate: 30.0%). About a month of Senior Research Scientist time each year for 9 different scientists will be spent directing the work of each of the 9 Postdoc positions to support research efforts, translating to 9 months of work in FY25 and FY 26.

0.33 FTE Project Manager (annual salary:120,000 benefits rate: 30%) in FY25 and FY26. The Project Manager will coordinate and integrate the work of the research teams as well as organize and facilitate each of the workshops.

GOODS AND SERVICES

In addition, the overarching study will require:

- FY25 only, $27,000 allocated towards the purchase of computers for the 9 postdoc positions ($3000 each).
- FY25 only, $22,000 for computational resources for ecosystem modeling, primarily hardware like GPUs.
- FY26 only, $2,000 for computational resources for ecosystem modeling, primarily data storage and computing time.
- FY25 and FY26, $20,000 each year for two workshops (four total) to understand the possible scenarios of off-shore wind energy development off of the western coast of the United States and other key study parameters, collectively define and refine the scope of the study and points of integration, enable the research teams to interact with each other and regional and national experts, and synthesize the findings.

TRAVEL

- In FY25 and FY26, $10,000 each year travel support for research scientists to interact with regional colleagues (e.g.,

federal government, tribal governments, state agency scientists) and conduct briefings/project updates.

• In FY25 and FY26, $20,000 each year to support travel for regional and national experts to participate in the two workshops (four total).

Part III: Expenditure Detail

III. A - Operating Budget Expenditures

Account	Account Title	Type	FY 2024	FY 2025	2023-25	2025-27	2027-29
001-1	General Fund	State	0	976,320	976,320	1,150,000	0
		Total $	0	976,320	976,320	1,150,000	0

III. B - Expenditures by Object Or Purpose

	FY 2024	FY 2025	2023-25	2025-27	2027-29
FTE Staff Years	7.8	10.1	9.0		
A-Salaries and Wages		705,600	705,600	885,600	
B-Employee Benefits		171,720	171,720	212,400	
C-Professional Service Contracts					
E-Goods and Other Services		69,000	69,000	22,000	
G-Travel		30,000	30,000	30,000	
J-Capital Outlays					
M-Inter Agency/Fund Transfers					
N-Grants, Benefits & Client Services					
P-Debt Service					
S-Interagency Reimbursements					
T-Intra-Agency Reimbursements					
9-					
Total $	0	976,320	976,320	1,150,000	0

III. C - Operating FTE Detail: *List FTEs by classification and corresponding annual compensation. Totals need to agree with total FTEs in Part I and Part IIIA*

Job Classification	Salary	FY 2024	FY 2025	2023-25	2025-27	2027-29
Postdoctoral Scholar/Research Scientist		6.8	9.0	7.9		
Project Manager		0.8	0.8	0.8		
Senior Research Scientist		0.3	0.3	0.3		
Total FTEs		7.8	10.1	9.0		0.0

III. D - Expenditures By Program (optional)

NONE

Part IV: Capital Budget Impact

IV. A - Capital Budget Expenditures

NONE

IV. B - Expenditures by Object Or Purpose

NONE

IV. C - Capital Budget Breakout

Acquisition and construction costs not reflected elsewhere on the fiscal note and description of potential financing methods.

NONE

IV. D - Capital FTE Detail: *FTEs listed by classification and corresponding annual compensation. Totals agree with total FTEs in Part IVB.*

NONE

Part V: New Rule Making Required

Provisions of the bill that require the agency to adopt new administrative rules or repeal/revise existing rules.