INVITATION TO BID

ITB Number:	**P203309090CH**
ITB Title:	**Dynamometer for Testing Marine Energy Systems**
Submittal Email:	**bids@oregonstate.edu**

INTRODUCTION

Procurement, Contracts and Materials Management is seeking responsive responsible bidders to submit bids for a high-torque motor/generator testbed for testing marine energy Power Take Off systems.

SCHEDULE OF EVENTS

Issue Date:	July 23, 2025 (10:00 am, PT)
Question Deadline:	August 6, 2025 (10:00 am, PT)
Closing:	**August 20, 2025 (10:00 am, PT)**

OSU ADMINISTRATIVE CONTACT

Name:	Cassandra Hurd
Title:	Purchasing Analyst
E-Mail:	cassandra.hurd@oregonstate.edu

Procurement, Contracts and Materials Management (PCMM) at Oregon State University (OSU) is the issuing office and is the sole point of contact for this Invitation to Bid (ITB). Address all concerns or questions regarding this ITB to the OSU Administrative Contact identified above.

I. GENERAL

1. BACKGROUND:

The Wallace Energy Systems and Renewables Facility (WESRF) at Oregon State University serves as a testing center for marine energy technology developers, as part of the Pacific Marine Energy Center (PMEC). The US Department of Energy is funding research and infrastructure development for WESRF and PMEC to develop a testbed for testing rotary Power Take Off systems used in ocean wave energy and marine current turbines. The testbed will be mainly utilized by independent marine energy technology developers that use WESRF for testing and validation.

Ocean wave energy applications are generally characterized by high-torque and low-speeds in oscillatory motion. That is, rotation in one direction, then a reversal and rotation in the other direction, often with a reversal every few seconds (depending on the wave climate being emulated). Marine current turbines – which function in a manner similar to wind turbines -- are characterized by unidirectional rotation, with torque and speed variations in accordance with turbulence or variations in the overall flow. The testbed needs to reproduce these torques and speeds.

The testbed will be able to provide oscillatory torque or speed inputs to an unspecified client PTO for PTO testing and development. The role of the testbed is to replicate shaft torques and speeds in a lab environment that would be produced by hydrodynamic forces for a field deployment of a marine energy Power Take Off system. The testbed will be capable of two operating conditions: bidirectional (oscillating) rotation, and unidirectional rotation. In bidirectional mode, the peak shaft torque is 20 kNm and the peak speed is 15 RPM. In unidirectional model, the peak shaft torque is 2 kNm and the peak speed is 150 RPM.

2. OREGON STATE UNIVERSITY:

Founded in 1868 as Oregon's land grant institution, OSU serves the state, the nation, and the world as a premier 21st-century research university. OSU is committed to exceptional research, discovery, innovation, and engagement – and to integrating its research and engagement mission with the delivery of a high-quality, globally relevant, and affordable education for the people of Oregon and beyond. OSU is one of only three land, sea, space and sun grant universities in the U.S. and is the only university in Oregon to have earned both Carnegie Classifications for Very High Research Activity and Community Engagement.

Through its centers, institutes, Extension offices and Experiment Stations, OSU has a presence in all of Oregon's 36 counties, including its main campus in Corvallis, the Hatfield Marine Sciences Center in Newport and OSU-Cascades Campus in Bend. OSU offers undergraduate, master's and doctoral degrees through 11 academic colleges

enrolling more than 35,000 students from every county in Oregon, every state in the country and more than 105 nations.

OSU's 570-acre main campus is in the city of Corvallis, a vibrant college town of nearly 58,000 in the heart of Western Oregon's Willamette Valley. The campus is located within the traditional homelands of the Mary's River or Ampinefu Band of Kalapuya. Following the Willamette Valley Treaty of 1855 (Kalapuya etc. Treaty), Kalapuya people were forcibly removed to reservations in Western Oregon. Today, living descendants of these people are a part of the Confederated Tribes of Grand Ronde Community of Oregon and the Confederated Tribes of the Siletz Indians.

3. TERMS AND CONDITIONS:

Contracts resulting from this ITB are subject to the applicable OSU standard terms and conditions, unless otherwise specified.

4. APPLICABLE REGULATIONS / JURISDICTION AND VENUE:

This ITB is subject to the applicable provisions and requirements of the Oregon Revised Statutes, Oregon Administrative Rules, and OSU Standards and Policies. OSU Standards 03-010 and 03-015 govern OSU's procurement activities. In case of confusion or dispute of a word or term used in this ITB, the definitions included in OSU Standards 03-010 and 03-015 control.

This ITB, and any dispute arising out of this ITB, shall be construed in accordance with, and governed by, the laws of the State of Oregon. Any other action to enforce any provision of this ITB or to obtain any relief from or remedy in connection with this ITB may be brought only in the Circuit Court of Oregon for Benton County.

II. INSTRUCTIONS TO BIDDERS

1. COMMUNICATIONS DURING BID PROCESS:

Bidders are prohibited from communicating about this ITB or award of a new contract with OSU employees, other than the OSU Administrative Contact, or any party in a position to create an advantage for the bidder or disadvantage for other bidders. This restricted period of communication begins on the date the ITB is issued and ends with the conclusion of the appeal period following notice of intent to award. This restriction does not apply to communications during a pre-bid conference or other situations where the OSU Administrative Contact is present. A bidder who intentionally violates this requirement or otherwise benefits from such a violation by another party may have its bid rejected due to failing to comply with all prescribed solicitation procedures.

2. QUESTIONS:

Questions about this ITB must be sent via email and received by the OSU Administrative Contact no later than the question deadline indicated in the Schedule of Events on the first page of this ITB. OSU will consider all timely submitted questions and if appropriate either amend the ITB or answer questions through an addendum. Questions should be clearly marked with the ITB Number and Title.

3. ADDENDA:

Only documents issued as written addenda by PCMM serve to change the ITB in any way. No other direction, written or verbal, serves to change the ITB. Addenda will be publicized on the OSU bid opportunities website. Bidders are advised to consult the OSU bid opportunities website prior to submitting a bid to ensure that all relevant addenda have been incorporated into their bid. Bidders are not required to submit addenda with their bid however, bidders are responsible for obtaining and incorporating any changes made by addenda into their bid. Failure to do so may make the bid non-responsive, which in turn may cause the bid to be rejected.

4. SIGNATURE:

Any submittals that require signature must be signed, in ink or electronically, by an authorized representative with authority to bind the bidder. Bidder's signature certifies that the bidder has read, fully understands, and agrees to be bound by the ITB and all exhibits and addenda to the ITB.

5. PUBLIC RECORD:

Upon completion of the ITB process, information in all bids will become subject records that can be disclosed under Oregon Public Records Law. Oregon Revised Statute 192.345 contains exemptions from disclosure including "trade secrets", which may include, but are not limited to: any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented, which is known only to certain individuals within an organization and which is used in a business it conducts, having actual or potential commercial value, and which

gives its user an opportunity to obtain a business advantage over competitors who do not know or use it. NOTE: Price is NOT a trade secret.

If a bid contains "trade secrets" the bidder must only mark those sections of the bid with the words "TRADE SECRET" prior to, and at the end of, the trade secret information; *provided*, that such mark shall not be sufficient to make any information a "trade secret.". Only bona fide "trade secrets" may be exempt and only if public interest does not require disclosure. Marks or claims that the entirety of a bid is "trade secret" or "confidential" WILL RESULT IN NONE OF THE BID BEING TREATED AS SUCH.

6. SUBMISSION:

Bidders must submit their bid as attachment(s) in an e-mail sent to the bids@oregonstate.edu email address. Electronic versions must be sized appropriately for transfer (under 150 mb per email.) Multiple emails may be sent to submit bid attachments as necessary. Bids must be received, in their entirety, by PCMM no later than the closing date and time indicated in the Schedule of Events on the first page of this ITB. The e-mail subject line must contain the ITB number and ITB title. It is the bidder's responsibility to ensure that the bid is received prior to the closing date and time. Only those bids received at the bids@oregonstate.edu email address by the closing date and time will be considered responsive. Do not e-mail a copy of the bid to any other OSU e-mail addresses.

It is highly recommended that the bidder confirms receipt of the email with the OSU Administrative Contact noted in this ITB. The OSU Administrative Contact may verify receipt but will NOT verify the integrity of the attachment(s), answer questions related to the content of the bid or address the overall responsiveness of the bid.

7. MODIFICATION:

Modification of a bid after submittal but prior to closing may be completed by submitting a written notice indicating the modifications and a statement that the modification amends and supersedes the prior bid. After closing, bidders may not modify their bid.

8. WITHDRAWALS:

A bidder may withdraw their bid by submitting a written notice to the OSU Administrative Contact prior to the closing date and time. The written notice must be on the bidder's letterhead and signed by an authorized representative of the bidder.

9. LATE SUBMITTALS:

Bids and written notices of modification or withdrawal must be received no later than the closing date and time. For purposes of this ITB, the official date and time is the date and time that the email is received at the bids@oregonstate.edu email address. OSU may not accept or consider late bids, modifications, or withdrawals except as permitted in OSU Standard 03-015, Sec 5.9. Sole responsibility rests with the bidder to ensure OSU's

receipt of its bid prior to closing. OSU shall not be responsible for any delays or misdeliveries caused by transmission errors, malfunctions, or electronic delays including those within OSU's network. IT IS THE BIDDER'S RESPONSBILITY TO ENSURE OSU HAS RECEIVED THE BID BY CLOSING DAY AND TIME. Any risks associated with electronic transmission of the bid are borne by the bidder.

10. BID OPENING:
Bids will be opened immediately following the closing. Bidders may request to attend a virtual bid opening which may be conducted via Zoom or other electronic meeting platform. Please inform the OSU Administrative Contact in advance if you would like to attend the bid opening. Only the names of the bidders submitting bids will be announced. No other information regarding the content of the bids will be available.

11. BIDS ARE OFFERS:
The bid is the bidder's offer to enter a contract pursuant to the terms and conditions specified in the ITB, its exhibits, and addenda. The offer is binding on the bidder for one hundred twenty (120) days. OSU's award of a contract constitutes acceptance of the offer and binds the bidder.

12. RIGHT TO REJECT:
OSU may reject, in whole or in part, any bid not in compliance with the ITB, exhibits, or addenda. OSU may reject all bids for good cause, if OSU finds that it is in the public interest to do so. Notification of rejection along with appeal rights will be sent to bidders whose bid is rejected.

13. BID CANCELLATION:
If an ITB is cancelled prior to closing, notification of cancellation will be sent, and all bids already received will be deleted. If an ITB is cancelled after closing, or all bids are rejected, the bids received will be retained and become part of OSU's bid file.

14. BID PREPARATION COST:
OSU is not liable for costs incurred by the bidder during the ITB process.

15. RESPONSIVENESS REVIEW:
Bids will be reviewed for responsiveness. Bids that do not comply with the instructions, that are materially incomplete, that do not meet required specifications, or that are submitted by bidders who do not meet minimum qualifications may be deemed non-responsive. Written notice will be sent to bidders whose bid is deemed non-responsive and will include the reason the bid was determined non-responsive and the bidder's right to appeal.

16. AWARD:
Award will be made to the lowest responsive responsible bidder(s). In determining the lowest responsive responsible bidder OSU reserves the right to make award(s) by line

item, groups, entire bid, or any combination thereof. OSU reserves the right to delete any item from the award when deemed to be in the best interest of OSU. If a successful contract cannot be completed with the lowest responsive responsible bidder(s) after award, OSU may rescind its award to the bidder(s) and award to the next lowest responsive responsible bidder.

17. APPROVALS:
Contract award is subject to all required OSU approvals. OSU will have no obligation or liability whatsoever to the bidder selected as result of this ITB unless and until a contract satisfactory to OSU is approved and executed by both parties.

18. BID RESULTS:
A written notice of intent to award will be issued to all responsive bidders along with appeal rights for aggrieved bidders. The bid file will be available for responsive bidder's review during the appeal period. Bidders must make an appointment with the OSU Administrative Contact to view the bid file electronically. After the contract is executed or ITB canceled, the file will be available by making a Public Records Request through OSU's Public Records Request process.

19. CONTRACT REVIEW AND NEGOTIATION:
Prior to execution of a contract, the contract may be reviewed and negotiated. This review may result in modifications of the applicable terms and conditions specified on OSU's website, in the ITB, exhibits, addenda, or those proposed by a bidder. OSU's negotiation of, or acceptance of alternate terms and conditions, is at OSU's discretion as may be in the best interest of OSU.

20. INVESTIGATION OF REFERENCES:
OSU reserves the right to investigate and to consider the references and the past performance of any bidder with respect to evaluation and determining bidder's responsibility. OSU may consider such things as bidder's past performance, provision of similar goods or services, compliance with specifications, contractual obligations, and its lawful payment of suppliers, subcontractors, and workers.

III. SPECIFICATIONS AND QUALIFICATIONS

1. SPECIFICATIONS:

Specifications are included in the attached Exhibit F. The table below are specifications that the bidder must offer to be considered:

	Description	Required "Y/N"
1.	Price of $510,000 or less, includes delivery and attendance of representative on day of delivery for training and check off.	Y
2.	1 year warranty	Y

BRAND NAME OR EQUAL: Any manufacturers' names, trade names, brand names, information, catalogue numbers or source links specified in the solicitation are listed to describe the specifications and characteristics of desired products. Bidders may offer any brand, for which they are an authorized representative, that meets or exceeds the specification unless specified as "NO SUBSTITUTE". If bids are based on equivalent products, bidder should include the offered brand and part number with the original bid. Bids that do not include the offered brand or part number may cause that line item to be non-responsive. Bids lacking any written indication of intent to provide an equivalent product will be received and considered in complete compliance with the specification as listed in the ITB.

IV. SUBMITTALS

It is the bidder's sole responsibility to submit information in fulfillment of the requirements of this ITB. If submittals are not substantially compliant in all material respects with the criteria outlined in the ITB, it may cause the bid to be deemed non-responsive.

Bidders must submit the following information:

Submittal Document	Check-off
Exhibit A, Certifications	☐
Exhibit B, Bid Price Sheet	☐
Exhibit C, References	☐
Exhibit E, Domestic Preference	☐

EXHIBIT A
CERTIFICATIONS

By signature below the undersigned certifies that they are authorized to act on behalf of the bidder and agrees and certifies that:

- the bidder, to the best of the undersigned's knowledge, is not in violation of any Oregon tax laws defined in ORS 305.380(4);
- they have read, understands, and agrees to be bound by the ITB and all exhibits and addenda;
- the information provided is true and accurate, and that providing incorrect or incomplete information may be cause for rejection of the bid or contract termination; and
- they will furnish the designated item(s) and/or service(s) in accordance with the ITB and the contract.

Signature:_____ Date:_____

Name:_____ Telephone: (____)_____

Title:_____ Email:_____

Company Name:_____

Address, City, State, Zip:_____

EXHIBIT B
BID PRICE FORM

ITEM #	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL PRICE
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
Shipping, freight, and handling must be included in quoted prices. Additional costs for such are disallowed. Delivery is F.O.B. destination, prepaid and allowed. Incoterm DDP-Delivered Duty Paid for international shipments.				**TOTAL**	**$**

BIDDER NAME: _____

EXHIBIT C
REFERENCES

BIDDER NAME: _____

REFERENCE 1

Company Name: _____

Contact Name/Title: _____

Phone Number: _____

Email: _____

Goods/Services Provided: _____

REFERENCE 2

Company Name: _____

Contact Name/Title: _____

Phone Number: _____

Email: _____

Goods/Services Provided: _____

REFERENCE 3

Company Name: _____

Contact Name/Title: _____

Phone Number: _____

Email: _____

Goods/Services Provided: _____

REFERENCE 4

Company Name: _____

Contact Name/Title: _____

Phone Number: _____

Email: _____

Goods/Services Provided: _____

EXHIBIT D
ADDITIONAL TERMS AND CONDITIONS

Contracts resulting from this ITB are subject to the applicable OSU standard terms and conditions.

EXHIBIT E
DOMESTIC PREFERENCE

Pursuant to 2 CFR 200.322, OSU is providing a preference during the bid price evaluation for the purchase, acquisition, or use of goods, products, or materials produced in the United States ("U.S. Materials".) In implementation of this regulation, OSU will grant a 3% evaluative price reduction for each item bid that uses 100% U.S. Materials. **The price reduction will be used for price evaluation purposes only.** For purposes of this section: 1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States; 2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

To receive domestic preference price reduction during the bid evaluation, bidders must provide a signed copy of this exhibit certifying that items bid use 100% U.S. Materials. In addition, bidders must identify which items in their bid use 100% U.S. Materials. Failure to include a copy of this exhibit, or identify which items in their bid use 100% U.S. Materials, with the original bid will result in bidder not receiving a domestic preference evaluative price reduction.

Instructions:

1. If you are using a listed material in your bid and it is 100% U.S. Materials enter Y in the right column.
2. If you are using a listed material in your bid, but you are NOT using 100% U.S. Materials, enter N in the right column.
3. If you are NOT using a listed material in your proposal, enter N/A in the right column.

Materials	**100% U.S. Materials Used (Y/N)**
Iron	
Steel	
Non-ferrous metals (e.g., aluminum)	
Plastics and Polymer-based Products (e.g., polyvinyl chloride pipe)	
Cement	
Aggregates (concrete)	
Glass (including optical fiber)	
Lumber	

By signing below, the undersigned certifies and represents under penalty of perjury that they are authorized to act on behalf of the bidder, and that all the statements, certifications, representations, and other information supplied for this exhibit are true and correct as of the date signed below.

Authorized Signature:_____ Date:_____

Signatory Name:_____

Company Name:_____

EXHIBIT F
SPECIFICATIONS

General
Testing: Bi-directional power take off systems for ocean wave energy and marine current turbine systems.
Start of system usage: March 1 2025
Budget: $510k (was previously $600k)
Electrical service: 480 V 3 phase, 200 A, fully regen
Power: 30 kW
Two main operational cases: wave energy and marine current. For wave energy mode, torque, speed, and position are oscillating, with periodic reverse power flow from the device under test to the dyno. For marine current mode, torque and speed are unidirectional, with only brief reverse power flow under braking or transient conditions.
Speed: in oscillating mode, 15 RPM; in unidirectional mode, 150 RPM.
Torque: in oscillating mode, 20 kNm; in unidirectional mode, 2 kNm.
Physical
Space: Ideally the testbed itself, with the driving motor/generator and space for the PTO under test would be some sort of t-slot bed with a total area of at most 5 foot by 15 foot. Drives and supporting equipment could be free-standing next to that. The DUT under test should have 5 x 7.5 foot.
Testbed: T-slot or similar so that the DUT can be rigged and mounted flexibly.
Any adjustable or swappable testbed components must be serviceable via a 3 ton overhead crane.
Center line requirement: because of large torque, the devices under test could have large diameters. Spec is 1.27 m a soft target, absolute minimum of 0.6 m.
Control
Control mode 1: constant speed
Control mode 2: constant torque
Control mode 3: sinusoidal torque of a programmable amplitude and period, with a peak amplitude up to the rated torque, and a fastest period of 1 second.
Control mode 4: sinusoidal speed of a programmable amplitude and period, with a peak amplitude up to the rated speed, and a fastest period of 1 second.
Control mode 5: sinusoidal position of a programmable amplitude and period, with a fastest period of 1 second, and an amplitude not to exceed the speed rating.
Control mode 6: position control based on time and position vectors supplied as a csv file
Control mode 7: speed control based on time and position vectors supplied as a csv file
Control mode 8: torque control based on time and position vectors supplied as a csv file
Control mode 9: torque control with reference provided externally via Ethercat
Control mode 10: position control with reference provided externally via Ethercat
Slew rate capability: at the shaft, maximum rate of change of speed of 15*2*pi RPM/s in oscillatory mode, and 150*2*pi RPM/s in unidirectional mode. Maximum rate of change of torque at the shaft of 20,000*2*pi Nm/s in oscillatory mode, and 2,000*2*pi Nm/s in unidirectional mode.
Data Acquisition
Ethercat for IO
Available measurements over Ethercat: shaft torque, speed, and position
Frequency: data acquisition should be at least at 10 Hz, preferably 100 Hz.
Sensors

Torque at the point of connection to the system under test (shaft)
Speed and position at the point of connection to the system under test (shaft)
Typical but not exclusive operating conditions for the oscillatory mode:
The points below are not concurrent, but three independent examples of typical conditions.
Shaft torque = 12000*sin(2*pi/2*t) Nm
Shaft speed = 10*sin(2*pi/3*t) RPM
Shaft power = 10000*sin(2*pi*t) + 1000 W [note the instantaneous power variation from 11000 W (power from the testbed to the DUT) and -9000 W (power from the DUT to the testbed)]
Generally oscillatory testing is either for regular sea conditions, or real sea conditions. Regular seas are a single frequency, like the point examples above. Real seas are harmonically rich, with a dominant frequency and rich frequency content above or below the dominant. An example is shown below. For the testbed, this requires frequent and irregular reversals. For real seas, the highest frequency content we expect to test is 0.1 Hz, which is already factored in to the specification of slew rates for speed and torque.