



# Oregon State University

## **REQUEST FOR INFORMATION #2021-004627**

### **Understanding the R&D and Testing Needs of Future PacWave Clients and Marine Energy Stakeholders**

ISSUE DATE: JANUARY 15, 2021

RESPONSE DUE DATE/TIME:

FEBRUARY 12, 2021 at 2:00 PM Pacific Time (UTC-8)  
via electronic submission to [bids@oregonstate.edu](mailto:bids@oregonstate.edu)

QUESTION DEADLINE: FEBRUARY 4, 2021 at 5:00 PM Pacific Time (UTC-8)

#### **OSU ADMINISTRATIVE CONTACT:**

Ben Baggett, PacWave Contract Officer  
Construction Contracts Administration  
Oregon State University  
644 SW 13<sup>th</sup> Street  
Corvallis, OR 97333

Email: [constructioncontracts@oregonstate.edu](mailto:constructioncontracts@oregonstate.edu)

*OSU standards and policies govern this solicitation ([Procurement Thresholds and Methods](#), [Procurement Solicitations and Contracts](#)) unless otherwise referenced or stated.*

# 1 INTRODUCTION

## 1.1 INTRODUCTION

This is a Request for Information (“RFI”), issued by Oregon State University (“OSU”) Construction Contract Administration Unit of the Procurement Contract and Materials Management Department of OSU.

**OSU WILL ONLY BE ACCEPTING RESPONSES ELECTRONICALLY** - Responses are to be submitted to [bids@oregonstate.edu](mailto:bids@oregonstate.edu) by the Due Date/Time as shown in Section 2.

All questions shall be submitted via e-mail to [constructioncontracts@oregonstate.edu](mailto:constructioncontracts@oregonstate.edu) by the Question Deadline in Section 2, in order to be addressed. The email subject line should contain the RFI Number/Name on the cover page of this RFI and Firm Name.

Responses to this RFI must be received no later than the Due Date/Time as shown in Section 2.

Information gathered in this process could potentially be incorporated in a future Invitation to Bid (“ITB”) or Request for Proposal (“RFP”) excluding and Confidential information as defined in Section 6 ‘Confidential Information.’ Any future RFP or ITB will be openly competitive and therefore responses should not be exclusive or restrict competition. **This RFI does not obligate OSU to issue an RFP or ITB nor to include information submitted by respondents or grant any preferences to Respondents for evaluation purposes in any future RFP or ITB award consideration.**

Respondent agrees to comply with all federal, state, county, and local laws, ordinances, and regulations as well as all applicable OSU Standards and Policies while on OSU owned or controlled property.

## 1.2 BACKGROUND

Founded in 1868, OSU is a comprehensive, research-extensive, public university located in Corvallis Oregon, USA. OSU is one of only two US universities to hold the Land Grant, Sea Grant, Space Grant and Sun Grant designations. OSU is also the only Oregon institution to have earned both Carnegie Foundation classifications for Highest Research Activity and Community Engagement, a recognition of the depth and quality of its graduate education and research programs.

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. Oregon State offers undergraduate, master’s and doctoral degrees through 11 academic colleges, the Honors College, Graduate School and online Ecampus, enrolling more than 31,000 students from every county in Oregon, every state in the country and more than 110 nations.

OSU is an AA/EEO employer.

## 1.3 PROJECT SUMMARY, DESCRIPTION OF THE REQUEST

### Objective

Responses to this RFI will be used to achieve the following objective: for strategic planning purposes by the PacWave and Pacific Marine Energy Center (PMEC) teams to help ensure testing opportunities are in alignment with industry needs and so that the PacWave capabilities are developed to meet testing support needs as best as possible. **Responses to this RFI will not be published and will be used for**

## internal planning purposes only.

### Overview

This Request for Information (“RFI”) solicits feedback from wave energy converter (“WEC”) technology developers and marine energy stakeholders on how the PacWave facility<sup>1</sup> can best support the development of WEC technologies. The PacWave and PMEC teams will use responses to meet the objectives stated above.

The following sections of this document provide information that will help inform parties responding to this RFI. First, the Background section provides a brief overview of the WEC industry and describes why open ocean WEC testing is critical for the industry’s ultimate success. The following section provides details on the PacWave facility, including discussion of the services PacWave will provide and the aspects of testing that will be the responsibility of the clients. Finally, the RFI Survey section (provided as a fillable PDF) asks specific questions to help the WEC industry and stakeholders provide focused feedback to the PacWave team.

**Note that this RFI is focused on the grid-connected PacWave South test site.** The PacWave North test site, which is an autonomous test site (i.e., not grid-connected) for small-scale WEC and marine energy technology tests, is not the focus of this RFI.

### Background

WEC technologies convert the renewable energy contained within ocean waves into electricity, other useful forms such as hydrogen, or needed products such as desalinated water. While WEC technologies have been actively developed since the 1970s, the growing global need for renewable sources of energy and the large wave energy resource<sup>2</sup> have spurred private sector and government investment in the development of WEC technologies that could help meet the world’s future renewable energy needs. In the United States, the Department of Energy’s Water Power Technologies Office, created by Congress in 2007 to advance marine energy technologies, is partnering with private technology developers, universities, and national laboratories to develop a broad range of WEC technologies.

WECs are being developed to meet the needs of a broad range of applications, including providing power to utility grids, powering microgrids for military applications and remote communities, and supplying power for blue economy applications, such as powering ocean instrumentation systems and charging autonomous underwater vehicles. Several developers have advanced their technologies to the point where there is a pressing need for open ocean testing to quantify system performance in an effort to demonstrate system viability, understand any environmental impacts, and identify future research and development (“R&D”) needs with the overall goal of advancing technologies toward commercial viability. However, testing WEC systems in the open ocean is technically challenging, time consuming, and expensive due to the harsh marine environments, complex logistics of open ocean testing, and strict regulatory requirements. It has therefore proved difficult for small start-up WEC technology developers

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<sup>1</sup> <http://pacwaveenergy.org>

<sup>2</sup> Jacobson, Paul T., George Hagerman, and George Scott. *Mapping and assessment of the United States ocean wave energy resource*. No. DOE/GO/18173-1. Electric Power Research Institute, 2011.

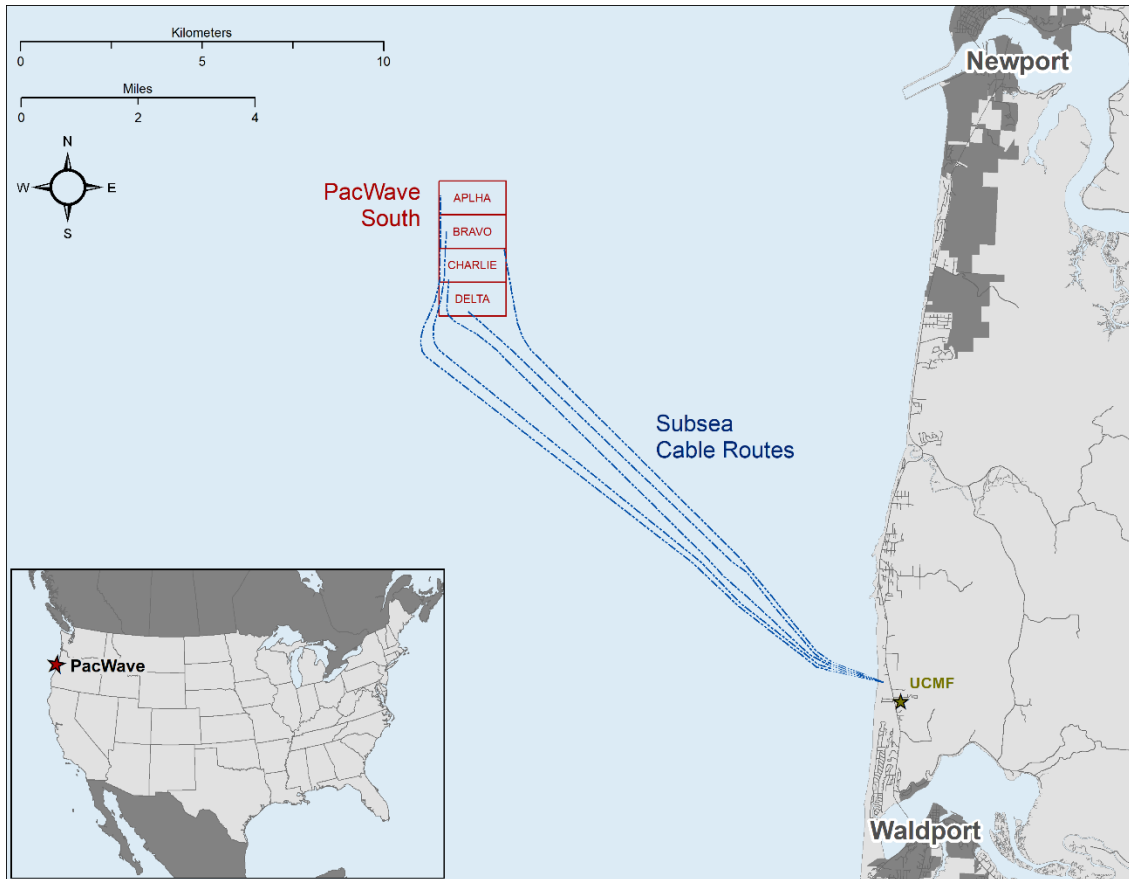
to individually take on the challenge of open ocean testing, and industry progress in this space has been slow.

Accordingly, to reduce costs and other barriers to performing open ocean WEC testing, Oregon State University, the state of Oregon, and the U.S. Department of Energy have partnered to develop the PacWave test site off the coast of Newport, Oregon. PacWave consists of two open ocean wave energy test sites—PacWave South and PacWave North. PacWave South is a pre-permitted, grid-connected site in a high energy, open ocean environment. PacWave North is an autonomous (i.e., not grid connected) site for testing smaller scale WECs and other R&D activities. Each site is just a few miles from the deep-water port of Newport, Oregon. **This RFI is soliciting feedback on the PacWave South test site only.** The next section provides information on the South site and details on testing support that PacWave currently plans to provide to PacWave South clients.

### **The PacWave South Facility**

PacWave South, shown in Figure 1, is 7 miles (11.25 km) off the Pacific Coast and just south of Newport. The site itself covers an area of approximately 2 square nautical miles (1,695 acres, 686 hectares). It will be licensed to support the testing of up to 20 WECs and to transfer up to 20 MW of power to a grid connection point with Central Lincoln People’s Utility Company in Lincoln County, Oregon.

PacWave South features four pre-permitted offshore test berths. Each test berth is approximately 6,000 x 3,000 ft (1,850 x 925 m) and is located in approximately 215-255 ft (65-78 m) of water (mean lower low water). The seafloor in the area is generally soft sand. PacWave South is expected to be operational and ready to work with clients to test WEC technologies in early 2023. In addition to the information provided in this RFI, information on marine geophysical and geotechnical surveys, the subsea cable system, terrestrial geophysical and geotechnical surveys, and wave resource assessments are available at <https://oregonstate.box.com/s/s4fnpr7gbur352nf483od67m1j4xuogq>.



**Figure 1. PacWave South’s four test berths and the subsea cable routes to shore**

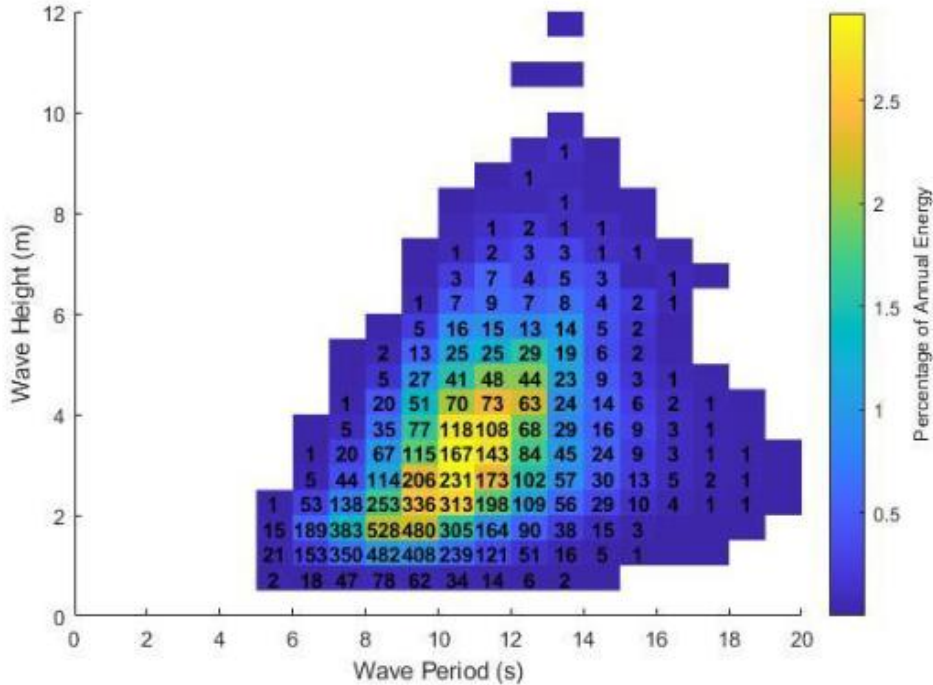
### **Services PacWave Will Provide**

PacWave provides testing infrastructure and services to support clients’ use. Because every client’s needs will differ, the package of equipment and services provided will be customized during contract development. This section provides a high-level overview of what PacWave can be expected to provide.

#### *Metocean Measurements and Environmental Monitoring*

PacWave South will be monitored for wave conditions, meteorology (air temperature, barometric pressure, and wind speed), ocean conditions (temperature, salinity, currents), and background and WEC-related acoustics. Additionally, periodic surveys will monitor benthic ecology, and remotely operated vehicle inspections of the site will be conducted regularly. Detailed resource conditions (waves, winds, currents, and extremes) are available at

[https://ir.library.oregonstate.edu/concern/technical\\_reports/hm50tz68v](https://ir.library.oregonstate.edu/concern/technical_reports/hm50tz68v) and Figure 2 depicts annual average wave conditions at PacWave South.



**Figure 2. Annual average wave conditions at PacWave South.**

*Permitting*

PacWave has secured all the necessary permits and authorization needed to allow for the following WECs to be tested within the boundaries of the PacWave South test site shown in Figure 1.

**Point absorbers:** floating or submerged structures with components at or near the ocean surface that capture energy from the motion of waves, which drives a generator. Point absorbers may be fully or partly submerged.

**Attenuators:** structures that respond to the curvature of the waves rather than the wave height. These WECs may consist of a series of semi-submerged sections linked by hinged joints. As waves pass along the length of the WEC, the sections move relative to one another to drive a generator.

**Oscillating water columns:** structures that are partially submerged and hollow (i.e., open to the sea below the water line), enclosing a column of air above the water. Waves cause the water under the device to rise and fall, which in turn compresses and decompresses the air column above. This air is forced in and out of the WEC, driving a turbine.

**Hybrids:** WEC types that use two or more of the above-listed technology types.

While the testing of the above WEC types is pre-permitted, **PacWave can also support the testing of other WEC types, WEC components and other R&D related to the marine energy industry.** Clients planning such activities must contact PacWave, as additional permitting requirements may apply. All clients will be required to comply with various permitting and compliance activities; however, PacWave will be responsible for management and implementation.

### *Test Site Access and Infrastructure*

PacWave will provide clients with access to a test berth (see Figure 1), subsea cables, and dry mate connectors that terminate each cable. Each of the four berths has a dedicated cable system rated for 34.5-kV AC and clients will need to supply the other half of a dry mate connector and any umbilicals/dynamic risers/subsea hubs they will need to connect a device to the PacWave system. Each cable system can accommodate up to 1 MW at 12.47 kV AC and 5 MW at 30 kV AC. Voltage levels are nominal and referenced to the shoreside, power-receiving Utility Connection and Monitoring Facility (UCMF). Each cable also includes a fiber-optic data connection to the UCMF Control Building described in the next section.

A fifth, auxiliary cable is designed to support various offshore instrumentation packages for environmental monitoring, research, and technology R&D. The auxiliary cable connects to an instrumentation node, which is a branching system developed to service multiple instrumentation packages at up to 5 kW at 440 VAC power and single wavelength fiber-optic data connectivity.

Additional infrastructure at PacWave South includes U.S. Coast Guard approved aids to navigation and various environmental monitoring packages.

### *Utility Connection and Monitoring*

Power and data are transmitted from the test berths offshore via the subsea cables, which route from the seafloor through underground conduits to the UCMF, where power monitoring, conditioning, and test berth control operations are performed.

The UCMF is a fenced and secured compound approximately 12 miles (19 km) south of Newport that is dedicated to PacWave operations. Within the compound, there are three single-story buildings:

- **The Power Conditioning Building** contains four, dedicated client bays, each measuring 70 x 35 ft (21 x 11 m). The climate-controlled bays are just over 20 ft (6.3 m) high. Each bay will be assigned exclusively to a specific client, with the cable from each client's offshore test berth terminating in the corresponding bay.
- **The Switch Gear Building** houses PacWave's switch gear, metering, utility equipment and general storage.
- **The Control Building** houses the PacWave data, control, and communications center, as well as monitoring, communications, data storage, and supervisory control and data acquisition systems. Each client will be assigned a dedicated Control Room, which is the termination point for the fiber data cable from the corresponding offshore test berth.

### *Logistics Support*

The level of logistical support PacWave provides will be determined through consultation with each PacWave client. PacWave personnel have developed excellent local, regional, and national connections and can offer advice and guidance to clients and help them connect with appropriate industry representatives.

### **Services PacWave Will Not Provide**

In general, the items discussed in this section will be the responsibility of the client.

### *WEC or Other Technology*

Clients will need to provide all the equipment they will need to conduct their testing, research, or R&D at PacWave South. They will be responsible for bringing or sourcing necessary spares and tools. If possible, all WECs should be equipped with a GPS tracking system or, preferably, an automatic identification system (AIS).

#### *Dry Mate Connector, Umbilicals, and Hubs (as Required)*

Each PacWave subsea cable terminates in one-half of a subsea dry mate connector. All hardware to connect between that and the WEC or equipment being tested will be the client’s responsibility. If clients will be testing an array, they will need to provide a hub or some other way to connect multiple devices to a single dry mate connector.

#### *Anchors and Mooring Systems*

The PacWave site does not have any anchors or mooring systems available to clients. Clients are prohibited from using any PacWave infrastructure that is installed at the test site, apart from the offshore end of the subsea cable at their designated test berth. Clients will be responsible for all anchors, floats, buoys and mooring systems for any equipment they plan to deploy.

#### *Deployment, Operation, Recovery, and Decommissioning*

Clients are responsible for the safe and responsible deployment, operation, recovery, and decommissioning of all equipment. It is their responsibility to plan, arrange, coordinate and implement all marine operations associated with their work at PacWave.

#### *Electrical Connection*

Clients are responsible for supplying a 12.47-kV pad mount transformer (secondary voltage) if the generation voltage of the WEC—and associated transmission voltage over the subsea cables—is not 34.5 kV. There is a concrete pad for this purpose external to the UCMF located at the back of each client bay.

## **2 SCHEDULE**

Issue Date	January 15, 2021
Question Deadline	February 04, 2021 5:00 PM Pacific Time (UTC-8)
Final Addendum Issuance (if necessary)	February 09, 2021
Responses Due Date/Time	February 12, 2021 2:00 PM Pacific Time (UTC-8)

OSU will make every effort to adhere to the above schedule. However, it is subject to change.

## **3 QUESTIONS, CHANGE OR MODIFICATION**

### **3.1 QUESTIONS**

**3.1.1** All questions and contacts with OSU regarding any information in this RFI must be addressed in writing via email to [constructioncontracts@oregonstate.edu](mailto:constructioncontracts@oregonstate.edu) no later than the **Question Deadline** as stated in Section 2. If a Respondent is unclear about *any* information contained in this RFI, they are urged to submit those questions for formal clarification.

### **3.2 CHANGE OR MODIFICATION**



- 3.3.1** Any change or modification provided by the Owner for this RFP or the documents included as exhibits to this RFI shall be made by a duly issued Addendum made available to all firms on the [OSU Business and Bid Opportunities](#) website.

## 4 PUBLIC RECORD

- 4.1** OSU will retain an electronic copy of this RFI and one electronic copy of each Response received, together with electronic copies of all documents pertaining to this RFI. These documents will be made a part of a file or record, which shall be open to public inspection. If a Response contains any information that is considered a trade secret under ORS 192.345(2), you must mark each trade secret with the following legend: **“This data constitutes a trade secret under ORS 192.345(2), and shall not be disclosed except in accordance with the Oregon Public Records Law, ORS Chapter 192.”**
- 4.2** The Oregon Public Records Law exempts from disclosure only bona fide trade secrets, and the exemption from disclosure applies only “unless the public interest requires disclosure in the particular instance.”
- 4.2.1** Therefore, non-disclosure of documents or any portion of a document submitted as part of a Response may depend upon official or judicial determination made pursuant to the Public Records Law.

## 5 RESPONSE SUBMISSION

- 5.1** Submit **one (1) electronic version of the attached fillable PDF, Exhibit 1, as your response via email** to be received by the Due Date/Time listed in this document to [bids@oregonstate.edu](mailto:bids@oregonstate.edu) as stated in this RFP. **Electronic versions must be sized appropriately for transfer (under 10 MB).**
- 5.2** All Responses should be received by OSU before the Due Date/Time as set forth in Section 2.
- 5.3 Response Submission Requirements**
- 5.3.1** **Your Response should be the completed fillable PDF.** Please answer the questions to the fullest extent possible.
- 5.3.2** OSU may reject any Response not in compliance with all applicable OSU solicitation procedures and requirements, and may cancel this solicitation RFI or reject for good cause, all Responses upon a finding by OSU that it is in the public interest to do so.
- 5.3.3** Note that throughout this procurement process, OSU will not accept Responses that require OSU to pay the cost of production or delivery.
- 5.3.4** Telephone and facsimile transmitted **Responses will not be accepted.**
- 5.3.5** Each Response shall be emailed to [bids@oregonstate.edu](mailto:bids@oregonstate.edu). The email line should contain the RFI Number/Name and Firm Name. Only those Responses received at this email address by the Response Due Date/Time shall be considered responsive. Responses submitted directly to the OSU Administrative Contact will NOT be considered responsive. It is highly recommended that the Respondent confirms receipt of the email with the OSU

Administrative Contact. The OSU Administrative Contact or designee may open the email to confirm receipt but will NOT verify the integrity of the attachment(s), answer questions related to the content of the Response, or address the overall responsiveness of the Response.

#### **5.4 Acceptance or Rejection of Solicitation RFI Responses by OSU**

**5.4.1 The procedures for Contract awards shall be in compliance with the provisions of OSU standards and policies adopted by OSU.**

**5.4.2** OSU reserves the right to reject any or all Responses and to waive minor informalities in compliance with the provisions of OSU standards and policies adopted by OSU.

#### **5.5 Withdrawal of RFI Response**

**5.5.1** At any time prior to the Due Date/Time, a Proposer may withdraw its Response in accordance with OSU Standards. This will not preclude the submission of another Response by such Proposer prior to the Due Date/Time.

**5.5.2** After the Due Date/Time, Respondents are prohibited from withdrawing their Proposal, except as provided by OSU Standards.

## **6 CONFIDENTIAL INFORMATION**

**Definition:** Confidential information means any information disclosed by one party to the other, whether belonging to the disclosing party or one of its suppliers, that should reasonably be understood by the recipient because of legends or other markings, the circumstances of disclosure, or the nature of the information itself to be proprietary and confidential to the discloser, one of its suppliers or to any other third party. Each party may use the confidential information disclosed by the other ONLY as necessary to fulfill the objective of this RFI as set forth Section 1.3 'Project Summary, Description of the Request.'

**Exceptions:** The restrictions of this provision do not apply to information that (a) was in the recipient's possession without confidentiality restriction before its disclosure, (b) is or becomes generally available to the public through no fault of the recipient, (c) the recipient independently develops without reference to any confidential information received from the discloser, or (d) the recipient obtains without breach of any obligation of confidentiality owed to the discloser.

**Non-Disclosure and Protection:** The recipient must treat the discloser's confidential information in the same manner that it treats its own information of similar importance, but with no less than reasonable care. The recipient may not divulge the discloser's confidential information to any third person or make any use of it except as expressly authorized herein. The recipient must limit disclosure of confidential information received from the discloser to recipient's employees, affiliates, suppliers, contractors, or agents who (a) need to use or access the confidential information to configure, modify or use the Products or to carry out the recipient's obligations and objectives under this RFI and (b) have agreed in writing to treat the confidential information in accordance with this provision.

**Judicial or Governmental Request:** If the recipient is ordered to disclose the discloser's confidential

information under a judicial or governmental request, requirement, or order, the recipient must (a) promptly notify the discloser, (b) take reasonable actions and provide reasonable assistance to the discloser to secure confidential treatment of the confidential information, and (c) disclose only the confidential information that is required to comply.

**Limitation on Copying and Return of Information:** The recipient may not reproduce or copy any confidential information, except as reasonably needed to achieve the objective of this RFI. Each copy or reproduction of confidential information authorized under this provision must include all notices of patent rights, copyrights, trademark rights, or similar proprietary rights included on the original version furnished to the recipient by the discloser. The recipient's right to use the confidential information will immediately terminate (excluding any licensed Products whose term of use is subject to the license rights granted above) upon completion of the objective as set forth under this RFI. Upon termination or any earlier demand by the discloser, recipient must promptly return to the discloser or, at the discloser's option, confirm destruction of all tangible materials that disclose or embody the discloser's confidential information.

**Oregon Public Records Law:** This Contract is subject to the limitations and conditions of the Oregon Public Records Law, Oregon Revised Statutes (ORS) 192.311-192.478. Notwithstanding anything else to the contrary in this RFI, Respondent may disclose information to the extent it determines disclosure is required under Oregon Public Records Law and such disclosure shall not breach any other provision of this RFI. In order to facilitate public inspection of the non-confidential portion of the Response, material designated as confidential must be readily separable from it. Prices, makes, model or catalog numbers of items offered, scheduled delivery dates, and terms of payment will be publicly available regardless of any designation to the contrary. Respondent shall not mark all documents associated with this RFI as a trade secret in its entirety.

**END OF RFI**

**EXHIBIT 1 – FILLABLE PDF SURVEY/QUESTIONNAIRE**

**(ATTACHED AS A SEPARATE PDF DOCUMENT)**