PUBLIC UNIVERSITIES STATE PROGRAMS
2015-16 REPORT

June 6, 2017

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Engineering Sustaining Funds (ESF) Overview

Legislative Origin:
SB 504 (1997) established the Engineering and Technology Industry Council (ETIC) with funding allocated to the universities via the Oregon University System (OUS). As part of the transition from OUS to the Higher Education Coordinating Commission (HECC), what had been the ETIC Sustaining Funds (80% of its prior biennium funding) transitioned to the HECC.

History of Dedicated State Appropriations (all seven institutions):
2007-09 $37,280,000
2009-11 $30,981,350
2011-13 $27,387,573
2013-15 $29,030,827
2015-17 $24,451,274

FY2016 Total Funding Sources (all seven institutions):

State Program Funding (GF)	$ 11,981,124
University Funding	7,133,832
Gift Funding	1,332,850
Federal Grant & Contract Funding	7,514,324
All Other Grant & Contract Funding	-
Total	$ 27,962,130

Mission Statement, if applicable:
Per HECC Budget Report Summary:

These sustaining funds are intended to focus on the following three principles:

1. Provide stability and sustaining the progress that has been made by utilizing ETIC funding and meeting the productivity and outcomes historically examined by ETIC; particularly engineering and technology related graduates at the undergraduate and graduate levels, externally funded research and industry investment.
2. Provide a tactical linkage of engineering and technology programs to the labor force needs of Oregon industry by dedicating a portion of current funding levels and funding growth on that linkage.
3. Encourage and deepen connections between universities and engineering and technology industry partners, and collectively advocating for additional private and public investment.

EOU Engineering Sustaining Funds

Contact: LeAnn Case, Provost, lcase@eou.edu
Website: https://www.eou.edu/computer-science/

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

Students majoring in computer science learn to design and develop software systems for industrial, scientific, commercial and educational applications. They acquire an understanding of programming, analysis, data structures, algorithms and operating systems. Graduates are prepared to work in the private or public sector, or to proceed to advanced study.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Students at EOU can earn a Computer Science degree. EOU offers 72 credit hours each year. Funding has made it possible to equip a new lab for working with embedded systems. The first use of this facility was to offer a course in computer architecture and assembly-language programming in which students integrate hardware and software. This new 4=credit course currently enrolls 11 students. We plan further integration of this facility into existing and planned networking, security, and artificial intelligence courses. Non-degree seeking students from Math, Chemistry/Biochemistry and Education all rely on this program for foundations-level computer science courses.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  In addition to formal experience gained in the aforementioned class, the facilities supported by the funds allow a student-led campus organization (EOU Pi-Bots) to work on embedded-software projects. In addition to pursuing projects of individual interest, club members are working on outreach projects to use in generating interest in the surrounding community, particularly K-12 schools.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Computer Science (CS) Student Engagement:

  Total Unduplicated Students Engaged: 26

CS Students Placed in Internships: 4
CS Students Placed in PT Employment While Enrolled: 8
CS Class of 2017 Grads Placed: 1

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

EOU's participation in this program provides students with opportunities to creatively apply their knowledge in a much wider spectrum of arenas than possible using traditional curriculum.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

EOU's Computer Science program is undergraduate only.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Engineering Sustaining funding has enhanced the viability of EOU's computer science degree program for well over a decade. Local technology industries such as SkipLine, Cayuse Technologies and other employers have directly benefited from the availability of skilled personnel familiar with and willing to work in rural Eastern Oregon.

Describe any indirect benefits to Oregonians from this program:

This program helps Oregonians by contributing to a better prepared workforce for the technical business sector.

How does this program (or could it) provide meaningful information to assist the State Legislature?

With Eastern Oregon industry requiring a better educated workforce in a region with low college completion rates, EOU partnered with Blue Mountain Community College and Baker Technical Institute at Baker High School to seek Engineering Sustaining Funds Renewable Funds in March 2015 to complement our GO STEM hub and to build a scaffolded enrollment pipeline from Career Technical Education to community college to university. Unfortunately, our joint proposal was not funded.

Nonetheless, the Engineering Sustaining Funds EOU continues to receive serves the east side of the state and makes a very big difference in our ability to prepare students for technical careers. Working in partnership, BMCC and EOU are producing graduates and certificate earners to fill needed positions in software development and technical support at many levels in existing and emerging industry in Eastern Oregon along the I-84 corridor.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The program is staffed entirely by university employees and works entirely within university facilities. The program exists to serve students directly, and in so doing to support technological advances in the community at large. The program serves the larger STEM mission of EOU, serving a curricular role of computer literacy throughout the institution as well as an applied learning role through internships and employment opportunities in Information Technology at the university and in surrounding communities.

  Within EOU's Information Technology Department, four employees are graduates of the EOU Computer Science program. In addition, four of the five student workers in the department are in the Computer Science program currently. Four other employees are currently enrolled in the Computer Science program, with two to graduate in June.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The program is staffed by 2.15 FTE university faculty who deliver all 100-level and major requirements for the B.S. degree in Computer Science.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  University employees.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  EOU provides funding in addition to the Engineering Sustaining Funds for our Computer Science degree program. This includes additional funding for faculty, student labor and services and supplies. Eastern provides indirect support by providing equipment, facilities use, administrative services, and technology support. The Engineering Sustaining Funds primarily provides salary/benefits for faculty (1.3FTE) and services and supplies.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  At present, program success is evaluated by standard measures of student success, including student learning outcomes and the following program metrics:

PROGRAM	SCH TREND	% FACULTY FULL-TIME	% TERMINAL DEGREE	NEW TRANSFERS	TRANSFER RETENTION	TRANSFER GRAD RATE	UNDERGRAD DEGREES	SCH TO NON MAJORS	STUDENT : FACULTY RATIO
COMPUTER SCIENCE	-24%	100%	50%	5	67%	0%	7	47%	10.9

The self-study metrics are still being refined, but will serve as the basis for annual program self-evaluation. Expectations are that these measures will be used to stimulate further questions and play a primary role in annual planning and goal-setting for continuous program improvement.

- *SCH Trend* (year over year): Percent difference in total program SCH compared to previous academic year (excludes Eastern Promise/Dual Credit)
- *% Faculty Full-time*: Proportion of all faculty teaching in the program as of November 1 who are considered full-time
- *% Faculty with Terminal Degree*: Proportion of all faculty teaching in the program as of November 1 who have a terminal degree
- *New Transfers*: Total number of new transfers (fall or summer returning fall) who declare program as major 1 or major 2
- *Transfer Retention*: Proportion of transfers who are retained from first fall to second fall in the program (major 1 or 2 at time of entry)
- *Transfer Graduation Rate*: Proportion of program new transfers who earn a degree within two years of entry
- *Undergraduate Degrees*: Total number of degrees awarded in the program for the academic year
- *SCH to Non Majors*: Proportion of academic year program SCH generated by students enrolled in program courses whose declared major (1 or 2) is not that program
- *Student-Faculty Ratio*: Ratio of total student FTE in the program to total Faculty FTE (includes all students and instructors - FTE calculated at 36 for graduate students, 45 for undergraduate, and 45 for faculty) for the academic year

OT Engineering Sustaining Funds

Contact: Hallie Neupert, Interim Dean, College of Engineering, Technology and Management
Website: http://www.oit.edu/academics/engineering-technology-management

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Oregon Tech utilizes Engineering Sustaining Funds (ESF) to support six faculty positions in Engineering and Technology. Every faculty member teaches at least three to four courses per term, with at least twenty students per course, for three or four terms. ESF supported courses serve an estimated 1,440 students per year, generating 4,320 credit hours.

  ESF supports faculty who produce results with a proven track record over time, including a major expansion in the number of engineering and technology graduates across all seven universities. Between 2005 – 2015, Oregon Tech demonstrated these results:
  - Degrees produced in Engineering, Technology and Management: +34% (350 degrees)
  - Women in Engineering, Technology and Management: +97% (348 women)
  - Students of Color in Engineering, Technology and Management: +183% (529 students)

  Oregon Tech's portion of the ESF allocation to support full-time faculty teaching positions is: FY15: $540k, FY 16: $958k and FY 17: $1,245k.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  The ESF-supported faculty provide classroom instruction, including capstone projects, industry-supported senior projects and student advising to 1,440 students per year.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Students are supported by direct faculty advising, including attaining internships and employment through faculty advising and career services.

Describe any indirect benefits to university students through the university's participation in this program:

- Ability to grow and sustain engineering and technology programs;
- Ability to develop new program courses, specializations, and graduate courses to meet emerging industry and market needs.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

The ESF faculty are full-time teaching faculty. We are seeking Oregon Renewable Energy Center funding so that some faculty can be assigned to teach part-time and conduct applied research projects part-time, enabling more relevant to participate in relevant industry projects.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Expanding Oregon's capacity to produce engineers and technically-capable graduates will drive economic growth, attract companies and catalyze start-ups. Oregon Tech is the Klamath region's economic engine, working to grow businesses and jobs in rural Oregon. Oregon Tech is a critical partner in our economic and community development strategies and is a significant talent development engine for the region. Oregon Tech is working with the Klamath County Economic Development Association (KCEDA) to attract businesses to the Tech Hills industrial park, located adjacent to the Klamath Campus, and to start new student-led companies through the Catalyze Klamath Falls Challenge. We cannot attract and retain companies in our rural region without ESF-funded faculty that educate the future engineering talent for Oregon.

According to a recent Economic Impact Analysis by EcoNorthwest, the Klamath community benefits from $75M in total annual output in Klamath County from Oregon Tech. This kind of direct economic impact to a rural community cannot be overstated. It directly benefits the community, contributes to local jobs, and attracts and keeps students in the community who will become the next generation of employees, business owners, and inventors.

Describe any indirect benefits to Oregonians from this program:

See above

How does this program (or could it) provide meaningful information to assist the State Legislature?

ESF-funded faculty may have expertise that could benefit the state legislature and would be willing to provide serve as needs are identified.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  All ESF-supported faculty are full-time university employees.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  ETIC is not a "center." It is a targeted and strategic investment by the Legislature to expand engineering and technology education in Oregon. ESF funds support six full-time engineering and technology faculty positions. Results are documented above.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All ESF-funded positions are full-time faculty and university employees.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The ESF-funded faculty are supported through the use of all the university's facilities, central staff, central services, and all benefits of full-time teaching faculty members.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  Number of graduates/degrees, women and students of color in engineering and technology ESF outcomes are fully integrated into our overall university outcomes. Between 2005-2015, in the college of Engineering, Technology and Management at Oregon Tech:

  - Degrees produced in Engineering, Technology and Management: +34% (350 degrees)
  - Women in Engineering, Technology and Management: +97% (348 women)
  - Students of Color in Engineering, Technology and Management: +183% (529 students)

OSU Engineering Sustaining Funds

The College of Engineering receives approximately $7 million from the Engineering Sustaining Fund (ESF). Originally ETIC and now ESF funds are critical in supporting our 182 faculty who are responsible for educating nearly 9,000 College of Engineering students. In particular, these funds are used to support approximately 25% of the College of Engineering faculty.

Contact: Scott A. Ashford, Dean, College of Engineering
Website: engineering.oregonstate.edu

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

OSU's College of Engineering, with the long-term support of the Legislature through the ETIC and now ESF, has become the 11th largest college of engineering in the United States. The ESF support in 2016 enabled the College to fund 45 additional engineering faculty beyond what could be otherwise be supported, which has increased access for students. Students participate in College of Engineering programs at the bachelors, masters and Ph.D. levels. The College has a successful online post baccalaureate degree in computer science that enables students with bachelor's degrees in any field to refocus into a high demand STEM field. The College is developing other online programs to further increase access for students, and to provide continuing education opportunities for working professionals.

As a result of the 45 additional faculty funded through ESF, the College attributes 25% of its output to ESF resources. In particular, the College graduated an additional 347 engineers in the 2015-16 academic year, specifically with 263 bachelors, 72 masters, and 11 doctoral degrees. The College is on track to graduate over 1500 students in 2017; one quarter, or 375 of these degrees, are specifically attributable to ESF investments.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  ESF funds provided the College with the ability to:
  - Enroll 2181 additional students in fall 2016, consisting of 1841 undergraduates, 175 masters, 135 doctoral, and 27 non-degree seeking students
  - Enroll students in an additional 26,732 student credit hours at the undergraduate level, and an additional 8,710 student credit hours at the graduate level in academic year 2015-16.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  In addition to the classroom portion of their education, students are involved in a number of activities directly related to their fields of interest. These activities include undergraduate research projects, graduate research leading to master's theses and doctoral dissertations, extracurricular projects and teams directly related to their engineering training, and capstone projects that are often sponsored by industry partners. ESF investment increases opportunity. ESF investment has increased access to undergraduate research for 95 students, graduate research for 250 students, extracurricular experiential activities for 440 students, and capstone project courses for 275 students.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  The largest segment of the internship engagement in College of Engineering is through the industry-led MECOP program in which approximately 450 students at the junior and senior years participated. This translates to over 100 additional students being engaged in internships because of ESF support. An additional 150 students attributable to ESF investment have engaged in internships that were outside of MECOP. The vast majority of all the internships are in Oregon, generating a benefit for Oregon industry.

  Of the additional students enabled by ESF support, 100 students are employed as student workers, and slightly over 200 graduate students work in faculty research laboratories, generating additional research output at OSU.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

The College of Engineering has experienced the greatest growth of any college at OSU, and this is directly attributable to the additional faculty enabled by ESF. It is important to note that the caliber of faculty being recruited is among the highest in the country, with the College regularly competing with schools like MIT, Stanford, Georgia Tech, and the University of California system, and attracting those top candidates to OSU. The quality of the faculty is borne out by the large number of NSF CAREER award winners and Department of Defense Young Investigator Award recipients, eight recipients in 2016 alone. The growth and quality of the faculty in engineering has enhanced the visibility of OSU nationally, and that visibility has in turn attracted students to the OSU that might not otherwise have thought about coming to Oregon.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

During the last fifteen years of ETIC then ESF investment, the College research expenditures have more than tripled to $37.2 million in the 2015-16 academic year by emphasizing highly collaborative faculty and research. The CAREER and Young Investigator Awards noted above are the highest research honors

for young faculty in the U.S. The College faculty publish in high impact international journals, are fellows of their professional societies, and are widely sought as experts in cutting-edge research. Research awards span multiple fields too numerous to detail but stretch from underwater robotics to glucose-detecting contact lenses. Faculty are leaders in multidisciplinary consortia such the Northwest National Marine Renewable Energy Center, known as the flagship Center in the U.S. for marine energy.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

In addition to providing a world-class engineering education to Oregonians in an on campus setting, the online programs provided by the College of Engineering provide access to citizens across the state. As mentioned previously, the online post baccalaureate in computer science allows students with bachelor's degrees in any field to transform their careers to a high-tech profession that is in high demand in Oregon.

Faculty in the College have created world leading spin-out companies. For example, NuScale Power, a spinout from Nuclear Engineering at OSU designs safe, small, scalable, nuclear power generators that are well on their way to NRC certification. Jonathan Hurst, a faculty member hired with ETIC funding, founded Agility Robotics, a spinout from OSU research in bipedal robots that is revolutionizing walking robot technology.

Describe any indirect benefits to Oregonians from this program:

Many of OSU's College of Engineering graduates are employed in Oregon. These employees contribute to economic development by providing a well-trained high tech workforce, with high paying jobs that contribute to a healthy tax basis. Through ESF investment, College of Engineering is able to provide 25% more of these graduates than would otherwise be possible.

How does this program (or could it) provide meaningful information to assist the State Legislature?

College of Engineering faculty have provided information to the legislature on a number of issues important to Oregon including resilient infrastructure, tsunami preparedness, marine energy, and advanced manufacturing. The faculty includes international leaders on a number of topics that are important to Oregon and are available to provide information or serve on committees as requested by the legislature.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  Generally speaking, College of Engineering faculty teach mostly engineering students. However, engineering students take courses across campus in many subjects to complete their degree

requirements. Classrooms in engineering buildings are also used by non-engineering faculty to support courses in many disciplines. The newly formed humanitarian engineering minor draws students and faculty from across the university to address some of the world's most pressing needs.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  College of Engineering has 182 faculty and 250 staff. The staff consist of academic advisors, program support personnel, and administrative leadership and support personnel.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  The employees of College of Engineering are all OSU employees.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  In addition to the $7M in ESF support, OSU has invested approximately $7M to hire additional faculty and staff over the last 10 years with the goal of increasing student access and opportunity and leverage the ESF investment.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  The College of Engineering bachelor's degree programs are all accredited by ABET, the worldwide standard in engineering degree accreditation. ABET's reviewers are expert volunteers from industry, academia, and government. The graduate programs are accredited through OSU's accreditation. In addition, each graduate degree undergoes a graduate program review. This review is organized by OSU, and has a panel consisting of OSU faculty and external experts that is led by one of the external volunteers. In addition, each school within the college has industry advisory boards that review activities within the school and provide advice on a broad array of topics, particularly, relevance of programs to industry. Key performance indicators for the goals of the College's strategic plan are tracked internally; some of these metrics are reported on the college website dashboard.

PSU Engineering Sustaining Funds

Contact: Ren Su, Dean, College of Engineering and Computer Science
Website: pdx.edu/cecs

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

PSU's Maseeh College of Engineering and Computer Science provides educational and research opportunities for nearly 3000 students. With the support of ESF, additional full-time faculty have been hired and provide increased capacity in the departments. This increases access for students into engineering and computer science fields of study at the bachelor's, master's and PhD levels.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  ESF funding is used to support full-time faculty who teach and conduct research in five departments in the Maseeh College of Engineering and Computer Science. ESF faculty accounted for the following number of students and student credit hours during the 2015-16 academic year:

	Undergraduate	Graduate	Totals
Headcount	533	435	968
SCH	4739	4471	9210

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  ESF faculty are research active and supported 64 graduate students in research labs with tuition and stipends. ESF faculty also advise on PhD dissertation and thesis projects. The number of students taking thesis or dissertation credits from ESF supported faculty was 134.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**
  - 76% of the past academic year graduates reported to being employed as of the date of this report (that's significantly up from last year when it was 70%) with an additional 9% pursuing further graduate degrees (that's up from last year by 4%). So that's 85% placement (up by nearly 10% compared to the previous year).
  - Employment/ continued education to date is highest for CEE (over 93%), followed by MME (85%), CS (83), ECE (81%) and ETM (67%).

- 58% of the students graduated with an internship in their field of study. PSU offers internships via the MCOP, CECOP and PCEP programs.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

A large number of graduates are developed and employed in the field and industry. They produce a reputation of quality engineering education which benefits future generations.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

The ESF program has improved and expanded the research capacity of the faculty. They in turn become more competitive for research funds from federal and state agencies and industry. Examples include:

- UTC, University Transportation Center: $3M/yr for 5 years. PSU's UPC is among 5 in the nation.
- NSF grant for research in Cross Laminated timber structures. This is the first federal grant to study CLT in Oregon.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

As the funding has provided more instructional capacity, departments are able to accept and graduate more students in engineering and computer science. This serves the state with workforce needs and local initiatives and projects. One such initiative MCECS is developing is a Working Community Network with the goal of mobilizing teams of engineering and computer science students and faculty to help communities solve problems that are important to their citizens.

Other areas of note:

- Oregon Manufacturing Innovation Center (OMIC) aims to hugely improve the regional metal manufacturers R&D capability to improve global competitiveness.
- UTC has a direct impact on the transportation system design and testing in the greater Portland area.
- The Power Systems Lab has become a crucial R&D partner with PGE.

Describe any indirect benefits to Oregonians from this program:

Help create a sustaining and vibrant tech industry and economy in the greater Portland area. Research in current areas of relevance impacts industry as innovative products and processes are developed.

How does this program (or could it) provide meaningful information to assist the State Legislature?

The economic impact of ESF from all institutions can help the State Legislature develop investment strategies.

The following questions pertain to the relationship between this individual program and the university as a whole.

PSU ESF funds are used to fund full time faculty that support the educational mission of the Maseeh College of Engineering and Computer Science. Through this funding we are able to provide students with more opportunities to learn from research active faculty both in the classroom and in labs. As ESF is not a distinct program set apart from others in the College the funding is critical to retaining core faculty in all departments.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  ESF faculty are fully integrated into the College/PSU as members of a home department. All services provided to other full time faculty at PSU are available to ESF funded faculty. Instruction and interaction with students as well as community engagement is key in all faculty positions.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  Total FTE covered under ESF funding is 17.2 FTE which represents 18% of full time faculty in MCECS.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  They are PSU faculty employees.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  All faculty are supported within departments by administrative staff and have the use of office and lab space. Additional support is provided by the overall administrative structure at PSU (HR, Research, Facilities, etc). Funding is available to all faculty for professional development via departmental and university allocations.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  All undergraduate bachelor degree programs are evaluated and accredited by our national accrediting body – ABET. The College is also involved in the university accreditation process and has an external advisory council composed of industry leaders in the greater Portland area.

SOU Engineering Sustaining Funds

Contact: Sherry Ettlich, Academic Director, Science, Technology, Engineering, Mathematics.
Mark Denney, AVP, Budgets and Planning
Website: www.sou.edu

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, just note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year:**

  The Computer Science Program served 113-118 majors each term and deliver 1236-1401 SCH per term in 2016-17. Without ESF funding CS would not have had the staffing to offer sufficient courses to assure students could graduate in 4 years. Currently, about 25% of the faculty salaries are paid through ESF funds and approximately 25% of the offerings and SCH are directly attributable to these funds.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  The quantity and variety of electives available to students is directly related to the number of faculty available and their areas of expertise. Students have five courses in the major that they must select from available electives. In addition, some select additional courses as part of their university electives when planning their course of study. These are of particular interest to students as they customize their program of study to address their academic and career goals. Elective courses in 2016-17 included: courses on parallel programming, programming for android and iOS devices, advanced networking and network security courses, and an artificial intelligence course. Furthermore, students were able to work with faculty on research, and participate in practicums and internships. Practicum and internships are described in next section. The majority of the research projects with faculty occur in the two-term capstone course where 23 students worked in small teams to complete real-world projects. These projects match student interest areas and expertise with projects from either campus or community members. In addition, one graduate student worked on a more elaborate individual research project.

- **Describe student Internships or employment (include number of student workers/graduate assistants annually):**

This year, three students participated in significant practicum experiences with local businesses: One student served as the website developer/administrator to maintain and update the commercial website of MaskiT, LLC. This included design and development of a newsfeed application and landing page for website in addition to adding additional features to the site as needed. Another student created a database management system that will organize data related to customers and vendors for Excel Construction Management, INC., a family owned company that provides construction management services for residential and commercial projects. The final student worked with FLOWJO to develop a plugin for the front end of their software and as part of a team that developed a significant display mechanism for their core software.

CS also employed four CS students: Two students served as tutors assisting students in a wide variety of CS courses throughout the year. The other two students worked in an isolated network lab used for exploring network weaknesses and combatting exploits. These students worked with a faculty member throughout the year to maintain this lab including several improvements to meet the needs of three networking courses throughout the year.

CS students are in high demand as student workers in a wide variety of positions in our IT area, including working help lines and help desks, assisting IT staff with deploying and maintaining systems, etc.

Many CS students also hold off-campus jobs while going to school, some part-time and full-time in local technology companies as well as others working for unrelated businesses.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

Beyond supporting the delivery of the CS program, the funding of these faculty allow CS to address student needs in other programs across campus, including both introductory programming and web development courses, as well as courses on network forensics and legal and ethical issues in computer science.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

Funding has allowed advances in global grids project, including work on two provisional patents to protect the intellectual property. There has been interest from industry in obtaining rights to this work, including the principle faculty member working directly with a company last year.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Many graduates of this program are employed locally and contribute to the technology sector in our region. When we did the last inventory a year ago, we had 31 graduates working at 17 local companies. We also have graduates who move beyond the Rogue Valley, working for much larger technology companies, primarily on the West Coast.

The CS program sponsors monthly Tech Talks and Tech Workshops that are open to the public. Participants include current students, graduates, individuals employed in various technology companies, and other interested community members and campus employees. These presentations are coordinated by a community volunteer who is committed to helping students and community members better network and learn about new technologies and opportunities applicable to their career trajectory.

In addition, university and community members who submitted capstone projects benefit from the products produced that further their research, program, or meet other needs within their department or business.

Describe any indirect benefits to Oregonians from this program:

The technology sector is a targeted growth area in our region, providing clean industry and family wage jobs, and is instrumental to SOU's mission of regional engagement and contributing to the economic engines of our region.

How does this program (or could it) provide meaningful information to assist the State Legislature?

This question is difficult to respond to, however, here are some areas that might be helpful: statistical data on program graduates, economic impact, or potentially participation in research projects.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The Computer Science Program is fully integrated into SOU. As a member of the STEM division, CS receives administrative and clerical support through that division. CS' program offices are located in the Computer Science Building and are proximate to computer labs, meeting rooms, classrooms, and other facilities needed to maintain the program. CS students are members of the SOU community and have access to all student services, including opportunities to participate in a wide variety of extracurricular offerings. CS faculty are members of the university faculty and serve in a variety of roles. The CS program participates in SOU's general education program and provides service courses to other programs as well as receives support from mathematics in the form of service courses to CS. In particular, CS offers courses that allow students to meet their university studies non-lab science requirement and integration requirements in Science Technology and Society, and in Citizenship and Social Responsibility. CS offers introductory programming courses that assist students in completing Bachelor of Science requirements and serve other programs, especially business. All of these courses are offered both face-to-face and online to serve degree programs of all types.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The staffing plan for the CS program calls for 4 FTE of tenured/tenure-track faculty, supplemented by 1 FTE of part-time adjuncts. All support staff services are provided by the STEM Division office. It is a very leanly staffed program and we have not been able to maintain that staffing level with recent retirements. Due to the short staffing some administrative functions normally handled by program faculty have been temporarily shifted to the division director.

  As more faculty retired and SOU was unsuccessful hiring, the CS program was shrinking. In 2016017, 1.257 faculty members' base salaries were paid by ESF funds. In addition, for a new hire in 2017-18, a $15,000 augmentation to the base salary of a new faculty member will be funded with these monies. Having sustainable funds to the augmentation to SOU's base salary was an essential factor in reaching a competitive salary rate and successfully hiring a great new faculty member. This strategy will be repeated for the 2018-19 hire(s).

  For 2016-17, CS had 4.33 FTE of faculty: 2.0 FTE tenured faculty, 0.33 FTE tenured faculty member retiring December 31, and 2.0 FTE of full-time temporary faculty. CS had two searches during 2016-17 and made one successful hire.

  For 2017-18, CS will have 4.67 FTE of faculty: 2 FTE of tenured faculty, 0.67 FTE new tenure-track faculty member starting January 1, and 2.0 FTE of full-time temporary faculty. CS is anticipating 1-2 searches during 2017-18.

  The remaining two tenured faculty will be retiring in the next 2-3 years and searches will be conducted to maintain the staff needed to deliver the program.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All faculty in the CS program are employees of the university.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The CS program is fully housed and supported by the university, including office, classroom and lab space. The program has the same access to central staff, services and university systems as any other program on campus. The program has budget support commensurate with other programs on campus, but relies on the ESF funding to maintain staffing levels.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

Like all programs on campus, CS participates in university assessment activities that support the university accreditation. Like the majority of programs on campus, CS does not have a separate accreditation or external review process. Programs may request external review and the last external review for CS was in 2012. CS also has reached out to community partners through roundtables and other organized meetings to get feedback on potential changes and how they can better meet employer needs.

UO Engineering Sustaining Funds

Contact: Stacey York, Interim Director | 541-346-6752 | syork@uoregon.edu
Website: internship.uoregon.edu

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  The Graduate Internship Program (GIP) at the University of Oregon is an accelerated, interdisciplinary master's program designed to meet state and national industry needs in several areas: photovoltaic and semiconductor device processing, optical materials and devices, polymer science, and bioinformatics. The GIP also provides industry engagement for doctoral students in technology fields.

  There are 54 credits required to complete the program – 24 coursework credits and 30 internship credits—typically completed over four or five consecutive terms. ETIC—and now Engineering Technology Sustaining Funds-- investment in the GIP program helps the university to provide an opportunity for approximately 80 master's students to pursue these degrees each year, for a total of approximately 4,300 credit hours per year.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  A key part of the GIP program is completing a nine-month paid internship in the field. What makes the GIP experience unique is the ability to gain an immersion classroom and laboratory experience which helps students tap into the strengths of their bachelor's degree and apply those in the context of an applied setting, most often engineering. Approximately 80 new students are immersed in this unique program each year.

  The different GIP tracks have, combined, more than 80 industry partners. These include IBM, FEI, Bend Research, Willamette Valley Company, Cascade Microtech, Applied Materials, Timbercon, Pacific Northwest National Laboratory, Los Alamos National Lab, Spectra Physics, ESI, nLight, Moxtek, WR Grace, Qorvo, and around 70 others around the state and region, and across the country.

Students also gain valuable interviewing experience and develop soft skills-- communication, leadership, and the ability to work in a team-- through their coursework and engagement with industry partners. These are emphasized throughout the curriculum.

- **Describe student Internships or employment (include number of student workers/graduate assistants annually):**

  Students selected by the GIP company partners complete a nine-month paid internship as part of the GIP experience. The GIP staff recruits and maintains relationships with, currently, more than 80 different company partners.

  In recent years, internship salaries have ranged from $3,000-$5,400/month. *About 98% of our students have successfully completed internships. In the past year, approximately 78 have completed internships.*

- **Describe any <u>indirect</u> benefits to university students through the university's participation in this program:**

  98% of GIP students successfully complete their internship and close to 90% receive regular job offers after their internship ends.

  In addition to the master's students who are the main participants in this program, we leverage the program to recruit outstanding Ph.D. students whose first year on campus is enriched through participation in the immersion courses. In addition, the research facilities that we established to support the GIP courses are typically used to support undergraduate and graduate student research during the academic year when they are not being used by the GIP Research.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

Because the focus of the GIP education is advanced workforce development, as opposed to research, it is difficult to quantify its impact in terms of grants and publications. However, the GIP is indirectly responsible for enhancing the university's research profile in the following ways: (1) participation in the GIP programs provides critical research training that jumpstarts Ph.D. candidates' research; (2) a transitional fellows program provides pathways for aspiring graduates of the GIP to return to the Ph.D. program, supplying some of our best talent to our research groups; and (3) the facilities established through the GIP provide critical research infrastructure that fuels student and faculty research.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

The GIP meets a critical need in Oregon by supplying applied scientists with advanced degrees that are uniquely prepared to help Oregon companies maintain leadership positions in microelectronics, polymers and coatings, optical materials, bioinformatics and advanced materials analysis and imaging. Over 500 master's students have been placed in Oregon companies across the history of the GIP. Based upon the demand from these companies, there is clearly an economic benefit that is difficult to quantify.

Describe any indirect benefits to Oregonians from this program:

GIP graduates add value to and strengthen the in-house expertise of the Oregon companies that employ them, which, in turn, creates opportunities and greater economic stability for all Oregonians.

How does this program (or could it) provide meaningful information to assist the State Legislature?

The GIP is a model for advanced workforce development. It is a targeted graduate training program specifically designed to meet industry needs. It is nimble enough to keep pace with changing industry needs on an annual basis. As a self-sustaining program, the program only exists when there is both strong student and strong company demand. It is a nationally unique model tailored to Oregon industry in a way that complements other internship programs and community college-based workforce development.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The GIP has a small staff, currently housed administratively under the Office of the Vice President Research and Innovation (OVPRI), which oversees the different program tracks, and recruits instructor talent from the College of Arts and Science as well as other universities (principally OSU) as needed. The GIP is fully integrated within the UO, involving the Materials Science Institute, the departments of Chemistry, Physics, and Biology, the Center for Advanced Materials Characterization in Oregon (CAMCOR), the Graduate School and the OVPRI.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  Currently, a director, two program track leaders, a recruiter and a business manager comprise the staff of the program. The director reports to the OVPRI through an associate vice president. The program and its tracks have been approved by the Graduate Council based upon an academic oversight model, which leverages the mechanisms within the participating academic departments.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

All staff and academic instructors are employees of the UO or are hired instructors from other institutions (typically OSU).

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The program is provided space within the science complex for staff offices, lecture rooms and laboratories. The program is overseen by the academic departments (academic oversight) and the OVPRI (administrative oversight).

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  The GIP seeks annual feedback from industry partners on the individual interns and the internship programs as a whole. Additional internal measures include the numbers of student applications and the quality of those applicants, the speed of placement of interns, and the rate of conversion of interns to employees.

WOU Engineering Sustaining Funds

Contact: Dr. David Olson, Computer Science Division Chair, olsond@wou.edu
Website: http://www.wou.edu/cs/

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year): 2015-2016 AY**

Undergraduate Degree Program	N – Head Count	Graduates (Degrees Granted)			
CS Majors	165	36		Undergrad SCH	6780
CS/Math Majors	29	5		Graduate SCH	695
CS Applied Bac	3			CS Division total SCH:	7,475
CS Minor	8	8			
IS Majors	88	15			
IS Applied Bac	2				
Minor	6				
MIS (Masters/Graduate)	43	12			

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Undergraduate students engage in team projects as part of the undergraduate curriculum and have symposia for project presentation that also includes attendance from local industry representatives. (Approximately 30 per year)

- **Describe student Internships or employment (include number of student workers/graduate assistants annually):**

  Seniors have the option for internship/practicum placement in small, regional firms. (Approximately 15 per year)

Describe any indirect benefits to university students through the university's participation in this program:

WOU's participation in ESF-funded activities have also provided computational science curricular support to students in multiple majors on campus -- including criminal justice, visual communication design, and education technology. The division also offers introductory CS coursework non-majors can take as part of their quantitative reasoning undergraduate learning outcome general education requirements.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

Several of our faculty have received small research grants, but the focus of ESF funding is not on faculty research, but rather on undergraduate curriculum. Because of our focus on students typically underserved in CS programs, in 2013 a lead donation of over $200,000 was made toward a $1.3M renovation project for improvements to the CS teaching facilities to better support student project team work.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Relevant impact is all via graduating students, especially first generation students in CS.

Describe any indirect benefits to Oregonians from this program:

WOU's mission is heavily focused in being an access institution. This includes access for students wishing to pursue careers in computer science-related industries. For many of our graduates, they represent the first in their families to enter the professional world ESF is promoting. Faculty in the CS division are actively engaged in the ASOT-CS administration and have been aggressively pursuing establishing synchronous curricular offerings to remote community colleges with insufficient CS staffing (e.g., Clatsop, Blue Mountain) to provide lower-division coursework so that students can complete the ASOT-CS at the community college. The CS division also participates in open-houses, gaming days and similar outreach programming with local/regional middle-high schools.

How does this program (or could it) provide meaningful information to assist the State Legislature?

ESF funding is directed toward support of curricular programming in computer science and in information systems. The faculty in the Computer Science Division have intentionally established an environment that provides a high level of faculty-student mentoring to better meet the learning needs of first generation and traditionally educationally-disadvantaged students. Such students have significant difficulty in the much more competitive environment found at the larger engineering schools.

Further, the faculty in this program have expanded the reach to Oregonians via establishment of Applied Baccalaureates in Computer Science and in Information Systems. This is beginning to attract students with Applied Science degrees; providing them with a faster tract to completion of a baccalaureate degree in computer science.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The ESF-funded curricular operations are folded into the operational fabric of our computer science division programming and also provides funding for necessary support services from the university computing services staff.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  Funding covers the equivalent of 3 FTE in adjunct faculty coverage and 1 FTE of university computing services staff. In addition, student work wages funding is also allocated from ESF funds. Since this funding was established, the university has converted 2 previously ESF-funded faculty positions into E&G- funded positions.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All individuals are faculty, staff or students of the university.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The computer science programming is significantly covered by the university as part of its core E&G funding (about 80%). However, the higher costs of running CS and the outreach to community colleges is possible due, in part, to the additional funding provided by the ESF fund.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  Because the program is a student curriculum-focused program, evaluation is tied to ongoing university academic program review processes and assessment of undergraduate learning outcomes.

  Adjustments to the curriculum are made in light of this as well as changes in industry demand and feedback from internship placements.

TallWood Design Institute

(previously National Center for Advanced Wood Products Manufacturing and Design)

The TallWood Design Institute is the nation's only research collaborative dedicated exclusively to the advancement of structural wood products. It conducts the applied research, testing, product development and training needed for widespread adoption of mass timber building technology in the U.S.

The Institute is a partnership between OSU and the UO, bringing together the strengths of OSU's College of Forestry (ranked #2 worldwide in 2017) and College of Engineering, and the University of Oregon School of Architecture and Allied Arts, a US leader in sustainable architecture for more than 50 years.

Contacts: Geoff Huntington, OSU & Judith Sheine, UO
Iain Macdonald, Associate Director
Website: http://tallwoodinstitute.org/

Legislative Origin:

SB 5507 (2005) Budget Report: *The Subcommittee approved $2,500,000 General Fund for the College of Forestry at Oregon State University to operate a center for the manufacturing and design of advanced wood products in cooperation with the University of Oregon. The $2.5 million represents a partial biennium of expenses, and as such, state support for the center rolls up to $3,400,000 in the 2017-19 biennium.*

History of Dedicated State Appropriations:

2015-17 $2,500,000
Budget Report for SB 5507 (2015) noted "the $2.5 million represents a partial biennium of expenses, and as such, state support for the center rolls up to $3,400,000 in the 2017-19 biennium."

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 1,225,000
University Funding	191,910
Gift Funding	7,500,000
Federal Grant & Contract Funding	2,402,490
All Other Grant & Contract Funding	315,000
Total	$11,634,400

Mission Statement, if applicable:

The Institute seeks to:

- Enable Oregon's manufactured wood products industries to take a dominant competitive position in the emerging US market for high value engineered wood products that are perfectly suited to the timber we grow and the stewardship of our State.
- Support Oregon's growing reputation as a center for sustainable building design.

By:

- Growing the mass timber manufacturing base in Oregon.
- Eliminating barriers and stimulating demand for buildings that use mass timber products and building systems.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Undergraduate students in OSU's Bachelor of Science in Renewable Materials and undergraduate and graduate students in UO's Architecture programs can enroll in elective joint courses held by OSU/UO, featuring project-based learning involving mixed interdisciplinary teams from both institutions. Students gain enhanced real-world experience in designing and fabricating products and buildings that utilize engineered and advanced wood products, helping to train the next generation of architects, designers and manufacturers necessary to position Oregon as a U.S. leader in this field. In the first year of the program, a joint OSU/UO course on Timber Tectonics (4 credits) was taken by four OSU undergraduates, one OSU graduate student and 13 UO students in Winter 2016. A second architectural studio course to redesign the Hayward Field grandstands (6 credits) at UO had 11 UO students and 12 OSU students. A joint course on product development (3 credits) involved eight OSU and 16 UO students. These programs are being constructed and developed to expand both in offerings and student involvement from all three participating colleges in successive years.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  TDI has leveraged funding from the State of Oregon to secure a large additional federal research appropriation that is being used to carry out high-priority research projects on technical performance characteristics such as fire protection, seismic resilience, weather-related durability, acoustic and thermal insulation, indoor comfort, and others. In total during the biennium, 14 new research projects have been funded by TDI involving 15 Masters and PhD students. TDI intends to further leverage the state contributions to establish a research cooperative to attract private sector matching funding that can support greater numbers of research projects.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Ten students have helped to represent TDI at conferences and trade shows and have assisted in providing tours of lab facilities. One student worker in the Department of Civil and Construction Engineering has been hired as a summer intern to summarize research findings for presentation to various stakeholder groups, including building inspectors, code officials, architects and structural engineers. Now that the TDI is a reality, student internship opportunities are being aggressively developed in concert with industry in the United States and Europe. Interest is high, and opportunities for student engagement are growing.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

TDI's strong links with industry are creating enhanced internship and employment opportunities for students, and are stimulating a greater number of industry partnerships and sponsorships for research projects. The enhanced links between the university and industry are also expected to contribute over the longer term to greater awareness of relevant academic course offerings and a corresponding increase in enrollment. TDI offers seminars and special events that are open to students as well as industry and external stakeholders. These provide supplementary learning opportunities for students as well as the chance to network with and learn from the professional communities that they will become a part of in the future. Lastly, state of the art infrastructure (lab buildings, equipment, machinery) and specialist personnel attached to TDI will enrich undergraduate and graduate learning experiences and equip them with marketable skills in fields such as 3D computer-aided-design, building information modeling, and computer-and robotic-controlled manufacturing.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

As noted above, TDI has successfully leveraged state funding to raise an additional $10,409,400 in contributions from the University, private sector and federal grants and contracts. These include approximately $1.9M from a congressional appropriation channeled to OSU through the Agricultural Research Service and a $450,000 grant from Economic Development Administration for peer review and testing of building designs and advanced wood products that can inform future building code development in Oregon. At time of writing, a further $250,000 grant from USDA Wood Innovations Program has just been secured to help equip TDI's new Advanced Wood Products Lab with an advanced computer numerical control. Private sector contributions for the construction of the new A.A. Red Emerson Advanced Wood Products Laboratory total approximately $7M.

As this is the first two years of operation, research results from early projects are still at the pre-publishing stage but projects have been selected based on the input of a robust external evaluation committee consisting of representatives from the architectural design, engineering, manufacturing and construction communities with the goal of ensuring quick application and impacts of results in the marketplace.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

TDI's work with Oregon manufacturers has already resulted in tangible expansion of rural employment opportunities in two communities. TDI's strategic leadership encouraged DR Johnson of Riddle, OR to become the first certified manufacturer of cross laminated timber (CLT) in the US. TDI provided a range of product testing, prototyping and other forms of technical assistance to the company and advised on acquisition of manufacturing equipment. TDI also assisted Freres Lumber Company of Lyons, OR to create a new category of mass timber product known as the Mass Plywood Panel. The company is currently constructing a new manufacturing facility and will commence commercial production in January 2018. TDI continues to encourage other manufacturers to consider expanding their product lines to include mass timber through activities such as guided technical tours to the European heartland of mass timber manufacturing, seminars, conferences and direct outreach efforts. Mass timber jobs involve sophisticated skills in computer aided design and fabrication and are thus higher value than typical commodity manufacturing jobs. TDI is helping to equip Oregon workers with the requisite skills to be successful in this industry by creating new training courses that will be delivered statewide in partnership with community colleges and high schools.

TDI has carried out technical testing for new mass timber buildings in Oregon, such as the 12-story Framework building that will begin construction in Portland in 2017, and a 4-story parking structure to be constructed in 2018 in Springfield. This work is helping to overcome major challenges such as seismic resilience, durability against weather and moisture, and fire protection, and is enabling Oregon to emerge as the US leader in the design and engineering of this category of buildings. Ultimately this will create high-paying knowledge economy jobs in the architectural and structural engineering sectors.

Describe any indirect benefits to Oregonians from this program:

Development and expansion of the mass timber industry provides indirect financial benefits to Oregonians in terms of spinoff employment opportunities in communities in which new high-value manufacturing jobs have appeared. Mass timber can utilize low-value forest residues that otherwise have little commercial value and tend to be left in the forest to decay, resulting in much higher risk of wildfires, therefore a major benefit will be increased fire safety and lower economic costs associated with fighting wildfires.

How does this program (or could it) provide meaningful information to assist the State Legislature?

TDI's research projects are generating critical technical data in the fields of seismic resilience, fire protection, acoustic and thermal (energy) efficiency to inform the future cost-effective design of sustainable wood buildings in the US. Our research is also monitoring the competitive landscape and evolving business case for large wood buildings and collecting global market intelligence to assist our local manufacturers to compete effectively against offshore suppliers. TDI's peer review and product testing program generates information on the viability of various design approaches, and this information is being supplied to Oregon building code development officials to ensure that the state assumes a leadership position within the US in the field of mass timber manufacturing and sustainable building design.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  TDI staff are university employees. TDI benefits from the services of existing employees in the College of Forestry to carry out marketing and communications, continuing education, administrative, financial and research functions. Faculty members and students in OSU's College of Forestry, College of Engineering and UO's School of Architecture and Allied Arts carry out applied research and participate in continuing education, outreach and industry support activities.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  There are currently two full time employees – an Advanced Wood Products Lab manager and an Associate Director. These staff are professional faculty and are housed in offices within the College of Forestry.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  The employees are university staff.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  Grant funds are subject to the normal OSU indirect charges. 15% of the state funds received are assigned to pay for the costs of central staff in the College of Forestry, specifically in the marketing and communications, IT, financial, research services, continuing education support and administrative functions. Prior to the hiring of an associate director for TDI, a College of Forestry senior staff member served as *de facto* director of the Institute. A portion of his salary was reimbursed to the College of Forestry from the TDI budget to reflect this.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  An external industry advisory board is being created to ensure that the training, education, research and testing activities of the Institute remain highly relevant to the needs of the emerging mass timber industry. Our internal research calls for proposals are adjudicated by an industry review panel. Specific program advisory committees are also struck to guide course development of major new curricula, such as the Certificate in Mass Timber Manufacturing.

Dispute Resolution – PSU Oregon Consensus

Oregon Consensus is a program of the Mark O. Hatfield School of Government at Portland State University. It facilitates collaborative, agreement seeking processes that unite communities, government, and businesses to resolve differences and build durable agreements that address public issues.

Contacts: Peter Harkema, Director
Laurel Singer, National Policy Consensus Center Director
Website: http://oregonconsensus.org/

Legislative Origin:

SB 904 (2003) transferred the programs of the Dispute Resolution Commission to the Oregon University System and abolished the Commission effective September 2003. Currently the UO and Portland State University (PSU) provide services that use this funding, allocated by agreement 65%/35% respectively. The HECC adopted OAR 715-013-0066 to allocate these funds via this agreed-upon split.

History of Dedicated State Appropriations:

2007-09 $2,267,275
2009-11 $2,107,233
2011-13 $2,297,895
2013-15 $2,435,769
2015-17 $2,516,149

FY2016 Total Funding Sources (UO and PSU combined):

State Program Funding (GF)	$1,232,913
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	407,024
All Other Grant & Contract Funding	725,949
Total	$2,365,886

*** PSU receives $431,519 general funds of the $1,232,913 of the 2016 total (Federal and other grants and contract funding represent above indicate funds that Oregon Consensus leverages to support project efforts)

Mission Statement, if applicable:

The mission of Oregon Consensus (OC) is to fulfill the Oregon legislative mandate (ORS 174.109) to serve as a neutral forum to provide mediation and other alternative dispute resolution services for public bodies. As part of this mission, OC seeks to engage diverse stakeholders in creating lasting solutions to public policy challenges in Oregon using collaborative agreement-seeking processes. We increase the

use of these services by networking with and serving as a resource to legislative leaders, government agencies, nonprofits, and non-governmental organizations for assessing whether and how to implement collaborative agreement-seeking processes.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  OC staff played a key role in the development and launch of the new PSU Graduate Certificate Program in Collaborative Governance, an 18 credit hour graduate program. The certificate program offers students the opportunity to learn about the theory behind interest-based negotiation, collaborative approaches to decision making, and apply this knowledge to real world scenarios. OC staff serve as the primary faculty for the course, "Collaborative Governance Process and Systems" course. As part of the certificate program, students will complete a practicum, some working on OC projects, as an opportunity to further develop their skills and refine their knowledge of collaborative governance.

  Certificate Program
  - Students formally admitted to the entire certificate program: 9
  - Students pending admittance: 5

  Course Enrollment
  - Fall: 24 students (72 credits)
  - Winter: 17 students (51 credits)
  - Spring: 3 students (9 credits)
  - Summer: 21 currently registered (63 credits)
  - Total: 65 students (195 credits total)

  (Total credit hours reflects credit generated through the entire Collaborative Governance Certificate Program in the last academic year. The winter term credits reflect the course taught solely by Oregon Consensus staff)

  In addition to the Certificate Program, OC staff conduct a 30-hour training for students at the UO law school in the Practice of Collaborative Governance. The participation in this training are as follows:
  - 16 students attended the training: 11 were Law Program students, 4 were Conflict Resolution Program students, 1 dual-degree student (Law and Conflict Resolution)
  - 4 students sought internships from NPCC and its affiliated network of practitioners.

Additionally, OC staff frequently serve as guest faculty and/or lecture in courses throughout the University, including the Hatfield School or Government, College of Public Administration, and Conflict Resolution Graduate Program.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  OC provides many opportunities for students to gain experience in the field of collaborative governance, facilitation, and mediation. While working on projects at OC, students often work alongside OC's affiliated private providers assisting with public policy facilitation. Because of the connections made on these cases, a number of times these students were later hired by the providers or firms.

  OC works on research with students, for example, this year a student worked with our team and a PSU professor to assess the collaborative approach to the State of Oregon's Sage Grouse Plan development. Through a grant OC helped attain through the Hatfield School of Government, the student was able to receive payment for her work on this research. A link to the research report can be found
  at: http://oregonconsensus.org/projects/sage_grouse_conservation_partnership/.

- **Describe student Internships or employment (include number of student workers/graduate assistants annually):**

  OC routinely provides internships to students from PSU and UO to work side by side with staff and the program's senior affiliated providers to learn methods for approaching public policy related conflicts using interest-based approaches. Below are a few of the examples this past year of OC's work with student interns and the statistics on those placements.

  Working in collaboration with the Center for Women's leadership, OC helped secure a Hatfield Grant to provide internship opportunities for two woman of color. OC and Oregon Solutions shared employment of the interns for a total of 200 hours of work as part of this grant opportunity, which included mentorship in collaborative governance. In collaboration with the Oregon Office of Community Dispute resolution, the program procured a Hatfield grant that was matched by both programs to support six paid student internship placement in community dispute resolution throughout the state.

  Internship Program by the Numbers
  - Intern Inquiries: 13
  - Interns engaged on National Policy Consensus Center (NPCC) projects: 7
  - Interns referred to our affiliated provider network: 4

  Paid/Unpaid Interns:
  - Hatfield Grant paid interns: 2
  - Other project funded interns: 2
  - Unpaid interns: 3

  Intern hours to date on NPCC projects:
  - Hatfield grant interns: 200 hours

- Other: Approximately 180 hours

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

OC has a mutually beneficial relationship with PSU. The program's university affiliation is critical to the program's ability to function as a neutral forum and also allows access to the tremendous academic resources and expertise of these institutions. OC draws on student interns to provide additional capacity for staffing, and to provide critical learning opportunities for students. Housing the program at the university creates opportunities for students to directly engage in, learn from, and support collaborative approaches to resolution of public policy issues. Students are exposed to public and private leaders, which has value in exposure future work opportunities and various levels of government, which future civic engagement. OC helps develop an educated citizenry to support responsible roles in a democratic society, and advancing family life, civic stability, and the promotion of knowledge and skills.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

OC leverages state resources to support its project efforts. Its projects often bring resolution to complex public issues that save on costly litigation and the policies enacted often create policy efficiency that result in efficiencies for the state. For example, our work several years ago resulting in a statewide approach to population forecasting was calculated to save the state millions of dollars over the next decade. OC actively engages in research efforts, for example, this year a student worked with our team and a PSU professor to assess the collaborative approach to the State of Oregon's Sage Grouse Plan development.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

OC projects bring together multiple levels of government (tribal, federal, state, regional, and local) and stakeholder interests to resolve public policy challenges faced in the state of Oregon. OC projects give Oregonians directly affected by and interested in a topic a voice in decisions that impact them. OC projects, from forest collaboratives support to regional transportation planning efforts, facilitate consensus agreements on economic challenges facing the state in both rural and urban settings. As noted above, OC helps avoid costly litigation resulting from protracted litigation and to move forward with policies that can move forward practices that bring durable and sustainable solutions that bring public benefit.

Describe any indirect benefits to Oregonians from this program:

All OC projects are designed to resolve challenging policy related topics for the benefit of Oregonians. For example, our program has worked extensively in the Burns and greater Harney County community for nearly ten years developing and facilitating collaborative efforts. Many have pointed to these collaborative efforts as providing critical resiliency during and after the Malheur Refuge occupation. OC also helps free up agency staff time and resources that would have otherwise be tied up in costly and time consuming litigation and instead to build positive relationship with their constituencies.

How does this program (or could it) provide meaningful information to assist the State Legislature?

OC is the state of Oregon's legislatively mandated program for public policy dispute resolution. It has served the Legislature by providing a neutral forum and facilitation service for legislative task forces, legislatively established committees, and Governor designated task forces. Legislators will seek out OC services to assist in forging consensus-based recommendations on contentious public policies they can advance through the Legislature.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  OC offices and staff are located in the College of Urban and Public Affairs (CUPA) at Portland State University. The staff of OC share an office with staff of the Oregon Solutions program, and common space with professors, other institute's staff and the dean's office, which has led to integration into the University, and particularly into the Hatfield School of Government. OC has made use of the expertise of professors and students in multiple disciplines, to provide specific expertise for the benefit of projects.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  OC has 7 FTE, though that FTE equates to significantly more than 7 people. OC is able to leverage staffing efficiencies by buying portions of FTE of other PSU staff and faculty. OC also maintains and relies on a network of private senior mediators and facilitators who have diversity of expertise and geographic location, which allows the program flexibility to meet a diversity of policy needs in the state while maintaining low overhead.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  OC staff members (and student workers) are PSU employees. In addition to staff members, OC maintains a network of private affiliated practitioners that are pre-contracted with the Program and can work on OC projects. Our affiliated practitioners offer a diversity of skills and experience and the arrangement allows OC to serve as a neutral forum for the state while keeping overhead low and scaling up available resources as project needs arise.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  PSU provides office space, facilities, the full suite of administrative support, and access to all business services provided to the programs and departments of the university. OC pays the university an indirect cost of 20% on all project expenses, which contributes some partial funding towards the cost of facilities, telecommunications, and other university-wide resources and services.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  Upon completion, OC projects are evaluated for success by surveying the project participants. In select cases, such as the SageCon effort described above, OC has also teamed with university professors to research and evaluate project success and key lessons learned. Results from evaluations and research are applied to future projects to ensure continuous improvements in service delivery.

Dispute Resolution – UO Office for Community Dispute Resolution

The UO School of Law administers the Oregon Office for Community Dispute Resolution (OOCDR) that provides mediation services and conflict resolution training to private parties. The OOCDR also provides funding and training support to 20 community dispute resolution centers, serving 25 Oregon counties.

Contact: Charles F. Ikard, OOCDR Program Administrator
Website: http://pages.uoregon.edu/oocdr/

Legislative Origin:

SB 904 (2003) transferred the programs of the Dispute Resolution Commission to the Oregon University System and abolished the Commission effective September 2003. Currently the UO and PSU provide services that use this funding, allocated by agreement 65%/35% respectively. The Higher Education Coordinating Commission (HECC) adopted OAR 715-013-0066 to allocate these funds via this agreed-upon split.

History of Dedicated State Appropriations:

2007-09 $2,267,275
2009-11 $2,107,233
2011-13 $2,297,895
2013-15 $2,435,769
2015-17 $2,516,149

FY2016 Total Funding Sources (UO and PSU combined):

State Program Funding (GF)	$1,232,913
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	407,024
All Other Grant & Contract Funding	725,949
Total	$2,365,886

Mission Statement, if applicable:

Housed within the UO School of Law, the Oregon Office for Community Dispute Resolution (OOCDR) currently supports 16 community dispute resolution centers (CDRCs) in 24 Oregon counties through grantmaking, consultation, training, research, technical assistance, networking, and collaborative partnering.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Students enrolled in the Conflict & Dispute Resolution (CRES) Master's program are required to complete 8 credit hours of internship for completion of their degree. Many CRES students have completed internships with the CDRC network.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  In addition to engaging in internships with the CDRC, CRES students also regularly engage with the OOCDR and CDRC network to perform research and service related to their final graduate projects. For example, a year one CRES student completed an applied research project entitled, "Agriculture Coexistence Mediation Manual: A Training Manual for Mediators for Farmer-to-Farmer Disputes." This project was completed in partnership with Six Rivers Dispute Resolution Center, a CDRC that serves the Hood River region. Currently, a team of three CRES students are working with UO professor Kevin Alltucker to produce a program evaluation of the OOCDR.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Over the years many CDRCs have provided opportunities for internships for conflict resolution students from a variety of higher education institutions across the state. CDRCs also provide opportunities for conflict resolution graduate students to practice their skills volunteering as mediators and facilitators for our programs. OOCDR works with the CRES program at the UO to explore and provide opportunities for student involvement with CDRCs. This past year, five CRES students completed internships through the CDRC network. In addition, a CRES graduate served as the Restorative Justice Coordinator for Lane County's CDRC—The Center for Dialogue and Resolution. Another CRES graduate was recently elected to serve on the board of directors for one of the CDRCs.

Describe any indirect benefits to university students through the university's participation in this program:

Opportunities to give back to their home communities are plentiful as a result of the experience gained by volunteering with local CDRC's and by participating in available internships. As described above, many graduate students go on to volunteer in mediation centers around the state, and some even become staff members for those non-profit organizations.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

All of the CDRCs which are grant recipients are required to match OOCDR grants at 100% and have consistently met that requirement. The matching fund amounts from the grant applications for the 17-19 biennium amount to $7,485,711. This amount includes other cash along with in kind contributions, which include volunteer hours and donated office expense.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Statistics for the year 2016 show significant service levels to the 24 Oregon counties served. 34,000 individuals received a variety of services including conflict resolution, training and education in conflict resolution, large and small group facilitation, etc. A significant service involves the Oregon Foreclosure Avoidance Program which allowed more than Oregon 1700 homeowners to avoid foreclosure during 2016. Many of the CDRCs offer restorative justice or victim offender mediation programs. For example, Lane County's Center for Dialogue and Resolution administers the Restorative Peer Court—a diversion program for first-time juvenile youth offenders that allows for meaningful accountability, learning, and healing. Click here to view more information: http://www.lanecdr.org/.

Describe any indirect benefits to Oregonians from this program:

In addition to direct mediation and facilitation services, the CDRC network provides significant levels of conflict resolution training to citizens—youth and adults. This builds capacity for community members to resolve disputes at a lower level, and decreases cost to Oregon by decreasing reliance on litigation in the court systems.

How does this program (or could it) provide meaningful information to assist the State Legislature?

The resources and knowledge from the program could be leveraged to obtain information on trends in terms of the number and kinds of conflicts that arise on communities, as well as policy recommendations based upon those trends.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  Part of the funds received from the Legislature are used to provide office space and administrative support for the OOCDR staff and centers around the state.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

OOCDR staff has historically been at 1.5 FTE. The staff works closely with the CRES program and university administration to provide accurate and diligent oversight of the grant funds which are awarded to successful grant applicants from around the state.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  University staff.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  While funding received helps pay for some of the support received from the Law School, it does not fully cover the level of support required to provide adequate grant oversight. Therefore, the University provides a significant amount of support beyond the actual funds allocated for administrative support.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  Currently, UO professor Kevin Alltucker is working with a team of UO graduate students to complete a program evaluation of the OOCDR. This report should be available in the next 1-2 months, and can be distributed upon request.

PSU Oregon Solutions

Oregon Solutions (OS) promotes a new style of community governance, one based on the principles of collaboration, integration, and sustainability. OS is a state-funded program that brings together local groups to solve local problems using sustainable methods.

Contact: Steve Greenwood, Director
Laurel Singer, National Policy Consensus Center Director
Website: http://orsolutions.org/

Legislative Origin:

HB 3945 (2001) Oregon Sustainability Act
SB 5549 (2007) First Appropriations

History of Dedicated State Appropriations:

2007-09 $2,600,000
2009-11 $2,416,355
2011-13 $2,061,637
2013-15 $2,185,335
2015-17 $2,257,451

FY2016 Total Funding Sources:

State Program Funding (GF)	$1,106,151
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	31,410
All Other Grant & Contract Funding	295,875
Total	$1,433,436

Mission Statement, if applicable:

The mission of OS is to develop sustainable solutions to community-based problems that support economic, environmental, and community objectives, and are built through the collaborative efforts of businesses, government, and non-profit organizations.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Students from both the UO and PSU serve as interns on OS projects to earn academic credit for practicum or other course requirements for their college degree. Student interns are typically enrolled in the Conflict Resolution or the Public Administration and Policy programs. In addition, students can gain independent study credits in an area related to Collaborative Governance by working under the supervision of OS staff. During the last academic year, four students earned approximately 12 – 15 academic credits and contributed a total of 450-600 hours working on projects.

  OS staff played a key role in the development and launch of a new Collaborative Governance Graduate Certificate program, which is being offered online through the PSU Hatfield School of Government. Students completing the entire certificate program earn 18 credits over four terms. One of the OS staff serves as the primary instructor for the certificate program's three-credit course entitled "Foundations in Collaborative Governance" course. The breakdown of enrollment in the overall certificate program and enrollment is each course is as follows:

  Certificate Program
  - Students formally admitted to the entire certificate program: 9
  - Students pending admittance: 5

  Course Enrollment
  - Fall: 24 students (72 credits)
  - Winter: 17 students (51 credits)
  - Spring: 3 students (9 credits)
  - Summer: 21 currently registered (63 credits)
  - Total: 65 students (195 credits total)

  (Total credit hours reflects credit generated through the entire Collaborative Governance Certificate Program in the last academic year. The fall term credits reflect the course taught by Oregon Solutions staff).

  Additionally, OS has been home to students from the Masters in Public Administration Program completing a "509" project. The 509 project is required to be integrative of a student's skills and knowledge in a field and have a tangible impact on an organization. Typically, OS is host to one 509 student each year.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  OS utilizes student interns on most projects in roles from logistical meeting support, which allows them to learn skills related to collaborative process preparation and planning, to facilitating small-group discussions and learning about the impact of relationship building and collaboration in public processes. Students have found opportunities to provide research for

projects directly, and have gotten inspiration from the work of the project team to explore other related topics in their academic studies. Whenever possible, OS tries to build in financial compensation for the students into the project budget.

OS piloted a Prosperity Initiative program in 2015, which included three separate efforts across the state to work on different poverty-reduction-related issues. These projects included the support of multiple interns, and gave rise to a larger poverty-reduction project in 2016, which accessed the skills of at least five additional student volunteers and interns, many of whom were paid.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  In addition to the paid and unpaid intern opportunities described above, OS worked in coordination with the PSU Center for Women's Leadership Center and Oregon Consensus during the last academic year to get a grant from the Hatfield School. This grant supported two women of color to each be paid for a combined total of 100 hours at OS and Oregon Consensus, which included receiving mentoring from staff in the field of collaborative governance.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

Through their placement on projects, students are exposed to state leaders and agency staff. This exposure can provide the entrée for potential future employment and references that can be helpful for employment. Work on OS projects also gives students exposure to various levels of government, which helps to further their understanding of local politics and policy and build their civic capacity. OS helps develop an educated citizenry to support responsible roles in a democratic society, and advancing family life, civic stability, and the promotion of knowledge and skills.

The exposure to real life experiences through OS projects has helped students to discover career possibilities within the field of collaborative governance and to gain clarity about their goals and aspirations. Additionally, students who have worked with OS gain familiarity with program resources and often turned to the program for assistance in approaching issues they encounter in their work in public administration.

Students have also indirectly benefited from learning skills for problem solving and working with others that are applicable in a variety of situations, beyond just academic or professional endeavors. Students often report applying their newfound skills in the diverse communities in which they interact.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

All OS projects leverage state legislative funds that provide for the personnel expenses associated with management of a project, with a match of resources contributed by the community, typically a combination of county, corporate, city, philanthropic, non-profit, or federal funds.

Beyond leveraging resources for the OS process management, OS projects leverage additional resources for implementation. Every OS project culminates with a "declaration of cooperation" with partners committing resources needed to implement the identified solutions. In this way, the final solution is made possible by the alignment of multiple resources forged through the OS project that would not be possible by any one entity. In addition, the collaboration of the OS project often attracts significant resources beyond the team. This past year, for example, the OS Columbia Ready Levee project team demonstrated such a high level of commitment to the successful outcome of the partnership through their collaboration and pooling of their own resources, that they successfully attracted significant additional resources for project implementation.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Every OS project is designed to implement a specific solution to solve an important problem or capitalize on an opportunity, which will directly benefit a specific community and have significance for the state. OS works on an average of 20 major projects per year.

OS projects emphasize the aspects of the triple bottom line, always seeking to have economic, environmental, and social benefits that are linked to the desired outcomes outlined by the project team and the focus of the project. By leveraging and aligning resources for project implementation, OS helps to lessen the fiscal burden of Oregon communities, at the local and state levels.

Describe any indirect benefits to Oregonians from this program:

In addition to direct benefits, every project has the indirect benefit of building the community's capacity to address challenges in a collaborative way, build and restore trust in its state and local governmental entities, and increase social capital for future problem solving.

How does this program (or could it) provide meaningful information to assist the State Legislature?

Individual legislators, as well as the State Legislature as a whole, often turn to OS as a resource to help form and support collaborative groups to present the Legislature with information and assistance in leveraging resources for project implementation. A few examples this past year include the Willamette Falls Task Force, and a needs assessment regarding Oregon levees.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  OS offices and staff are located in the College of Urban and Public Affairs (CUPA) at PSU. The staff of OS share an office with staff of the Oregon Consensus program, and common space with

professors, other institute's staff and the dean's office, which has led to integration into the university, and particularly into the Hatfield School of Government. OS has made use of the expertise of professors in multiple disciplines to provide specific expertise for the benefit of projects. In addition, OS has utilized the research of students within the CUPA that can help inform project outcomes. For example, research on food security in the Columbia Gorge region was utilized for a project this past academic year.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  OS funding covers just over 11 total FTE, though that FTE equates to well over 11 people. OS is able to leverage staffing efficiencies through buying portions of FTE of other PSU staff and faculty. OS also utilizes a wide range of private contractors with diverse expertise and geographic location to provide services, which allow the program to have lower overhead and be flexible to meet communities' needs across Oregon.

  OS staff are all employees of the university and many participate in broader university discussions, particularly as related to equity, diversity, and other topic areas.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All employees are university staff.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  PSU provides office space, facilities, the full suite of administrative support, and access to all business services provided to the programs and departments of the university. OS pays the university an indirect cost of 20% on all project expenses, which contributes some partial funding towards the cost of facilities, telecommunications, and other university-wide resources and services.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  OS makes use of post-project evaluations to gather data on the perspectives and experiences of project participants to identify factors that contribute to project success. OS also engages faculty to assist in measuring the efficacy of the programs and outcomes.

OSU Fermentation Science

In 2013, the Legislature directed $1.2 million (biennium) in funding to OSU to expand its fermentation science programs. Funding supports university research in all aspects of the production of high value wine, beer, cheese, breads, and distilled spirits - all products of fermentation. It facilitates OSU's goal of being the first university in the nation with a working research winery, brewery, distillery, and creamery. The annual economic impact of Oregon's wine and beer industries is approximately $7.9 billion.

Contact: Bill Boggess, Executive Associate Dean, College of Agricultural Sciences
Website: http://owri.oregonstate.edu http://oregonstate.edu/foodsci/

Legislative Origin:

SB 816 (2013) provided recurring funding to the fermentation sciences programs at OSU to provide science-based research and innovation and skilled workforce development in support of Oregon's wine, cheese, microbrew, distilled spirits, and artisan bread industries.

History of Dedicated State Appropriations:

2013-15 $1,200,000
2015-17 $1,239,600

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 607,404
University Funding	1,727,516
Gift Funding	225,033
Federal Grant & Contract Funding	703,475
All Other Grant & Contract Funding	790,260
Total	$4,053,688

Mission Statement, if applicable:

OSU's Fermentation Sciences Program provides world class research, outreach, and teaching in support of Oregon's high valued, premium wine, beer, cheese, and distillery industries. It focuses on all aspects of the value chain from the production of premium quality grapes, hops, barley, milk, and other inputs, enhancement of the fermentation processes (enology, brewing, distillation, cheese making) and consumer sensory and market and demand analysis. Its goals are to help provide a skilled workforce, address evolving production problems, enhance fermentation processes, and assist with market access to facilitate the continued quality and growth of Oregon's premium quality fermentation science based industries.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Distilled Spirits is the newest offering in OSU's Fermentation Sciences Program. Chemist Dr. Paul Hughes joined the OSU faculty in 2015, bringing with him extensive experience in brewing and distilling in Edinburgh, Scotland. At OSU, he heads a new program of teaching and research focused on producing, aging, packaging, and marketing of whiskey, brandy, gin, vodka, and other distilled spirits. He also teaches the regulations governing the making and selling of liquor. Hughes is forging ties with Oregon's distilling companies on wide-ranging research and internship opportunities for students. Oregon has more than 80 distilling companies, generating $69 million in 2015.

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  During the 2015-16 academic year, 118 undergraduate students were enrolled in the Fermentation Science program (Fermentation Science and Enology & Viticulture degree options). These students completed approximately 4,200 total OSU credit hours during that period. During the same period, enrollment in Food Science & Technology courses included in the Fermentation Science curriculum generated 3,000 undergraduate student credit hours. In the same period, 12 MS and 4 PhD candidates were enrolled in the Brewing Science, Dairy Processing, and Enology (Wine Science) graduate research studies programs in Food Science & Technology.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Students participate in a variety of hands-on learning experiences, which are central to the fermentation science program. Working in the OSU creamery, students in the dairy fermentation program produce high-quality *Beaver Classic™* cheese using milk from the OSU Dairy produced by students in Animal & Rangeland Sciences, while learning industry good manufacturing practices for product safety and sanitation, quality assurance, product development, engineering, economics, and marketing. During this period, 17 students were employed as trainees in the creamery. Reflecting the program's educational quality, the Smoked Cheddar variety was awarded 3rd Place in the highly competitive 2016 American Cheese Society national contest.

  A crew of 11 students was employed in the winery, participating in crush and wine production from grapes grown at OSU's Woodhall Vineyard. Wine production is directly related to research projects which explore the impact of various yeasts on wine quality, optimizing fermentation parameters for Pinot Noir, and relating the molecular basis of aroma, taste, and mouthfeel to wine sensory attributes. Through a competitive work-study program, four students were able to work for one year in the field of enology and gain valuable research experience working directly with a host faculty member in Food Science and Technology.

In the research pilot brewery, 9 students contributed essential operations and equipment support, while obtaining direct hands-on training with different experimental brewing conditions to develop new hops, barley, and wheat varieties for brewing, including dry hopping.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Of the 45 fermentation science B.S. graduates (41 Fermentation Science, 4 Enology & Viticulture) in 2015-2016, 33 report professional employment or engagement in graduate education directly related to their degree (12 brewing, 7 graduate study, 7 wine, 2 dairy, 5 other food processing/equipment). Of these, 17 are known to be employed in Oregon. Industry employers ranged from small craft breweries to large brewing companies, mid- to large-size wineries, and large dairy/natural cheese producers.

  In 2015-2016, 26 fermentation undergraduate students reported food internships, 18 in alcoholic beverage (breweries, wineries, distillers, cider producers), 2 dairy (cheese, ice cream companies), 5 other food production (hops and fruit processors).

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

Expanding the fermentation industries across the state provides more job opportunities for our students across the disciplines involved in growing the ingredients, processing to finished products, and marketing their unique attributes and benefits. Students are also exposed to the network of industry professionals who work with OSU faculty on a regular basis and to the companies they work for.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

In 2015, Carlos Alvarez, Chairman and CEO of the Gambrinus Company (owner of BridgePort Brewing in Portland), donated $1 million to purchase a state-of-the-art research brewery for the Brewing Science program. This precision brewing equipment will be used for research, as well as teaching and outreach. Over $1.7 million of competitive grants, contracts, commodity, and gift funding was obtained by fermentation science faculty in support of their research programs.

Significant awards include:

- Four awards from the Hop Research Council: (Identifying compounds in hops and beer that drive aroma intensity as a result of dry hopping; identifying brewing qualities which aid hop breeding; single hop brewing trials for assisting in hop selection) $160,238
- USDA-SCRI: (Reducing insect and disease problems in hops) $204,307
- InBev Baillet-Latour Foundation: (Predicting hop aroma in beer) $57,000
- Hard cider industry: (Examining apple cultivars for cider quality) $42,700
- Hop industry: (Aroma hop chemistry support program) $26,600
- Beer industry: (Developing a method to analyze hop acids in brewers spent grain) $17,798

- Oregon Wine Board: (Comparing nitrogen fertilization in the vineyard vs. supplementation in the winery on quality of Pinot Noir and Chardonnay Wines) $177,054
- Oregon Wine Board: (Identifying off-flavors associated with "stressed vine syndrome" in Pinot Noir) $161,019
- Oregon Wine Board: (Impact of pre-fermentation cold-soak conditions on microbial populations and consequences for wine aroma) $50,928
- American Vineyard Foundation: (Investigating fruitiness perception in wines) $124,827
- USDA: (Interactions between Brettanomyces and wine lactic acid bacteria) $59,804
- Oregon Dairy Products Commission: (Dairy innovation) $60,000
- DMI Dairy Research Institute: (Impact of milk hauling and receiving on microbial content in raw milk) $37,897
- National Dairy Council: (Eradication of band-aid flavor in chocolate milk) $36,098

Representative graduate theses and publications as an outcome of these research projects include:

- Assessment of the impact of non-starter lactic acid bacteria from raw milk on the flavor and texture of aged cheddar cheese
- Factors that influence the aroma and monoterpene alcohol profile of hopped beer (Cascade, Chinook, Centennial, Citra, , or Simcoe hops)
- Brown marmorated stink bug taint in wine: Impact on wine sensory, effect of wine processing and management techniques
- Exploration into the influence of malolactic fermentation parameters and pre-fermentation juice treatment on Chardonnay mouthfeel

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

Employment at Oregon's rapidly growing breweries, wineries, distillers and cider makers has been growing even faster than high tech or health care since the beginning of the great recession. Over the last decade, employment has increased 437 percent in Oregon breweries, 59 percent in wineries, and 254 percent in distilleries. Oregon's craft brewing industry contributed $4.49 billion to the state's economy in 2016 while Oregon's wine industry contributed an additional $3.35 billion.

OSU offers several professional development and continuing education short-courses designed to provide brewers and entrepreneurs the technical underpinnings to improve their products and to shape the craft beer experience in their communities. Extension workshops held in wine-growing regions across the state contribute new knowledge to the sustainability of a growing wine industry.

Describe any indirect benefits to Oregonians from this program:

Contribution to state's economy through growth of enotourism, craft brewing festivals and related expansion of hospitality and restaurant industries.

How does this program (or could it) provide meaningful information to assist the State Legislature?

The number of fermentation science graduates entering the brewing, wine, distilled spirits, and artisan cheese industries can be used as an indicator for future growth of these industries, and may help to guide funding decisions by the Legislature.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  As described above, the funds provided by this program enhance the funds already available for fermentation sciences at OSU. The funds provided by SB 816 are fully integrated with the fermentation sciences program. Faculty and staff made possible by SB 816 are fully integrated into department programs and utilize space and facilities assigned to the department. They also participate fully in the educational curricula of each department.

  Furthermore, the fermentation sciences program is itself integrated across several departments in the College of Agricultural Sciences including: Food Science and Technology, Horticulture, Crop and Soil Sciences and Applied Economics. There is also integration of programs by the faculty contributing to fermentation sciences. For example, the brewing professor works with the barley and hops breeders, who in turn work with the plant pathologists, entomologists and soil scientists. There is also integration across food scientists as the food safety professors contribute along with sensory (tasting) experts. Finally, there is integration with marketing experts in Applied Economics.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The State's Fermentation Sciences investment has enabled OSU to hire 6.0 FTE new faculty and staff in distillation, brewing, cheese production, fermentation instruction, viticulture, and value-added product marketing to support these rapidly expanding industries. It has also allowed OSU to provide hands-on training and more than double the number of graduates with degrees in viticulture and enology or fermentation sciences. They are employed in the Departments of Food Science and Technology, Horticulture, and Applied Economics all within OSU's College of Agricultural Sciences.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All employees hired with funds made available by SB 816 are university faculty and staff.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  SB 816 funds are 'subsidized' by other university funding streams (Education and General Funds, Agricultural Experiment Station, Oregon Extension Service) that together make up the core

funding for the fermentation sciences program. Those funds leverage additional funds through private philanthropy, federal and state contracts and grants, and other grants such as from commodity commissions and the Oregon Wine Board.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  The food science and technology educational programs undergo regular review administered by the university. The BS program in food science and technology is accredited by the Institute of Food Technologists, an international scientific society of professionals engaged in food science, food technology, and related areas in academia, government, and industry. The wine, beer and cheese programs each have advisory boards that include industry representatives. The department also has an advisory board.

  The Oregon Wine Research Institute is establishing an outside review process that will occur every five years. Currently, faculty are reviewed by OWRI administration according to performance standards that the faculty established for the Institute.

Signature Research – Overview

The 2003 Legislature allocated $1,000,000 in support of a Signature Research Initiative (HB5077). The initiative funded the expansion of research programs in Multi-scale Materials and Devices to OSU, UO and PSU. The research focuses on integrating nanotechnology and micro-technology into product engineering and design. The overall mission of the initiative is to create high-wage jobs and quality economic development in the state. UO and OSU each receive 47.5% of the available funds and PSU receives the remaining 5%. HECC adopted OAR 715-013-0064 to allocate these funds.

Legislative Origin:

HB 5077 (2003)
Excerpt from LFO Budget Note: $1 million for operation of three Signature Research Centers

History of Dedicated State Appropriations (all participating institutions – OSU, PSU, UO):

2007-09	$1,039,234
2009-11	$863,902
2011-13	$863,903
2013-15	$1,007,335
2015-17	$1,040,577

FY2016 Total Funding Sources (all participating institutions – OSU, PSU, UO):

State Program Funding (GF)	$ 509,883
University Funding	350,000
Gift Funding	-
Federal Grant & Contract Funding	3,046,250
All Other Grant & Contract Funding	1,315,796
Total	$5,221,929

OSU Signature Research

Contact: Sam Angelos, Ph.D., Director, Advanced Technology and Manufacturing Institute (ATAMI)
Website: http://research.oregonstate.edu/research-centers-and-institutes-osu

Mission Statement, if applicable:

The Advanced Technology and Manufacturing Institute (ATAMI) drives research and innovation by connecting industry and high growth technology and manufacturing startups with unrivaled OSU resources.

- Access to world class faculty, facilities and equipment
- Effective research and commercialization with industry and startups to drive economic development in Oregon and beyond
- Unparalleled partnership opportunities

ATAMI is an OSU high technology shared-user facility involved in materials development, manufacturing research and device development. Currently there are eight OSU professors from the College of Engineering and nine private companies at ATAMI. The long-term goal of ATAMI is to catalyze new high-technology industries that result from the spinout and licensing of OSU technology, leading to economic growth and high wage jobs within Oregon and the Northwest. The ATAMI facility contains 80,000 sq. ft. of high-bay space located on the Hewlett Packard Corvallis campus just northwest of the main OSU campus. (In 2004, Hewlett Packard provided a long-term lease of the building to OSU with an estimated value of $22M.) Approximately 52,000 sq. ft. of the facility is currently developed and consists of test and fabrication laboratories, offices and conference rooms. Within this developed space, ATAMI houses the Microchannel Lamination Facility, comprising over 7,000 sq. ft. dedicated to manufacturing and dimensional characterization of microchannel process technology (MPT). The ATAMI facility also houses the Oregon Process Innovation Center (OPIC) for thin film and nanomanufacturing process development.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

Today there are 30 graduate students doing full time research with professors at ATAMI. These students are working on Masters or PhD degrees in engineering. There are also 90 "day use" graduate and undergraduate students who use the ATAMI facilities (equipment) on a periodic basis.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

All students who are at ATAMI or use the facility are enrolled at the university earning academic credits. While it is difficult to directly attribute a specific number of credits to working at ATAMI, graduate students enroll in research and thesis credits, and if their work is at ATAMI, there is a direct linkage between those student credit hours and ATAMI. In addition, the laboratories for MFGE 531 Meso-scale Manufacturing are taught at ATAMI.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  The students are doing research on equipment at ATAMI in their respect fields of interest. This work is directly applicable to their advanced degree requirements and leads to degree.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  During the school year, ATAMI has three undergraduate work study students. In the summer professors hire undergraduate students to do work on research projects. Currently there are plans for five to seven undergrad summer interns/students.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

Students have access to equipment that would be otherwise unavailable to them in their academic training. The strategic partnerships in which OSU engages through ATAMI bring visibility and value to their academic experience. The emphasis on commercialization and transitioning basic research to product is an important aspect to the student experience through ATAMi that is not widely available, but highly desirable.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

OSU receives state funding on the order of $240K annually that is used to support the operating budget for ATAMI. Private industries lease space from ATAMI and the College of Engineering, College of Science and OSU Research Office fund research activities at ATAMI.

Today, OSU-ATAMI researchers have **<u>$38.6M</u>** in active grants including the recently awarded RAPID Manufacturing Institute program form the DOE.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

ATAMI provides lab and research facilities space to university researchers and private industry. There are currently eight companies housed at ATAMI. These eight companies employ 43 people who have degrees in engineering or science. Four of the companies are spinouts from OSU researchers. Two of these spinouts, INPRIA and VALLISCOR, are establishing their advanced R&D research at ATAMI. ATAMI is a research facility providing students a place to do research to attain their advanced degrees and companies to develop new high tech technologies which grow and directly lead to high paying jobs for Oregon.

Describe any indirect benefits to Oregonians from this program:

ATAMI's mission of, "Effective research and commercialization with industry and startups to drive economic development in Oregon and beyond," has both direct and indirect benefits to Oregon. Directly, successful spinouts bring high paying jobs, and those jobs bring tax revenue to Oregon. Indirectly, the reputation of an incubator like ATAMI raises the profile of Corvallis and the surrounding communities as an economic development engine, and Oregon's prominence as a high tech state.

How does this program (or could it) provide meaningful information to assist the State Legislature?

When requested, leaders from this program have briefed the Legislature on the impacts of ATAMI research on students and the state. For example, on March 14, 2017, Dr. Brian Paul, The Tom and Carmen West Faculty Scholar and Professor of Manufacturing Engineering, testified before the House Committee on Higher Education and Workforce Development. While testifying in support of HB 2582, The Fighting Fund, he briefed the committee on receiving a Manufacturing USA award. This award was possible because of the investments that included the support of ONAMI, Oregon BEST and the Advanced Technology and Manufacturing Institute.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The faculty and students engaged in ATAMI research all have academic homes within OSU. College of Engineering provides IT support to ATAMI. Student participation is described above.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  (See Below)

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  ATAMI is staffed by four full time OSU professional staff employees, one OSU IT specialist (50% time), two OSU equipment techs (25% time), and two work Study students.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  ATAMI operations funding comes from three sources:
  1. 47% from lease and user fee revenues from industry tenants
  2. 47% from OSU operating budget
  3. 6% from SRC State Program funding ($240K annually)

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  ATAMI has four key performance metrics:
  1. Provide OSU researchers safe facilities to support their work.
     - Measures: research grant dollars generated
     - IP generation
     - New business spinouts

  2. Provide Industry tenants a collaborative, safe work environment to develop new business opportunities.
     - Measures: number of jobs created and supported annually

  3. Meet our operational spending targets.
     - Measures: revenue and operational expenses in control

  4. Meet OSU OSHA, EPA and City of Corvallis compliance metrics.
     - Pass annual audits from key stakeholders

PSU Signature Research – Center for Electron Microscopy and Nanofabrication (CEMN)

The Center for Electron Microscopy and Nanofabrication at PSU is a Signature Research facility of the Oregon Nanoscience and Microtechnology Institute (ONAMI), a collaboration between Oregon's research universities, Pacific Northwest National Laboratories and industry partners.

Contact: Alan Kolibaba, Interim Associate Vice President for Research Finance and Administration
Jun Jiao, Professor of Mechanical and Materials Engineering and Director, CEMN
Website: https://www.pdx.edu/cemn/

Mission Statement, if applicable:

The key components of CEMN mission are: (1) supporting faculty research activities and collaboration at the shared user facilities of PSU, UO and OSU, (2) preparing students for future careers, and (3) promoting the interaction between PSU and the greater community. The continued development of the CEMN is well on track with PSU's policy to enhance research activity and to support the needs of academic institutes and companies in the greater Portland area for advanced materials characterization capabilities.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  More than 1,000 users including faculty, postdoctoral researchers, graduate students, undergraduate students and external users have been trained to use the instruments since the lab started operations.

  CEMN supports three microscopy courses (two in Mechanical and Materials Engineering and one in Geology)
  - Total enrollment this academic year was 66 students
  - The three courses generated 264 credit hours
  - There are currently five PhD candidates involved in research projects at the lab

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

- Six PSU PhD physics students have won the Presidential Scholar Award from the Microscopy Society of America in the last fifteen years, based in part on their experience working with the instruments at CEMN.

- Professor Jiao has hosted the NSF-funded research experience for undergraduate (REU) program for more than 16 years and trained more than 180 minority and female undergraduate students recruited from universities around the country.

- **Describe student Internships or employment (include number of student workers/graduate assistants annually):**

    - Created internship opportunities for PSU students to work at CEMN. Almost all the CEMN interns (>20) either obtained high paying jobs at high tech companies or went to graduate schools.

    - CEMN has provided student wage positions for an average of six students per year for the last three years.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

In addition to providing hands-on learning experience working with the advanced instruments in the lab, earning credits towards degrees and participating in research projects, students make connections by working with industry users who pay for the use of CEMN's microscopes. These connections may lead to careers with some of the companies.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

This year the Signature Research E&G support was used to purchase an FT-IR spectrometer to support faculty, graduate students and R&D units of high-tech companies to develop 3D bio-printing process.

The following items are not directly leveraged by the Public University State Program funds, but are significant achievements of the lab related to research since the beginning of CEMN:

- PSU has received four NSF funded Major Research Instrumentation (MRI) grants and one grant from the Murdock Foundation for instrument purchases for CEMN
- The availability of the instruments in the lab have helped faculty to secure more than $20 million in external funds in the last 10 years
- PSU faculty have published more than 200 papers and conference presentations based on work at CEMN
- Lab personnel have provided technical support to more than 100 companies
- CEMN has supported facility recruitment efforts by offering tours to candidates in Physics, Biology, Chemistry, Geology, Electrical and Computer Engineering and Mechanical and Materials Engineering

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

- Hosts field trip tours to elementary, middle school, and high school students annually
- Serves as a training ground for graduates, undergraduates, and local K-12 students
- Plays an important role for promoting K-12 STEM education by offering electron microscopy short courses and internships through Oregon Saturday Academy Program and their summer ASE program

Describe any indirect benefits to Oregonians from this program:

Partnered with OMSI to offer informal education by offering PSU faculty's research images to OMSI exhibitions and organized undergraduate students to volunteer at OMSI events.

How does this program (or could it) provide meaningful information to assist the State Legislature?

N/A

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

    - CEMN is part of Research and Strategic Partnerships and the Director reports to the Vice President for Research and Strategic Partnerships.
    - Several credit courses on microscopy are offered by two departments.
    - University faculty and students use the lab instruments at a reduced cost per hour:
        - Materials research in engineering uses equipment in CEMN to analyze metals as part of other research projects.
        - PSU's Research office has offered competitive research stimulus programs to encourage and support faculty to develop research proposals for external funding.
    - Industry users are very important to the operation of the lab. Revenue from outside companies contribute significantly to the operating costs of CEMN.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

    - The Director of CEMN is a tenured faculty member who devotes part of her time to leading the lab.
    - There are two full time staff members.
    - An average of six students have worked in the lab each year for the last three years

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

    - All CEMN staff members are PSU employees.
    - CEMN is affiliated with the Oregon Nanoscience and Microtechnology Institute (ONAMI).

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

    - The University provides space and general daily maintenance at no cost to the lab.
    - The Research office provides funding for renovations as needed to accommodate new equipment.
    - The Assistant Vice President for Research and his staff provide administrative, budgetary and fiscal support.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

    - PSU has a system for review and evaluation of all centers and institutes on a periodic basis. The Associate Vice President is responsible for organizing the process.
    - There have been no outside reviews to date.

UO Signature Research – Center for Advanced Materials Characterization in Oregon (CAMCOR)

Contact: Kurt Langworthy, Director, CAMCOR | (541) 346-3660 | klangwor@uoregon.edu
Website: camcor.uoregon.edu

Mission Statement, if applicable:

The Center for Advanced Materials Characterization in Oregon (CAMCOR) provides state-of-the-art materials characterization facilities to researchers at regional academic institutions and companies; fosters collaborative interactions between faculty and researchers at academic institutions and industries in the Regional Northwest; and provides short courses, seminars and workshops on characterization techniques and provide hands-on training facilities for the participants. CAMCOR promotes regional economic development, professional development for graduate students and support of innovative research in the sciences by providing access to large and technically advanced equipment and techniques necessary to advance scientific inquiry.

The UO receives Signature Research Funds that support CAMCOR.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  CAMCOR offers graduate-level courses in instrumentation techniques. Enrolling over 60 students annually, the courses CAMCOR offers translate into about 325 credit hours per year. Three examples provide evidence of the impact: a) the polymer facility is heavily involved with the Graduate Internship Program (GIP), and trains more than 10 students annually on advanced polymer synthesis and characterization techniques; b) the semiconductor lab within CAMCOR is heavily involved with GIP students, and annually facilitates the education of 24 students in the field of semiconductor device processing; and c) the Advanced Materials Analysis and Characterization (AMAC) program graduates five students annually, proficient in focused ion beam microscopy, electron microscopy, and surface analysis. The AMAC program has a 100% job placement record and, with an average internship salary of $58,000, AMAC graduates have the potential for high-paying careers.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

CAMCOR provides unique access to UO graduate students, many of whom are engaged in the GIP, which utilizes CAMCOR as an instructional facility for advanced training relevant to Oregon industry. In each of the past three years, 52 uniquely trained students have graduated from the GIP program with 100% job placement in high-tech fields such as semi-conductors and bioinformatics.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  CAMCOR employs one undergraduate work-study student and one graduate student intern each year. Undergraduate positions typically involve more routine tasks such as ordering lab supplies, assisting visitors, and event planning, while graduate student interns are trained to operate and collect data on high-tech instrumentation to support facility users.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

CAMCOR periodically hosts workshops and guests speakers to expose faculty and students to new techniques and learning opportunities. Additionally, CAMCOR's connection to local industries has helped students find jobs pertaining to their scientific field of study.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

This program routinely generates leveraged funds by enabling competitive grants and private donations (such as a focused ion beam recently donated by FEI). CAMCOR has contributed to an estimated $100 million or more in sponsored research projects over the last decade. In the current biennium, we received a Murdock Charitable Trust award to support the creation of a new nanofabrication facility within CAMCOR.

Key partners of CAMCOR include but are not limited to the UO principal investigators, researchers from other Oregon universities, researchers from other nationally prominent research institutions, government agencies and industrial partners regionally and from across the globe.

<u>Public Service</u>

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

CAMCOR houses capital-intensive equipment supported by professional technical staff for microanalysis, surface analysis, electron microscopy, semiconductor fabrication as well as traditional chemical characterization. CAMCOR provides sample preparation, data collection and data analysis among other high-tech services for clients internal and external to the UO.

CAMCOR has provided an average of $1 million in services to external clients since FY13 and is on track to meet last year's revenue this fiscal year. The presence of CAMCOR and its related services contribute approximately more than $10 million annually to the research funding base in the state of Oregon. External clients include but are not limited to Intel, FEI, Applied Materials and Oregon Organics.

Describe any indirect benefits to Oregonians from this program:

CAMCOR currently promotes workforce training goals by providing a unique opportunity for graduate students – many of whom are Oregonians or who become Oregon residents as they land their first post-graduate jobs at Oregon companies – by training them to use exceptionally specialized and capital-intensive equipment and through the mentoring they receive by highly trained professionals regarding the use of the equipment and related analysis.

How does this program (or could it) provide meaningful information to assist the State Legislature?

N/A

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  CAMCOR is a one of 10 research core facilities reporting to the Office of the Vice President for Research and Innovation (OVPRI). It is a shared user facility that houses eight separate sub-facility services reliant on highly trained personnel and state of the art equipment. Facility users include principal investigators, students and researchers from UO and other Oregon universities, as well as researchers from other research institutions, government agencies and industrial partners regionally and around the world.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  CAMCOR has 10 full-time positions focused on instrument management, instrumentation training, teaching courses, and serving UO and non-UO clients.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  CAMCOR's team is primarily comprised of UO non-tenure track faculty. CAMCOR's director (also active in the lab) is a UO Officer of Administration.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

The UO partially subsidizes CAMCOR's rent, utilities, building maintenance and central services. OVPRI Research Core Business Services provides financial management support services to CAMCOR, including tracking, billing, reconciliation and the like.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  CAMCOR conducts annual financial reviews and periodically conducts assessments to identify new equipment and services that will ensure the provision of cutting-edge services for its users (faculty, researchers, students, and Oregon companies).

UO Labor Education Research Center (LERC)

The Labor Education and Research Center is a statewide program that combines teaching, research, and service to improve the lives of Oregon's workers, their families, and their communities. Working from offices in Eugene and Portland, LERC's faculty have backgrounds in adult education, political science, labor and public policy, history, and community organizing. LERC offers a wide range of non-credit workshops and customized trainings in areas such as representation skills, effective communication, building inclusive organizations, labor history, political economy, and the law.

Contact: Bob Bussel, Director
Website: https://lerc.uoregon.edu/

Legislative Origin: SB 5509 (1977)

Budget Report: *The Labor Education Center proposed by the Governor was approved by the Subcommittee. While the Center is to be headquartered at the University of Oregon, it was approved with the expressed understanding that it will practice an Outreach – Extension philosophy and take its programs off-campus to its clientele whenever practicable.*

History of Dedicated State Appropriations:

2007-09 $696,936
2009-11 $649,089
2011-13 $657,542
2013-15 $656,867
2015-17 $678,544

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 332,487
University Funding	753,041
Gift Funding	-
Federal Grant & Contract Funding	76,636
All Other Grant & Contract Funding	342,573
Total	$1,504,737

Mission Statement, if applicable:

Since its creation in 1977 with funding provided by the Oregon Legislature, the Labor Education and Research Center (LERC) at the UO has made the resources and expertise of the university available to workers, the union movement, and other stakeholders interested in the fields of work, the economy, and employment relations. Through education, research, and service activities and an extensive set of collaborations and partnerships, LERC fulfills the public service mission of the university and helps improve the quality of life for working Oregonians.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  LERC primarily teaches not-for-credit classes to adult learners. However, LERC faculty have also taught courses in the history, sociology, and political science departments at UO. Over the past two-three years, they taught approximately 150 students in these classes.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Although not a primary activity, LERC faculty have served on dissertation or masters' committees and assisted students with research, serving approximately 15-20 students per year.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  LERC typically employs a student-worker on an annual basis and has used law students as interns to support some of its research activities. LERC also employs one graduate student researcher each year.

Describe any indirect benefits to university students through the university's participation in this program:

This past academic year, LERC began hosting a colloquium on research related to work, employment, and labor issues. The program generated considerable interest among faculty and students, and we anticipate expanding its offerings in the coming year.

LERC faculty also work with student groups such as the Graduate Teaching Fellows Federation, the Oregon Hillel, and students associated with the Wayne Morse Center for Law and Politics.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

State funding leverages external grant support for LERC's faculty to conduct research and engage in consultation on issues related to work, employment, and occupational health and safety. LERC funding also includes earned income (approximately $125,000 per year) from program fees for educational

offerings, institutes, and conferences. These program fees do not support salary expenses. Instead, they cover program expenses and infrastructure needs such as shared office costs and overhead.

Recent research awards include:

- $10,000 from Kaiser Permanente and $35,000 from the Library of Congress to fund films documenting the experiences of home care workers in Oregon.
- $168,000 from the National Institutes for Occupational Safety and Health (NIOSH) for the Oregon Health Workforce Center for Community of Practice and Safety Support (COMPASS) to fund research on occupational safety for home health care workers.
- $238,601 from the NIOSH-funded Center for Construction Research for Safety Voice for Ergonomics Project (SAVE) to fund safety training for masons and bricklayers.
- **$**15,000 from the Washington State Dept. of Labor and Industries for mentoring training on Safety and Health Empowerment for Women in the Trades.
- $40,535 from In The Public Interest for research on education reform.

In the past two years, two of our faculty have published book-length monographs with respected academic presses. Faculty have also published three major reports on work and employment issues, along with seven articles that have appeared in academic journals in the arenas of occupational safety and health and political economy. These works have won recognition at the state and national level among academics and policy makers for their insights that have helped inform public policy discussions.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

In its principal area of non-credit teaching, LERC reaches approximately 1,500-2,000 students annually through workshops, conference, institutes, and longer programs.

LERC faculty provide consultation and technical assistance through their participation on agency boards, committees, and non-profit organizations. The organizations LERC faculty serve in this manner include but are not limited to the Asian Pacific Network of Oregon, The Broadway Redevelopment Project in Portland, the Integration Network for Immigrants in Lane County, the National Occupational Research Agenda on musculoskeletal disorders (National Institutes for Occupational Safety and Health), the Oregon Workforce Investment Board, and the Oregon Employment Department, and the Oregon Historical Society.

The consultation provided by LERC faculty helps each of these organizations advance its agenda of improving the quality of life for working Oregonians and developing appropriate policies to achieve this objective. LERC faculty have often played leadership roles in these organizations during the course of their service and used their broad set of constituent relationships to create a broader synergy among relevant stakeholders.

Describe any indirect benefits to Oregonians from this program:

On an annual basis, LERC faculty make public presentations that on the average reach 5,000 people. Oregonians benefit from gaining the expertise of our faculty on major issues related to work and employment.

How does this program (or could it) provide meaningful information to assist the State Legislature?

LERC prepares a biennial report that coincides with the beginning of each new legislative session. This report contains extensive qualitative and quantitative data that explain the scope of its work.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  LERC is fully integrated into the UO. Its faculty teach in academic departments and host colloquia for faculty and students and serve on university committees and assist other programs, including a permanent role in co-chairing the advisory board for the Wayne Morse Center for Law and Politics. LERC reports directly to the UO's Senior Vice-Provost for Academic Affairs.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The Labor Education and Research Center budget supports LERC's Director, five additional full-time faculty, one part-time researcher, one office administrator, and .3 FTE of support staff. State Programs Funding provided by the Legislature pays for LERC's Director, approximately 1.5 FTE faculty, and a portion of the program's expenses for operating its Portland office. General funds provided by the UO cover the remainder of LERC's recurring faculty and support staff expenses.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  Both LERC's classified faculty and unclassified staff are employees of UO.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  LERC's facility at the central campus is "subsidized" to the extent it does not pay rent for its space in Eugene. LERC does pay rent for its offices at the UO Portland center. Most of LERC's services, supplies, and infrastructure costs are covered by revenue generated from programs that the center offers its constituents.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

LERC is evaluated by the office of the UO Senior Vice-Provost for Academic Affairs; this is the office that it reports to directly. LERC also receives written evaluations from students who take its programs and gains regular feedback from its 30 member advisory board of labor and community leaders. It has also engaged in periodic one-on-one sessions with constituents, conducted focus groups and commissioned outside reports seeking constituent feedback. LERC also reviews its work at an annual planning meeting with a focus on qualitative and quantitative metrics that enable us to assess our strengths and weaknesses.

OSU Marine Research Vessel

This state-funded program provides ship days for the use of the Research Vessel (R/V) Oceanus in the research and study of Oregon's coastal waters. The passage of HB 3451 (2013) established a Research Vessel Council comprised of seven members appointed by the President of OSU to include a trained scientist with at least five years of marine research experience and at least one member from certain state agencies, and at least one member with expertise in marine operations or marine education. The Council solicits and evaluates research proposals and schedules use of a research vessel for the selected proposals. The appropriation for the current biennium funds 24 days of ship use during the biennium, including fuel, supplies and labor.

Contact: Jack Barth, Executive Director of the Marine Studies Initiative, Chair, Research Vessel Council
Website: http://ceoas.oregonstate.edu/research/oceangoing/

Legislative Origin:

HB 3451 (2013) established Research Vessel Council and appropriated $300,000 for 2013-15 biennium

History of Dedicated State Appropriations:

2013-15 $300,000
2015-17 $619,800

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 303,702
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	3,500,000
All Other Grant & Contract Funding	-
Total	$ 3,803,702

Mission Statement, if applicable:

Provides ship days to students and researchers from all of Oregon's public universities and natural resource agencies for the use of OSU's R/V Oceanus to explore key coastal issues, including changing ocean conditions, ocean acidification and renewable energy. Educational activities might include, but are not limited to, university-level classes about oceanographic research and/or the techniques of making oceanographic measurements at sea.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  During the 2016-2017 academic year, 17 undergraduates earned five credits each (85 credit hours total) for taking a UO class that highlighted participation in a state-funded cruise on R/V Oceanus in November 2016. Three high school students and four high school teachers from North Bend HS, Newport HS and Warrenton HS participated in a September 2016 research cruise. Several of these high school students received credit (job shadowing and/or course credit) and one high school student used the data for his International Baccalaureate project for which he also received college credit.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  During the 2016-2017 academic year, 25 undergraduates, one minority female from a community college, and 19 graduate students gained experience in oceanographic sampling during the state-funded cruises. One undergraduate is using data in his undergraduate thesis, the results of which he presented at a recent national Aquatic Sciences Meeting.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  N/A

Describe any indirect benefits to university students through the university's participation in this program:

Data collected on these oceanographic cruises become part of the long-term record of ocean variables (e.g., temperature, salinity, dissolved oxygen) that can be studied to detect changes over time. This is critical for informing the managing our ocean resources. One state-funded cruise was combined with one day of National Science Foundation funding to bring the R/V Oceanus to the Portland Riverfront in September 2016. More than 66 K-12 students toured the vessel and learned about oceanography, thus priming them for potential STEM program enrollment in Oregon's universities and community colleges. Twenty-four K-12 teachers attended an evening program onboard R/V Oceanus during which they learned about ocean research and education opportunities. More than 75 public citizens toured the R/V Oceanus while it was tied up at the Portland riverfront.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

The marine research vessel program leverages $4.5-5 million per year of funds from the National Science Foundation to operate the R/V Oceanus. Data from these research cruises is used in scholarly publication, for example, Goldfinger, C., et al., *The importance of site selection, sediment supply, and hydrodynamics: A case study of submarine paleoseismology on the northern Cascadia margin, Washington USA,* Marine Geology (2016), http://dx.doi.org/10.1016/j.margeo.2016.06.008.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

The state-funded ship days helps assure that OSU continues to operate an oceangoing research vessel, bringing $4.5-5 million of funds into the Newport, Oregon region.

Describe any indirect benefits to Oregonians from this program:

Helps ensure that Oregon continues to operate an oceanographic research vessel that is commensurate with other west-coast state oceanographic capabilities.

How does this program (or could it) provide meaningful information to assist the State Legislature?

Data collected during these oceanographic cruises can be used to inform decisions about marine reserves, coastal development and resilience, impacts of changing ocean conditions on living marine resources (e.g., shellfish, crab, fish), fisheries management (e.g., fisheries closures due to harmful algal blooms) and the placement and impact of ocean renewable energy infrastructure.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The state-funded days on R/V Oceanus are scheduled in coordination with projects funded by other sources of support, mostly from federal agencies. The R/V Oceanus day rate pays for all costs of using OSU facilities including the dock and associated equipment and personnel at the OSU Ship Operations dock in Newport.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The state-funded marine vessel program pays for daily costs of operating the R/V Oceanus. There are no FTEs supporting program staff.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

See above.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  All R/V Oceanus costs are included in the daily rate.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  Metrics for the number of students who participate and a summary of the research, scholarly findings, and educational and outreach activities conducted on each research cruise is collected.

PSU Population Research Center (PRC)

The Population Research Center (PRC) is an interdisciplinary public service, research, and training unit for population-related data and research for the State of Oregon.

Director/Contact: Sheila Martin, Director; Jason Jurjevich, Assistant Director
Website: https://www.pdx.edu/prc/

Legislative Origin:

Service to the State of Oregon began in 1956 with the creation of the Oregon Population Estimates Program, which chartered PRC with preparing annual population estimates for Oregon cities and counties. The PRC moved to PSU in 1965, and now includes the Oregon State Data Center. This appointment added the responsibility of acting as lead state agency in working with the U.S. Census Bureau to disseminate information at local levels. Additionally, the PRC is designated as the lead state representative in partnering with the Census Bureau through the Federal-State Cooperative for Population Estimates (FSCPE), and as participants in the Federal-State Cooperative for Population Projections (FSCPP). As of July 1, 2013, Oregon law requires that the PRC issue coordinated population forecasts for land use planning through the Oregon Population Forecast Program.

History of Dedicated State Appropriations:

2007-09 $472,744
2009-11 $439,187
2011-13 $374,427
2013-15 $421,407
2015-17 $435,313

FY2016 Total Funding Sources:

State Program Funding (GF)	$213,303
University Funding	33,462
Gift Funding	-
Federal Grant & Contract Funding	-
All Other Grant & Contract Funding	673,522
Total	$920,287

Mission Statement, if applicable:

The mission of PRC is to provide population data, information, and research analysis for Oregon and its communities. Center staff engage in a variety of demographic activities, including the Oregon State Data Center, the Oregon Population Estimates Program, Oregon Population Forecast Program, and a variety of population projects. PRC staff also teach in the PSU Nohad A. Toulan School of Urban Studies and Planning, supporting both a graduate concentration and a graduate certificate program in applied demography.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Center faculty teach courses in demographic analysis and quantitative methods that are part of the PSU Graduate Certificate in Applied Social Demography (https://www.pdx.edu/applied-demography/), and provide classroom support for students and instructors accessing demographic (largely U.S. Census Bureau) data. In 2015-2016, center faculty taught more than 50 students (both undergraduate and graduate) in two PSU courses and presented information about census data, population forecasts, and K-12 school demography in PSU classes containing over 100 students.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Launched in the fall of 2016, one of the core components of the PSU Graduate Certificate in Applied Social Demography is to provide students with experiential learning opportunities by working with center research faculty on commissioned demographic research projects in a capstone course. Students not enrolled in the graduate certificate program have opportunities to work with center research faculty on a variety of research projects through Graduate Research Assistantships and hourly wage positions (see below) provided by commissioned research projects.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Since 2016, grant funding from commissioned demographic research projects provided tuition/remission support and/or hourly wages for five students (both undergraduate and graduate).

Describe any indirect benefits to university students through the university's participation in this program:

Demographic and economic data, and support staff, is available for student research. This data is open to all students across Oregon.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

In 2015-2016, PRC research faculty leveraged state funding to secure an additional $675,000 in research funding from other state agencies (e.g., DLCD and ODOT), school districts (e.g., Portland Public Schools and Salem), special districts (e.g., Washington County Board of Commissioners), and not-for-profit foundations (e.g., John S. and James L. Knight Foundation).

Specific projects for 2015-2016 include:

- Portland Public Schools Enrollment Forecast ($59,029)
    - Report: pdxscholar.library.pdx.edu/enrollmentforecasts/
- ODOT Municipal Planning Organizations (MPO) Population Estimates and Forecasts ($37,047)
    - Final deliverables are sent to ODOT and then submitted to municipalities
- John S. and James L. Knight Foundation ($207,000)
    - Summary www.pdx.edu/prc/sites/www.pdx.edu.prc/files/Who_Votes_ppt_summary_sept_2015.pdf
    - Report www.pdx.edu/prc/sites/www.pdx.edu.prc/files/Who_Votes_for_Mayor_Sept_2015.pdf
    - Website http://www.whovotesformayor.org/
    - National Recognition
        - Interviewed for "Study Shows 'Abysmally Low' Voter Turnout in Texas." February 2017. *The Source* program, on Texas Public Radio (TPR). Available at: http://tpr.org/post/source-study-shows-abysmally-low-mayoral-voter-turnout-texas#stream/0
        - Interviewed for "Who Votes for Mayor?" October 2016. KXL and KEX FM Radio.
        - Work cited in "Dallas Had the Worst Big City Mayoral Election Turnout in the U.S. in 2015." January 2017. *Dallas Observer*. Available at: http://www.dallasobserver.com/news/dallas-had-the-worst-big-city-mayoral-election-turnout-in-the-us-in-2015-9119070
        - Work cited in "Analysis: Luckily for Texas, Voters Don't Get Report Cards." January 2017. *Texas Tribune*. Available at: https://www.texastribune.org/2017/01/23/analysis-luckily-texas-voters-dont-get-report-card/
        - Work cited in "Young and Apathetic: Millennials' Voting Rate is Low for Presidential Contests—it's Even Worse for Local Elections." January 2017. *Governing Magazine*. Available at: https://archives.erepublic.com/GOV/GOV_Mag_Jan17.pdf
        - Work cited in *Philly Magazine* (http://www.phillymag.com/citified/2016/10/28/philadelphia-mayor-turnout/) *SF Gate* (http://www.sfgate.com/politics/article/Few-San-Franciscans-vote-and-most-are-older-10417972.php), *CityLab* (http://www.citylab.com/politics/2016/11/in-the-us-almost-no-one-votes-in-local-elections/505766/),and *Jacksonville Progress* (http://www.jacksonvilleprogress.com/news/millennials-prone-to-skip-local-elections/article_3e0bfd88-e4ef-11e6-aa82-9b3ad706f96d.html).
        - Interviewed for "Researchers: Portland a National Model for Local Election Turnout." October 2016. Authored by *Portland Tribune*

http://portlandtribune.com/pt/9-news/329555-209297-researchers-portland-a-national-model-for-local-election-turnout

- Oregon Population Forecasts by County ($276,204)
    - http://pdxscholar.library.pdx.edu/opfp/
- Miscellaneous School Enrollment Forecasts, Census Tabulations, Presentations, and Special District Population Forecasts ($93,402)
    - http://pdxscholar.library.pdx.edu/prc_pub/

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

State Data Center (SDC): The primary goal of the State Data Center (SDC) is to provide training and information about U.S. Census Bureau data for state agencies, city/county officials, and the general public. In 2015-2016, the SDC Coordinator (Charles Rynerson) accomplished the following activities, which directly benefit Oregon communities:

1. Organized a census data user workshop in 2015 and 2016 with sessions in both Portland and Salem, featuring speakers from the Census Bureau and state and local agencies. Attendance has grown each year, with approximately 100 individuals attending in 2015. In 2016 a Eugene session and a second Portland session were added, with attendance topping 160 people at the four sessions. Attendees included state and local government staff, PSU faculty and students, news reporters, and employees from businesses and non-profit agencies. Presentations from the 2015 and 2016 events are available at https://www.pdx.edu/prc/node/62.
2. Rynerson was re-elected to the national SDC Steering Committee in January 2015, extending his tenure on the committee (initially elected July 2012).
3. Presented demographic trends and data user training to about 400 participants in sessions at five professional conferences across Oregon, and presented demographic trends and data user training as a guest speaker to about 250 participants at 17 special events such as board meetings, staff workshops, orientations, and miscellaneous small groups.
4. Responded by phone or email to nearly 500 data inquiries annually. Typical contacts include reporters, grant writers, students, medical researchers, and government employees.
5. Created Oregon Census Data Profiles, which summarize social and demographic data for Oregon counties, cities, and census tracts: https://www.pdx.edu/prc/census-data-for-oregon.

Population Estimates Program: PRC produces the annual population for Oregon counties and cities, which are used by the state and local governments, various organizations and agencies for revenue sharing, funds allocation, and planning purposes. Reports are available here: http://pdxscholar.library.pdx.edu/populationreports/

An example of impact surrounding the Population Estimates Program includes:

- http://www.oregonlive.com/pacific-northwest-news/index.ssf/2015/11/oregons_population_hits_4_mill.html
- https://www.qualityinfo.org/-/rogue-valley-population-estimates

- http://www.bendbulletin.com/localstate/4836744-151/deschutes-and-crook-counties-lead-the-state-in

Population Forecast Program: In 2013, Oregon law required that the PRC issue coordinated population forecasts for land use planning. The program provides Oregon counties and cities with coordinated (city-county) 50-year population forecasts for Oregon counties every 4 years. The program provides a consistent forecasting methodology across Oregon, and saves counties money because PRC is funded by the state to produce population forecasts. Additionally, center research faculty conduct regional meetings to collect local public input and encourage public participation. In 2015-2016, regional meetings were held in: The Dalles, Hermiston, Baker City, and Burns. Reports are available here: http://pdxscholar.library.pdx.edu/opfp/

Examples of impacts surrounding the Population Forecast Program includes:

- http://www.bendbulletin.com/business/3027280-151/central-oregon-in-2065-population-416764
- http://www.hermiston.or.us/business/population-growth-projections
- http://www.dailyastorian.com/Local_News/20160316/seaside-will-wait-to-draw-new-urban-boundary-lines

Describe any indirect benefits to Oregonians from this program:

Availability of forecast data for planning purposes, including: schools, road infrastructure, facility planning, and electoral redistricting.

How does this program (or could it) provide meaningful information to assist the State Legislature?

Shortly after each decennial census, the U.S. Census Bureau releases the Census Redistricting Data [P.L. 94-171] Summary Files and their geographic support products. Following Census 2010 (January 2011), PRC faculty testified about the redistricting data, along with Oregon's recent demographic trends, to the Oregon House and Senate Committees on Redistricting (https://olis.leg.state.or.us/liz/2011R1/Downloads/RecordingLog/SRED/2011-02-18-10-30).

Given that Oregon will likely secure an additional congressional seat in 2020, PRC research faculty expect to again testify at the Oregon Legislature to update legislators on this process. Also important, PRC research faculty meet regularly with officials from the U.S. Census Bureau to stay updated on procedures for ensuring an accurate headcount in Oregon.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  Providing population data, information, research, and demographic analysis to communities across Oregon for data-driven decision-making are the hallmarks of PRC's program initiatives. The center strives to be a leading university research program providing analysis for data-driven analytics for Oregon's communities. In the end, these programs not only support the PSU university mission of "Let Knowledge Serve the City", but by focusing statewide, the center's

work expands the boundaries of the university's mission to "*Let Knowledge Serve Communities Across Oregon."*

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  State program funds provide support for 2.39 FTE that is spread across four PRC research faculty and staff. Additional funds supplement staff FTE to achieve 1.0 FTE status.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  All PRC employees are university faculty and university students.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  PSU provides monetary (in-kind) support of facilities, central services, research project administration, and some travel support for research faculty.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  The PRC is evaluated as a contributing research center as part of the College of Urban and Public Affairs (CUPA) academic review. A five-year review was completed in 2014, and is available upon request.

OSU Institute for Natural Resources (INR)

In 2001, the Oregon Legislature established the Institute for Natural Resources (INR) to help link the knowledge and expertise of Oregon's universities to natural resource decision making. INR is headquartered at OSU with additional offices at PSU. The enacting legislation states that INR shall: (a) serve as a clearinghouse for scientifically based natural resources information; (b) provide scientifically based natural resources information to the public in integrated and accessible formats; (c) coordinate efforts with other state agencies and bodies to provide natural resources information to the public in a comprehensive manner; (d) facilitate and conduct research; and (e) provide information and technical tools to assist decision-making on natural resources issues.

Our focus areas are: information access and science synthesis, biodiversity restoration and conservation, integrated landscape assessments, and water. These focus areas are multi-agency; multi-disciplinary; and are not housed within any single university, department, or unit in Oregon's public universities. Since 2014, INR has merged with the OSU Institute for Water and Watersheds (IWW) for the water focus area. IWW coordinates interdisciplinary research, education, and technology transfer on issues related to water.

Director/Contact: Lisa Gaines, INR Director
Website: http://inr.oregonstate.edu/

OSU Institute for Water & Watersheds (IWW)
Director/Contact: Todd Jarvis, IWW Director
Website: water.oregonstate.edu

Legislative Origin:

INR: HB 3948 - Oregon Sustainability Act of 2001
IWW: Water Resources Research Act of 1984, as amended 42 USC 10301https://water.usgs.gov/wrri/WRRA_42USC10301_et_seq.pdf

History of Dedicated State Appropriations:

2007-09 $459,675
2009-11 $427,196
2011-13 $364,484
2013-15 $386,353
2015-17 $399,103
IWW – State Appropriations ended in 1964 with passage of Water Resources Research Act of 1964

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 195,560
University Funding	92,000
Gift Funding	173,163
Federal Grant & Contract Funding	402,464
All Other Grant & Contract Funding	1,140,207
Total	$ 2,003,394

Federal Funding (IWW) $ 92,335

Mission Statement, if applicable:

The effective use of science in decision making depends not only on the integrity of the process for developing new science, but on the review and synthesis of existing science, and the relevance, access to, and usability of integrated science-based information to specific plan, management, or policy decisions. *Our mission is to provide access to integrated knowledge and information to inform natural resource decision making and develop solutions in the context of sustainability.*

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

Students' direct participation in INR-IWW is project-dependent. They participate in ***applied, user-inspired*** research, science synthesis, data compilation, information access, convening and reporting. Since 2005, approximately 60-70 students (primarily graduate students) have directly participated with us – not including presentations in classes, classes that have been taught, seminars, or trainings.

Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):

We are housed under the OSU Research Office. INR-IWW is not an academic unit and therefore students can not earn academic credit hours within INR-IWW; however, INR-IWW staff have taught classes aligned with other academic units (e.g., in the past INR staff have taught FOR444, Ecologic Aspects of Park Management; and IWW staff teach three courses per year –two at OSU for three credit hours each and one at UO Law School for four credit hours).

Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):

- Approximately 1-3 students annually.
- Students participate in applied, ***user-inspired research, science synthesis, and information access projects*** that give them hands-on experience in linking science, data, and information to natural resources decision making.

- Students have conducted their Master's level, non-thesis capstone projects within INR-IWW for programs and units such as the Professional Science Master's Program, Environmental Sciences Program, the Marine Resource Management Program, the Water Conflict Management and Transformation Certificate Program, and the School of Public Policy.
- Students gain experience in transdisciplinary research project design and management by participating in INR-IWW projects and gain experience presenting their work to diverse audiences, including state and federal agency executives and personnel, legislators, and other stakeholders. Nearly $10,000, in the last biennium, was secured to support student workers to work on INR's Oregon Explorer (http://oregonexplorer.info/) – natural resources digital library that provides access to integrated natural resources information organized by topic, location and data portals. Through Oregon Explorer (OE), users can interact with place-based, up-to-date scientific information through maps, charts, data, images, publications, and visualization tools. This is in collaboration with the OSU Libraries and Press.
- Students participate in INR's Oregon Biodiversity Information Center (ORBIC), which works with partners across the region to provide the most comprehensive information on plants, wildlife, fish, fungi, and vegetation communities throughout Oregon – including the most comprehensive database of rare, threatened and endangered species of Oregon.
- A formal assessment of the WW2100 stakeholder engagement process was the subject of an OSU master's thesis (Ferguson, 2015; Ferguson et al., 2016).

Describe student internships or employment (include number of student workers/graduate assistants annually):

- Internships are required for a few programs at OSU (noted above). On average, INR-IWW has 1 to 3 interns per year from these programs.
- INR-IWW (Corvallis) employs 1 to 2 undergraduate or graduate students as research assistants per year; our Portland office employees 2-3.
- This year, there are 10 seasonal biologist positions, which provide field experience for students, recent graduates and graduate assistants, and 4 seasonal biologist positions at PSU to support students or provide experience to recent graduates.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

- INR-IWW staff serve on graduate committees.
- INR-IWW staff have been guest lecturers in OSU, PSU, and UO classes.
- Students have access to data and information via the Oregon Explorer. At least 8% of Oregon Explorer users are students and that at least 12 OSU classes use the Oregon Explorer.

ANTH 499	Special Topics – Rural Anthropology
ANTH 581	Natural Resources and Community Values
CSS/GEO 335	Introduction to Water Science and Policy
GEO 365	Introduction to Geographic Information Systems (GIS)
GEO 423	Land Use
GEO 465/565	GIS and Science

FW 435/535	Wildlife in Agricultural Ecosystems
FW 445/545	Ecological Restoration
SOC 475	Rural Sociology
BA 363	Technology and Innovation Management
BA 260	Introduction to Entrepreneurship
BA 101	Business Now
WRP 599	Business of Water

- Students have access to threatened, endangered, native and invasive species data and information available through INR's Portland Office, Oregon Biodiversity Information Center (ORBIC) for class work and projects.
- IWW funds graduate student hydrologic events such as an annual water symposium and field trips.
- Students have access to reports, data, and maps that we produce including videos such as "Stormwater Solutions for the Willamette Basin" and "Umatilla Basin Groundwater Depletion".
- Student work is highlighted on our website, such as The Oregon Water Atlas (http://oregonwater.info/) by undergraduate student, Gareth Baldrica-Franklin.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

Annually, INR-IWW brings in between five to ten times its dedicated state appropriations via contracts and grants. Two projects illustrate some of our work and recognitions:

- With the USFS Pacific Northwest Research Station, INR was the lead institution in a multi-year, $5 million effort (the Integrated Landscape Assessment Project (ILAP)) to produce information, maps, and models to help land managers, policy-makers, and others conduct mid- to broad-scale (e.g., watersheds to states and larger areas) prioritization of land management actions, perform landscape assessments, and estimate cumulative effects of management actions for planning and other purposes. ILAP has been being used in forest plan revisions.
- INR led a national team in developing the nine-step Integrated Ecological Framework (the IEF), which is designed to support and promote integrated transportation and conservation planning while expediting transportation project delivery. The IEF is a congruent science-based, technical framework to the Eco-Logical approach, developed by eight Federal agencies in 2006, which recommends a collaborative, integrated, watershed or ecosystem scale approach to *decision-making during infrastructure planning*, *environmental review*, and *permitting*. Extensive science and literature review, and national outreach was conducted to create the IEF. The IEF was selected by the Federal Highway Administration and American Association of State Highway and Transportation Officials (AASHTO) for national implementation.

More of our work is highlighted in this February 2016 document (http://online.pubhtml5.com/azbh/hlwh/#p=1) and publications and other products are available on our website (http://inr.oregonstate.edu/products).

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

- Providing access to natural resources data and information is our legislative mandate.
- Developing data to support natural resources uses: a) developers and public agencies rely on INR information to avoid project delays due to unforeseen environmental impact; b) public land management agencies rely on INR data and expertise to promote decisions and natural resource uses; c) INR creates basic framework data that supports development and public safety across the state; and d) INR provides support to legislators, federal and state agencies, and local government to assist in addressing science questions without bias, by working with the best expertise in Oregon's public universities.
- Funded partnerships with 6 state agencies: Department of Administrative Services (DAS), the Department of Land Conservation and Development (DLCD), the Oregon Department of Forestry (ODF), the Department of State Lands (DSL), the Oregon Department of Fish and Wildlife (ODFW), and the Oregon Watershed Enhancement Board (OWEB).
- Funded partnerships with 6 federal agencies: The U.S. Environmental Protection Agency (EPA), U.S. Forest Services (USFS), the U.S. Geological Survey (USGS), the Bureau of Land Management (BLM), the National Park Service (NPS), and the U.S. Fish and Wildlife Service (USFWS).
- Funded partnership with the Washington State Legislature.
- Funded projects through the Oregon State Legislature – most recently SB202 (2015) (the Task Force for Independent Science Review for Natural Resources in the State of Oregon); and HB 2998 (2015) to help the Oregon Business Development Department (OBDD) provide economic development assistance to persons engaged in business of western juniper harvesting or of manufacturing products from western juniper by identifying and mapping high quality marketable stands of western juniper that can be harvested in a commercially and environmentally reasonable manner for use in manufacturing.

Describe any indirect benefits to Oregonians from this program:

- Communities have used information made available to them for planning projects, grants, and general information about their communities and landscapes.
- 2-3 trainings per year given to K-12 teachers through our partners (Jim Proctor, Alder Creek Community Forest and Lewis & Clark College)
- INR played a leading role in developing the *Oregon Sage-Grouse Action Plan.* INR-Corvallis oversaw the full SageCon partnership and hosts the final *Action Plan* on the Oregon Explorer web, and INR-Portland led the technical portions of the immense planning effort.
  The *Oregon Sage-Grouse Action Plan* won final state approval through an executive order issued by Governor Kate Brown on September 17, 2015. This, and similar work in other states, led to the USFWS's September 2015 decision to not extend Endangered Species Act protections to the greater sage-grouse across its range in eleven states and three-Canadian provinces. Oregon's *Action Plan* was among the strongest of the state plans developed

across the sage-grouse range and provided key portions of the evidence the USFWS used to justify its decision. INR has helped to call national attention to the work that Oregon is doing in linking transportation and conservation planning.

- Through workshops and fieldtrips, the IWW's Willamette Water 2100 project created a forum for conversations about water in the Willamette Basin.

How does this program (or could it) provide meaningful information to assist the State Legislature?

- Science synthesis and review processes used by INR-IWW could help increase the objectivity, transparency, and utility of the resulting science "package" delivered to policymakers and practitioners around an issue of interest by the legislature.
- Information and data made publicly available through the Oregon Explorer can be and is being used to inform decisions.
- Science synthesis and reviews: SB 202 which led to SB198 (2017) – process for thinking about how third-party independent science reviews for natural resources benefit forward-looking, multi-agency natural resources management.
- Produced a video on Umatilla groundwater depletion which led to the funding of a $2m feasibility study for aquifer storage and recovery.

The following questions pertain to the relationship between this individual program and the university as a whole.

Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).

- INR-IWW, began a merging process in 2014. In addition to sharing staff, the programs are co-located, and share a board of advisors. INR-IWW is part of a cohort of Research Centers and Institute Directors, who meet quarterly to help with strategic planning and moving the research enterprise forward.
- OSU Libraries and Press give some space to our Oregon Explorer Program, and also have staff participate in this program.
- The IWW Collaboratory is a shared laboratory that provides OSU affiliates with access to low cost trace level, fresh water analysis instrumentation and procedures. Researchers can receive training on instrumentation and analyze samples themselves, or they can pay staff to run analyses for them. The goals are to encourage cooperative research' to provide access to quality instrumentation dedicated to fresh water analyses; to provide laboratory training opportunities, and to help researchers minimize water analysis costs.

Describe the program's staffing including FTE and the relationship of the staff to the overall university.

- INR-IWW currently has 20 full- and part-time staff members, and 10 temporary staff. Total FTE 25.96. Staff have PhDs, Masters, and/or Bachelor's degrees. Staff are specialists in science synthesis, modeling, geographic information systems and remote sensing, outreach and engagement, project management, facilitation, and research with the INR-IWW focus areas.
- Relationship to university: INR-OSU staff are housed within the OSU Research Office and some have adjunct or courtesy appointments with various programs on campus, including the Environmental Science Program, the Water Resources Graduate Program, the Professional

Science Master's Degree, and the Sustainability Dual Degree Program. INR-IWW collaborate with the OSU Libraries and Press, Department of Geosciences, the Marine Resource Management Programs, and the School of Public Policy. INR-PSU staff are housed within the School of the Environment within the College of Liberal Arts and Sciences.

Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?

All INR-IWW staff are university employees.

Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.

INR-IWW is organizationally under the OSU Research Office and the Portland Office is under the PSU College of Liberal Arts and Sciences. INR-IWW is assisted by these units through: space; most utilities (heating, lighting, some IT, etc.); some central services such as finance, human resources, proposal routing, and research compliance; and a core operating budget. OSU provides cost-share match for U.S. Geological Survey funds for IWW.

How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.

Evaluation (Table 1) was written into our current 2013-2017 Strategic Plan and states that, "a programmatic review will occur during the fifth year of the strategic plan (2017) and will help shape the 2018-2022 strategic planning process". INR-IWW is scheduled to go through an OSU Research Office Support Unit Program Review on 10-11 August 2017; these reviews are conducted in 5-year cycles for all OSU Research Office Centers and Institutes. Six reviewers have been selected by the OSU Research Office to conduct the review. IWW undergoes a separate national program evaluation through the USGS every three years, and is scheduled for review in August 2017.

Table 1. Indicators of performance from the 2013-2017 INR Strategic Plan	
Quality	• *Timeliness:* INR's ability to provide support to clients and users within a timeframe consistent with the expectations of the groups engaging with the INR. • *Client and user satisfaction*: The extent to which clients and users are satisfied with INR's processes, services, products, and outcomes. • *Collaborations:* The usefulness of INR's processes for engaging partners, collaborators and other stakeholders, and incorporating input.
Outputs	• *Quantity of products*: The quantity of relevant, credible, and useful products produced. • *Use of products:* (1) The extent to which available INR products are believed by partners, collaborators and other stakeholders to be relevant, credible, and legitimate to natural resources planning, management, and/or policy; and (2) the degree to which INR products and services have the potential to influence desired outcomes and/or change behaviors by clients and users. • *Usability of products*: An assessment of the usability of INR processes, services, and products, including whether or not using INR was worth the effort
Outcomes/Impact	• *Information support:* Extent to which INR work assists in natural resource-related decision making.

	• *Decision quality:* The extent to which INR clients and users believe that the process leading to a decision and an expected outcome(s) of the decision were the best that could be made with available information.

UO Clinical Legal Education – School of Law Domestic Violence Clinic

The Domestic Violence Clinic provides comprehensive civil legal services to low-income victims of domestic violence, sexual assault, and stalking while educating UO law students in the skills required for client representation in a litigation-based practice.

Any accredited institution of higher education in Oregon that provides civil legal services to victims of domestic violence, stalking or sexual assault may apply for the funds. In fiscal year 2016, only the University of Oregon applied for and received funds.

Director/Contact: Merle H. Weiner
Website: https://law.uoregon.edu/explore/family-law-domestic-violence-clinic

Legislative Origin:

HB 2961 (2007) created the Domestic Violence Legal Education Account, originally funded by court fees. HB 2710 (2011) transferred the Domestic Violence Legal Education Account to the General Fund and made the Clinical Legal Education program a Targeted Program within the Oregon University System budget.

History of Dedicated State Appropriations:

2007-09 $231,678
2009-11 $331,750
2011-13 $318,450
2013-15 $337,557
2015-17 $348,077

FY2016 Total Funding Sources:

State Program Funding (GF)	$170,558
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	143,004
All Other Grant & Contract Funding	-
Total	$313,562

Mission Statement, if applicable:

The Domestic Violence Clinic works to accomplish the following: provide collaborative and coordinated civil legal services to victims of domestic violence, dating violence, sexual assault, and stalking in Lane County, Oregon; train law students to represent these victims with passion, compassion, and competence; and, increase the level of skill, knowledge, and concern in the legal profession related to these victims' needs.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  The program is a law school clinic in which graduate students directly participate. Every year, the Domestic Violence Clinic is offered as a class during both of the law school semesters (fall and spring) and also offer it during the summer. Students can enroll during any of these periods. The Domestic Violence Clinic is broken down into several different opportunities for students. Students can learn about protection orders, other civil legal matters, and/or receive advanced training in either of these areas. In the most recent academic year, 13 students participated in the Clinic as enrolled students, earning 36 credit hours. There is also a related program, Student Survivor Legal Services, which is staffed by a post-graduate fellow (a recent graduate of the UO) who also receives training on representing survivors. That person often works with students who are volunteers and who are interested in campus sexual violence issues. There were eight student volunteers in calendar year 2016.

  Students love the hands-on education they receive. Students leave with a competency to represent victims of violence well and a determination to do so, often providing pro bono services to low-income individuals after graduation. In fact, a recent survey of Domestic Violence Clinic alumni found:

  - 87% worked to help victims of domestic violence, sexual assault, or stalking since leaving law school.
  - Of those, 55% did so as a paid lawyer and 45% did so as a pro bono lawyer.
  - 78% indicated that they anticipated working with victims of domestic violence in the future.
  - 100% responded affirmatively when asked, "Did your experience with the DVC make you more willing and/or capable of helping victims of domestic violence, sexual assault, and stalking?"

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  The Domestic Violence Clinic is the only program at the UO in which law students can gain hands-on detailed knowledge and experience about representing survivors of domestic violence, dating violence, stalking, and sexual assault. In the last year, 21 students participated in the Clinic's programs as enrolled students or volunteers.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

Because of the Clinic, an internship has been set up in Klamath Falls. Students learn about a rural legal practice while working with Klamath Falls Legal Aid. The focus is on all types of legal matters that affect low-income survivors of domestic violence. A student receives 6 credits for participating in this externship, which is available in the summer, fall, and spring semesters. It requires a student to live in Klamath Falls. Typically, there are one or two students in this internship on a variable basis. In the last year, there was not a student in this internship.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

This program had a huge impact on the ability to start Student Survivor Legal Services, which is a post-graduate fellowship in which the attorney represents exclusively UO campus survivors of sexual assault, domestic violence and stalking. This is a significant indirect benefit to university students.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

The Domestic Violence Clinic leverages state funding to produce research on the topic of domestic and sexual violence. For example, Merle H. Weiner, the faculty director of the Clinic, wrote, *Legal Counsel for Survivors of Campus Sexual Violence*, a scholarly article that will be published any day now in the Yale Journal of Law and Feminism (volume 29, pages 123-206) (2017). She and the post-graduate fellow presented the paper at the 2017 NASPA Sexual Violence Prevention and Response Conference, January 21, 2017, in Austin, Texas. The presentation was entitled, "The Missing Piece of the Puzzle: Legal Services for Survivors of Campus Sexual Violence." Professor Weiner is currently writing another scholarly article about sexual violence on campus, entitled *A Principled Approach to Responsible Reporting*. Her work led her to be an invited participant at a conference at Stanford University, entitled, "Title IX Advocacy in the Trump Era: A Coordinated Response," May 1-2, 2017. Professor Weiner will also be participating in the American Law Institute's drafting session in June 2017 for its Project on Sexual and Gender-Based Misconduct on Campus: Procedural Frameworks and Analysis (Philadelphia). Participation in this meeting involves both research and service. Overall, the Clinic provides the hands on knowledge and experience that informs good legal scholarship.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

199 clients were served by the Domestic Violence Clinic Jan. 1, 2016 – Dec. 31, 2016 (excluding Student Survivor Legal Services). If one adds clients served by Student Survivor Legal Services (SSLS), there are an additional 75 clients who have been served by this project of the Domestic Violence Clinic. Altogether that is 274 clients. When the Clinic supervisors are not educating students, they have their own caseload of clients.

Low-income survivors need comprehensive legal services for matters related to family, housing, benefits, consumer, and employment for their safety and wellbeing. *See* Nat'l Evaluation of the Legal Assistance to Victims Program 12, 174-78 (2005) ("[C]lients overwhelmingly reported a positive change in their lives as a result of receiving legal services."). Moreover, "Law School clinics perform a valuable service in training students to become skilled lawyers who are sensitive to the needs of domestic violence victims." *Id.* at 14. In fact, as a clinic student said to incoming students: "[T]his is going to be one of the best, if not the best, experience you can have during law school…You are becoming a part of a network of people fighting for women, their rights, and their safety."

The Oregon Department of Justice conducted a STOP Violence Against Women Act (VAWA) gaps and needs assessment survey in June 2016. It identified free/affordable civil legal services as a large service gap, second only to the lack of affordable housing. *See* STOP VAWA Priority Survey 2016, p. 13, 24.

Of course, as the program educates students to do this important work, it populates the state with competent and committed attorneys, willing and able to support survivors.

In addition, the ability to provide campus survivors with legal counsel is very important since campus survivors rarely have counsel and counsel is necessary to access legal remedies in the civil, criminal and campus disciplinary systems, and counsel allows students to focus on their studies and not their victimization. It helps keeps survivors in school.

It is notable that the Domestic Violence Clinic has been able to leverage its state-funded services to build the program and thereby to offer more services to low-income community members and students. For instance, the only reason the Domestic Violence Clinic is competitive on federal and state grants is because it has some stable core funding for the program.

Describe any indirect benefits to Oregonians from this program:

Economists have found that "the provision of legal services significantly lowers the incidence of domestic violence." Amy Farmer & Jill Tiefenthaler, *Explaining the Recent Decline in Domestic Violence*, 21 CONTEMP. ECON. POL'Y. 169 (2003). The economists explained that access to legal services is the *only* service that decreased the likelihood that women will be battered. Shelters, hotlines and counseling programs for battered women had no significant impact on the likelihood of domestic abuse, although they are vitally important crisis-intervention services. However, "the availability of legal services in the county of residence has a significant, negative effect" on the overall incidence of domestic violence.

Legal services decrease the likelihood of abuse because lawyers help domestic violence survivors obtain protective orders, custody of their children, child support, divorce, and sometimes public assistance, thereby helping women achieve physical safety and economic power so that they can leave their abusers. Farmer and Tiefenthaler said that legal services were a good place to invest resources since "legal services are the most expensive support service, the service to which the fewest women have access, and… [it is] the only service that decreases the likelihood women will be battered."

Lowering the rate of violence is imperative because of the high costs of intimate partner violence for the state. The costs of intimate partner sexual and physical assault in Oregon exceeds $50 million each year, nearly $35 million of which is for direct medical and mental health care services. See Or. Dep't of Human Services, Office of Disease Prevention and Epidemiology, Costs of Intimate Partner Violence Against Oregon Women 13 (2005), available at www.oregon.gov/DHS/ph/ipv/docs/IPVCosts.pdf. These costs fall

on all Oregonians, either directly through the government-funded Oregon Health Plan or through increased health insurance premiums. *Id*. This figure does not include the costs of the criminal justice system or the social service system.

How does this program (or could it) provide meaningful information to assist the State Legislature?

The attorneys in the Clinic, and the faculty director, are always ready to assist the State Legislature on issues related to the safety and needs of survivors of domestic violence, sexual assault, and stalking – some already serve on committees and task forces that assist state government. For example, Merle Weiner serves on the Advisory Committee for the Oregon Department of Justice's Crime Victims' Services Division. She was also the Chair of the UO Senate's Working Group on Responsible Reporting. The attorney with SSLS is on the Sexual Assault Services Program (SASP) subcommittee for the Department of Justice. In addition, Mike Quillin is on the Statewide Family Law Task Force, and involved in the Lane County Bar Association. Kathryn Moakley started the Lane County Council, a multi-agency organization focused on a holistic response to domestic violence in our community.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  The Domestic Violence Clinic is very integrated into the UO Law School. The staff are also housed in a UO facility, the Clinic Building. Students participate every day in the operations of the Clinic. The Faculty Director of the Domestic Violence Clinic is a tenured member of the law faculty. The Clinic supervisors are assistant clinical professors. All members of the Clinic actively participate in university activities related to their expertise. For example, Kasia Mlynski attends the monthly Alliance for Sexual Assault Prevention (ASAP) meetings and is part of a committee that is a collaboration on campus sexual assault between the District Attorney and UO. Kathryn Moakley is active with the Oregon Child Advocacy Project. Mike Quillin participates on the University Committee on Sexual Orientation, Attraction, Gender Identity and Expression. Merle Weiner headed up the University Senate's Responsible Reporting Work Group (related to campus sexual violence).

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The Domestic Violence Clinic has 3.75 FTE (not including the Faculty Director). Everyone is a UO employee, except the Womenspace Advocate, with whom the Clinic subcontracts. This breaks down as follows:

  - Mike Quillin: Assistant Clinical Professor and Supervising Attorney of Protection Order Clinic (1.0 FTE)
  - Kathryn Moakley: Assistant Clinical Professor and Supervising Attorney of DV Civil/Family Law Clinic (1.0 FTE)
  - Kasia Mlynski: Staff Attorney, Student Survivor Legal Services (1.0 FTE).
  - Alex Casillas: Legal Services Manager (i.e., Advocate, Womenspace) (.25 FTE)
  - Lacy Dougal: Secretary, UO (.5 FTE)

This summer, the Clinic will hire a post-graduate fellow to serve student sexual assault survivors on campuses in Lane County other than UO, such as Lane Community College and Northwest Christian University. The program received a Victim of Crimes Act grant, and have applied for federal funding from the Violence Against Women Office, to fund this position. Again, this is an example of how the Clinic leverages program funding to help more survivors in the state.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  Everyone is an employee of the UO, except the Womenspace Advocate, with whom the Clinic subcontracts.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The university assists the Domestic Violence Clinic in various ways. First, the Clinic does not pay rent for its office space. Second, the university has historically reduced the F&A charged on grant application so that the program will be competitive when seeking federal grants. Third, the UO Law School also provides significant support for Professor Weiner's programmatic efforts, including grant writing, grant reporting, authoring germane articles, reports, and newsletters, supervising project personnel, and teaching a seminar on Domestic Abuse Law. Fourth, the university provides routine administrative support (including the services of a webmaster, accountant, and publicist).

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  The program is evaluated in several different ways. First, with client satisfaction surveys, using the form recommended by the Department of Justice's Crime Victims Service Division. This is done for all programs, although the Clinic is only technically required to do it for certain grants that require it. Second, the teaching component is evaluated both by students (through student evaluations every semester) and by annual peer teaching reviews (by the faculty director).

OSU Oregon Climate Change Research Institute (OCCRI)

OCCRI:

- Facilitates research by forging collaborations among faculty at many of Oregon's universities
- Serves as a clearinghouse for climate change information
- Provides climate change information to the public in integrated and accessible formats
- Provides technical assistance to local governments and assesses the state of climate change science as it relates to impacts on Oregon
- Served as host, since 2010, for two federally-funded regional research enterprises: the NW Climate Science Center for US Dept. of Interior and the Climate Impacts Research Consortium for NOAA
- Has had projects that involved faculty, students, and staff at PSU, UO, UW, UI, Boise State, Oxford University, UC Santa Barbara
- Led both region-wide and local efforts to develop and apply science to improve resilience to climate variations, drought, and climate change
- Worked extensively with state agencies including Oregon's Water Resource Department, the Oregon Health Authority, the Department of Fish and Wildlife, Oregon's Department of Forestry, the Oregon Department of Geology and Mineral Industries and others, providing technical support
- Has been at the forefront of connecting science with management, for example by co-founding and organizing an annual conference for the NW region in which 300-500 scientists, planners, and natural resource managers track the latest developments in decision-relevant regional science
- Hosts Oregon Climate Service, the official state climate office for Oregon

OCCRI is a network of over 150 researchers at OSU, UO, PSU, SOU and affiliated federal and state labs. OCCRI is administered by OSU and resides in the College of Earth, Ocean, and Atmospheric Sciences (CEOAS).

Contact: Philip Mote, OCCRI Director
Website: http://www.occri.net/

Legislative Origin:

HB 3543 (2007)

History of Dedicated State Appropriations:

2007-09 LAB $180,000
2009-11 LAB $334,858
2011-13 LAB $285,701
2013-15 LAB $302,843
2015-17 LAB $312,837

FY2016 Total Funding Sources:

State Program Funding (GF)	$ 153,290
University Funding	30,000
Gift Funding	2,750
Federal Grant & Contract Funding	4,400,000
All Other Grant & Contract Funding	-
Total	$4,586,040

Mission Statement, if applicable:

The vision of OCCRI is to achieve a climate-prepared Northwest by building a climate knowledge network, cultivating climate-informed communities, and advancing the understanding of regional climate, impacts, and adaptation.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  N/A

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Since 2010, OCCRI has provided summer research opportunities for undergraduates in a competitive program, at the rate of one each summer (except 2016). In addition, four CEOAS graduate students have worked in OCCRI with Philip Mote as their advisor.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  OCCRI has employed several undergraduate students, one of whom transitioned to a full-time job at OCCRI when she graduated.

Describe any indirect benefits to university students through the university's participation in this program:

Director Philip Mote is a guest lecturer in 3-5 courses per year at OSU.

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

USDA Regional approaches to Climate Change for PNW agriculture, $20.0 million, UI-OSU-WSU 2011-2017
NSF Anticipating water scarcity, $4.3m, OSU-PSU-UO 2010-2016
DOI NW Climate Science Center, $4.2m, OSU-UW-UI 2010-2017
USDA Forest dieoff, climate change, human intervention, $4.1m OSU-UI-UCSB-Oxford 2013-18
NOAA Climate Impacts Research Consortium, $3.8m, OSU-UO-UW-UI-BSU 2010-2015, $3.7m, OSU-UI UW-UO and other partners, 2015-2020.
Numerous other funded projects from USGS, Bureau of Land Management, Microsoft Corp, several tribes, EPA, Army Corps of Engineers, totaling over $2m
Over 25 publications in the past 5 years

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

OCCRI staff and collaborators have worked with community leaders, community groups, OSU Extension agents, and other partners to bring climate science (including drought information and seasonal forecasts) to partners throughout Oregon. Communities with which OCCRI has worked in varying capacities include Portland, Tillamook, Corvallis, Eugene, Ashland, Bend, Pendleton, LaGrande, and Ontario. Modes of engagement include participating in community fora, providing advice to city officials on planning for the future, reviewing plans and other documents, and conducting multi-year research to address specific city questions. Topics include water supply, infrastructure, health, fires, agriculture and ranching, and much more. A multi-year project called Tillamook County Coastal Futures was recently completed; it was a scenario planning exercise with county-level stakeholders using technology developed at OSU to explore policies aimed at shoreline protection.

OCCRI has not attempted to quantify economic impacts of its activities but in some cases communities have indicated informally that the information is being used to inform multi-million dollar decisions. As noted above, OCCRI has leveraged state money to bring several million dollars per year to the region, virtually all in the form of salary and/or support for graduate and undergraduate students doing research with OCCRI at many universities.

Describe any indirect benefits to Oregonians from this program:

OCCRI is the regional host of the Pacific Northwest Drought Early Warning System, a network of local, state, and federal water managers working to achieve drought resilience and preparedness. OCCRI Associate Director Kathie Dello serves on the Drought Readiness Council and the Water Supply Availability Committee, and was a part of the state communication team during the drought of 2015 OCCRI staff give about 75 public talks and briefings/year, included invited talks to state agency staff and at OSU Extension regional and county offices. OCCRI experts have served as sources in the media,

including OPB, Capital Press, Oregonian, Corvallis Gazette-Times, Bend Bulletin, Eugene Register Guard, Salem Statesman, Associated Press, Reuters, ABC, Time, Atlantic Monthly, Scientific American. OCCRI staff – primarily the director and associate director - are quoted or featured in media stories approximately 80 times per year.

How does this program (or could it) provide meaningful information to assist the State Legislature?

OCCRI produces assessment reports on the state of climate science that are delivered to each member of the State Legislature. Relevant legislative committees are briefed upon request. In addition, agency staff dealing with drought, climate variability, and climate change are informed by OCCRI science and bring that information to discussions with legislative staff.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  OCCRI staff are OSU employees and their offices are in Strand Hall at the heart of OSU's campus, along with other CEOAS faculty, students, and staff; leadership of the Marine Studies Initiative; leaders and staff of the College of Agricultural Sciences; and the Institutes for Natural Resources and Water and Watersheds. The Director of OCCRI participates in campus-wide director activities including quarterly meetings of Center & Institute Directors, annual President's dinners, and meeting with candidates for senior leadership positions in the university.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  Staffing has been as high as 20 persons at OCCRI's central office. Currently there are 10 staff, 2 graduate students, and in June our next summer undergraduate. In addition, OCCRI's projects (see section on research above) funds all or part of about 80-100 faculty, staff, and students at other universities.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  Employees are university faculty, staff, or students.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The university provides office space for OCCRI. Both CEOAS and OSU provide in-kind support for fiscal management of grants and other awards to OCCRI including the state support.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

OCCRI has an external advisory board that meets annually to provide informal review. Neither the legislation (HB3543) nor university procedures require formal review.

PSU Profiling

The *Law Enforcement Contacts Policy & Data Review Committee* (LECC) is a statewide governor appointed committee that is charged with the duties of assisting Oregon law enforcement agencies with stop data collection and analysis efforts, improving community relations, training efforts, and policy recommendations that pertain to ensuring equity in Oregon law enforcement. With the passage of House Bill 2002 (2015), the LECC is able to assist the general public file a complaint of profiling by an Oregon law enforcement officer.

Contact: Brian Renauer, Director of Criminal Justice Policy Research Institute
Website: https://www.pdx.edu/cjpri/lecc

Legislative Origin:

In 2001, Senate Bill 415 established the Governor appointed *Law Enforcement Contacts Policy and Data Review Committee* (LECC) to address Oregonians' concerns over racially-biased policing. In 2007, the LECC was codified into statute (ORS 131.905 *et seq*) and staffing for the committee transferred to the Criminal Justice Policy Research Institute (CJPRI) at PSU. No state funding was provided at that time. In 2015, House Bill 2002, the End Profiling Act (EPA), expanded the role of the LECC and provided general fund support.

History of Dedicated State Appropriations:

2015-17 LAB $250,431

FY2016 Total Funding Sources:

State Program Funding (GF)	$122,711
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	-
All Other Grant & Contract Funding	-
Total	$122,711

Mission Statement, if applicable:

The purpose of the LECC is that "State and local law enforcement agencies can perform their missions more effectively when all Oregonians have trust and confidence that law enforcement stops and other contacts with individuals are free from inequitable and unlawful discrimination based on race, color or national origin."

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

  Two PSU undergraduate students in the past year participated in the work of the LECC for academic credit towards a required internship with the Criminology & Criminal Justice Department (CCJ 404 – 8 credits each) and as an option for the University's Senior Capstone requirement.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  Typically, LECC employs one to two graduate students per academic year who participate in the work of the LECC as part of a research assistantship. In some cases, that work has been used to support a thesis or field project.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  As noted above, there are typically one to two undergraduate students using this experience for a required internship or senior capstone and one to two graduate students per academic year as research assistants.

Describe any indirect benefits to university students through the university's participation in this program:

N/A

Research

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

Since the research aspects of this work focuses on racial/ethnic disparities in law enforcement actions, some of faculty involved have received recognition for this work and opportunities for studying disparity across the criminal justice system have been increasing.

Below are two examples:

1. Brian Renauer, "Analysis of Racial/Ethnic Disparity in TriMet Fare Enforcement", TRIMET, 8/16-12/16 ($25,000).
2. Brian Renauer, "CHI Early Intervention Evaluation", Multnomah County Juvenile Services Division, 7/15-current ($50,000).

Below is some local media coverage of this research:
Oregonian Article – "Prosecutors will stop pursuing charges against most TriMet fare evaders" (January 4, 2017)
Oregonian Article – "Study: Black riders more likely to be banned from TriMet for fare evasion" (December 14, 2016)

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

One aspect of the program work is direct service to the Oregon public. Due to HB2002, PSU/CJPRI can now receive complaints directly from the public regarding perceived experiences of being the target of profiling by Oregon law enforcement. CJPRI staff at PSU work with complainants to understand their story and initiate the complaint process with the appropriate law enforcement agency in question.

Describe any indirect benefits to Oregonians from this program:

Through the law enforcement training efforts of the LECC, over 2,000 Oregon law enforcement officers have been trained using a program that helps officers understand the dangers of biased policing and profiling and gives them tool and confidence to ensure equitable policing. These training efforts may have an indirect benefit to all Oregon's and their interactions with law enforcement.

How does this program (or could it) provide meaningful information to assist the State Legislature in their work?

The program provides the Legislature with information on the trends in disparities in traffic stop and searches, public perceptions of law enforcement, and profiling complaints.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  See below

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  The program funds a 1.0 FTE project manager position working at PSU. The project manager is solely dedicated to the work of this program, but situated within the Criminology & Criminal Justice Department and managed by the Director of the Criminal Justice Policy Research Institute.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  The 1.0 FTE position is an unranked PSU position and has been placed in the Program Administrator I job family and reports to the Director of the Criminal Justice Policy Research Institute.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The Criminology & Criminal Justice (CCJ) Department within the College of Urban and Public Affairs has provided a single dedicated office for the effort. CCJ pays for the phone, internet, and computers associated with the program. The CCJ front office staff provides administrative assistance to the program in the form of entering and paying purchases, and developing and paying contracts/consultants, and assistance with monitoring spending and the budget. The Director of the Criminology & Criminal Justice Policy Research Institute provides "in kind" FTE to the projects of approximately 4 hours a week.

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  LECC submits an Annual Report summarizing the work of the project. The Annual Report is reviewed by the LECC committee members and then provided to members of Oregon's Legislative Judiciary Committees. As far as metrics, the Annual Report examines the number of trainings held, number of trainees, feedback survey results from trainees, number of profiling complaints received and outcomes.

OT Oregon Renewable Energy Center (OREC)

As a public purpose, applied research center created by the Oregon State Legislature in 2001 (ORS 352.745), the Oregon Renewable Energy Center (OREC) speeds the integration and optimization of renewable energy resources with current power generation systems, and accelerates clean energy technologies in collaboration with industry partners. The director position is currently vacant.

Contact: Hallie Neupert, Interim Dean, Engineering, Technology & Management
Gary Kuleck, Provost
Website: http://www.oit.edu/orec

Legislative Origin:

ORS 352.745 (2001)

History of Dedicated State Appropriations:

No dedicated historical state funding. Funding of $985,000 requested for 2017-19.

FY2016 Total Funding Sources:

State Program Funding (GF)	$ -
University Funding	-
Gift Funding	-
Federal Grant & Contract Funding	-
All Other Grant & Contract Funding	53,500
Total	$53,500

Mission Statement, if applicable:

Enhance development and promote availability of renewable energy through: Energy Systems Engineering, Applied Research, Technical Assistance and Information Dissemination, Academic Degree Programs and Industrial Training and Development.

The following questions relate to the universities' core missions of instruction, research and public service. If not applicable to this particular program, note as "n/a."

Student Participation

Describe how students (identifying undergraduate and/or graduate) directly participate in this program.

- **Ability to earn academic credit hours (include number of students and total credit hours earned over most recent academic year):**

All OREC's applied research projects involve undergraduate or graduate students. These inter-disciplinary projects provide relevant hands-on experiences for students working with small and medium-sized companies. Students receive credit as part of their junior or senior project course or their graduate research courses.

During the past academic year, OREC hosted nine projects, involving 36 students. Specific credit hours for these projects are not tracked. Sustaining funds from the state will help Oregon Tech scale up the OREC functions for students and communities.

- **Ability to gain experience in field of interest, research projects, dissertation material or other factors (include number of students annually):**

  OREC does not currently receive dedicated state funding, so very few students are being served. The number of students served varies because it depends on the success of grant proposals which fund current operations. Total served this year is 36.

- **Describe student internships or employment (include number of student workers/graduate assistants annually):**

  Oregon Tech's student success rate for all students is 98% so the OREC students are exceptionally well-prepared for employment. Some students transition from the OREC projects to work as interns for the companies with which they have conducted research, and then are offered employment. John Dumbauld, who presented to the Joint Ways and Means, Education Subcommitte in 2017, conducted a research project with eWind Solutions, was hired as an intern, and is now employed as a mechanical engineer. This is a common story for students who work on OREC projects.

Describe any <u>indirect</u> benefits to university students through the university's participation in this program:

OREC provides a venue for working on applied research with companies, so it provides the following benefits:

- Increased brand awareness for Oregon Tech and OREC, so higher value of degree;
- Expanded applied learning experiences so students are ready for employment on day one;
- Increased exposure to industry companies and industry events around the state;
- Skill development in problem-solving, team work, research, project management, technical writing and other high-value skills

The applied research centers provide students with relevance in their education – it's putting the theory into practice.

<u>Research</u>

Describe how this program leverages state funding, noting recent research awards and dollars, published results, national or global recognition, etc.

OREC does not currently receive dedicated state funding. However, over its history since 2001, OREC has leverage over $12M in federal, multiple state, private company grants and donations to develop its energy resources and conduct technical assistance and research projects.

Public Service

Describe how this program directly serves Oregonians or the local/regional community, providing metrics over time as applicable and available. Include any economic impact on local, state, national, or global economies.

All of these outcomes have been funded with other grant sources, so they deliver the outcomes in the grant scopes of work. To date, OREC has helped 22 small and medium-sized companies with geothermal technical assistance, prototyping, testing, and manufacturability analysis.

Some of the Oregon companies are:

- Arcimoto
- eWind Solutions
- Kerr Avionics
- NW Renewable Energy Corporation
- PGE
- Powin Energy

Describe any indirect benefits to Oregonians from this program:

OREC helps accelerate the development and deployment of clean energy technologies, provides advice on the use of geothermal energy, and helps companies improve their existing products.

The benefits to Oregonians are:

- Innovation in products and services
- Energy savings
- Advice on use of renewable energy and grid security
- Expanded jobs in Oregon
- Economic development, mostly in rural Oregon

How does this program (or could it) provide meaningful information to assist the State Legislature in their work?

OREC could offer advice to the Legislature on how to improve energy efficiency and deploy clean technologies in the state's public buildings. OREC could offer its faculty expertise on issues of importance for the state. For example, currently one of the faculty is participating on a Transportation Policy Committee work group to advise the state on autonomous vehicles. Another faculty member is working with DAS on cybersecurity.

The following questions pertain to the relationship between this individual program and the university as a whole.

- **Describe how each program is integrated into the institution in terms of sharing of staff, facilities, student participation (see above), and community (defined broadly).**

  There are currently no dedicated OREC staff. Oregon Tech needs the dedicated state support to be able to dedicate faculty and staff time for applied research purposes. Dedicated state funds provide the foundational support for the research centers, and they are complemented by grants and sponsored projects.

  All OREC positions are envisioned as university faculty and staff, with part of their time dedicated to teaching (paid from Oregon Tech general fund) and part of their time for applied research projects (paid by dedicated OREC funding).

  The OREC-associated faculty and staff will utilize Oregon Tech shared facilities. Students will participate in projects as graduate and undergraduate students based on the matching of faculty expertise with research projects, and student involvement in the OREC-associated faculty classes and labs.

  With state funding, OREC can expand its community outreach and offer more technical assistance and applied research to emerging companies.

- **Describe the program's staffing including FTE and the relationship of the staff to the overall university.**

  Authorized in statute but not currently staffed. As projects arise, they are entirely grant or company funded, but we are turning away projects due to lack of dedicated faculty for research projects.

- **Are the employees university faculty, staff, or students, or is there another relationship, such as an affiliated nonprofit or other entity?**

  There are no current employees dedicated to OREC. When OREC receives dedicated funding, the faculty will be university employees, with some time dedicated to OREC projects.

- **Describe how the program is "subsidized" or assisted by the university(s) including use of facilities (e.g., does program pay rent), central staff, central services, sponsoring of conferences, and other activities.**

  The program will be subsidized through the use of all Oregon Tech facilities, including the geothermal and solar projects, for research and teaching purposes. Oregon Tech will also support OREC through marketing, industry outreach, sponsored projects and grants administration, and central office business services.

  With dedicated funds, the university will provide support in the following ways:

Expense	Description and classification	State Program Funding	Other Funding – University "subsidy"	Comments
OREC Director	1 OREC Director @ $120,000 + $60,000 OPE for two years Unclassified	360,000		Manage OREC, oversee centers of expertise and laboratory facilities, develop sustaining funding, work with Provost on faculty appointments to applied research center; manage Sponsored Research Office and VP Research functions.
Five applied research faculty positions	**Half of salaries** for 5 @ $125,000 including OPE x 2 years Unclassified faculty positions	$625,000 (OREC covers half of the salaries for applied research)		Faculty positions include part-time teaching of undergraduate and graduate courses, collaborations with companies on applied research projects, commercialization of research, leverage of private and federal funds.
Administrative and Grant Writing Support	1 Admin Assistant @ $60K including OPE x 2 years; Classified position		$120,000	Oregon Tech will support this function through grants and sponsored projects administrative offices.
	1 Grant Writer/ Grant Manager @$100k including OPE x 2 yrs. Unclassified position		$200,000	Oregon Tech will support this function through grants and sponsored projects administrative offices.
Research Labs, tied to industry needs, and energy curriculum	$100,000 each x 5 researchers		$500,000	One-time costs; future shared lab facilities will be grant funded in collaboration with other university partners or privately funded with business partners.
Total		$985,000	$820,000	Biennium

- **How is the program evaluated -- please describe any internal measures that are used, any institution based system or process, any outside "industry" reviews.**

  When OREC is supported with dedicated state funds, OREC will report on the following metrics. Currently, metrics are reported for each specific grant or sponsored project.

  Accountability: Measuring OREC's success
  - Value of contracts, grants or revenue from sponsored applied research
  - BS and MS-level degrees awarded by Oregon Tech in energy and related fields
  - % Employment of Oregon Tech graduates in Oregon
  - # internships and industry-supported undergraduate/ graduate projects, related fields
  - # jobs created through new or improved product development or manufacturing production
  - # start-up companies (student inventors/spin offs)

State Programs Funding History

State Programs Funding History	2007-09 Final*	2009-11 Final*	2011-13 Final*	2013-15 Final*	2015-17 LAB	2017-19 ARB	2017-19 GRB	2017-19 REQUEST
Ongoing State Programs								
Engineering Sustaining Funds (previously ETIC)[1]	$37,280,000	$30,981,350	$27,387,573	$29,030,827	$24,451,274	$25,744,445	$25,205,902	$26,383,000
TallWood Design Institute - OSU & UO[2]					2,500,000	3,579,157	3,504,933	3,669,000
Dispute Resolution - 65% UO & 35% PSU	2,267,275	2,107,233	2,297,895	2,435,769	2,516,149	2,649,223	2,593,804	2,715,000
Oregon Solutions - PSU	2,600,000	2,416,355	2,061,637	2,185,335	2,257,451	2,376,843	2,327,122	2,436,000
Fermentation Science - OSU				1,200,000	1,239,600	1,305,159	1,277,857	1,338,000
Signature Research - OSU, PSU, UO	1,039,234	863,902	863,903	1,007,335	1,040,577	1,095,610	1,072,692	1,123,000
Labor Education Research Center - UO	696,936	649,089	657,542	656,867	678,544	714,430	699,486	732,000
Marine Research Vessel - OSU				300,000	619,800	652,580	638,929	669,000
Population Research Center - PSU	472,744	439,187	374,427	421,407	435,313	458,336	448,748	470,000
Institute for Natural Resources - OSU	459,675	427,196	364,484	386,353	399,103	420,210	411,420	431,000
Clinical Legal Education - Currently UO[3]	231,678	331,750	318,450	337,557	348,077	366,486	358,820	376,000
Climate Change Research Institute - OSU	180,000	334,858	285,701	302,843	312,837	329,381	322,492	338,000
Profiling - PSU[4]					250,431	263,676	258,160	270,000
Rounding						-	(2)	
Oregon Renewable Energy Center (OREC) - OT	-	-	-	-	-	985,000	-	985,000
	$45,227,542	$38,550,920	$34,611,612	$38,264,293	$37,049,156	$40,940,536	$39,120,363	$41,935,000
One-time Appropriations								
OSU Canola Study				$ 679,000	$ -			
OSU Ocean Acidification Study				250,000	-			
OSU Shellfish Research				-	500,000			
PSU INR-Western Juniper Research				-	100,000			
OSU INR Task Force Support				-	108,907			
EOU Wrestling program				-	300,000			
PSU Oregon Solutions Task Force					62,300			
OSU Endophyte					100,000			
OSU Marine Renewable Energy					800,000			
OSU ALS Scholarship				-	100,000			
				$ 929,000	$ 2,071,207			

** End-of-biennium actual appropriations inclusive of any mid-biennium reductions, Emergency Board (E-Board) actions, and one-time funding*

[1] Beginning 2015-17, includes only "sustaining" funds

[2] Previously funded as "Advanced Wood Products"; 2017-19 Funding includes legislative phase in of $936,900 - SB 5507 (2015)

[3] Until 2011-13, funding was received through a special court fee. Beginning in 2011-13, funding was received through General Fund appropriations to the OUS. Historically, allocations were shared between UO and Lewis & Clark College through an application process and based on clientele served. Due to a change effective 2015 in Lewis & Clark's clinical programs, they will no longer be eligible for this funding.

[4] Original 2017-19 Consolidated Funding Request omitted Profiling program, incorrectly assumed to be one-time

Fiscal Year 2016 Total Funding for State Programs

State Programs Other Funds Information	FY2016 Actual Revenues					
	State Program Funding (GF)[1]	University Funding	Gift Funding	Federal Grant & Contract Funding	All Other Grant & Contract Funding	Total
Engineering Sustaining Funds (ESF, previously ET	$ 11,981,124	$ 7,133,832	$ 1,332,850	$ 7,514,324	$ -	$ 27,962,130
TallWood Design Institute[2] - OSU & UO	1,225,000	191,910	7,500,000	2,402,490	315,000	11,634,400
Dispute Resolution - 65% UO & 35% PSU	1,232,913	-	-	407,024	725,949	2,365,886
Oregon Solutions - PSU	1,106,151	-	-	31,410	295,875	1,433,436
Fermentation Science - OSU	607,404	1,727,516	225,033	703,475	790,260	4,053,688
Signature Research - OSU, PSU, UO	509,883	350,000	-	3,046,250	1,315,796	5,221,929
Labor Education Research Center - UO	332,487	753,041	-	76,636	342,573	1,504,737
Marine Research Vessel - OSU	303,702	-	-	3,500,000	-	3,803,702
Population Research Center - PSU	213,303	33,462	-	-	673,522	920,287
Institute for Natural Resources - OSU	195,560	92,000	173,163	402,464	1,140,207	2,003,394
Clinical Legal Education - Currently UO	170,558	-	-	143,004	-	313,562
Climate Change Research Institute - OSU	153,290	30,000	2,750	4,400,000	-	4,586,040
Profiling - PSU	122,711	-	-	-	-	122,711
OREC - OT	-	-	-	-	53,500	53,500
Total Program Funding	$ 18,154,086	$ 10,311,761	$ 9,233,796	$ 22,627,077	$ 5,652,682	$ 65,979,402
	27.5%	15.6%	14.0%	34.3%	8.6%	

[1] *State General Fund is split 49% in year one of the biennium, 51% in year two*

[2] *Gift funding is for the construction of the Wood Products Institute*