



Humboldt State University

Economic and Community Impact Analysis

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Humboldt State University
1 Harpst Street
Arcata, CA 95521

Submitted by:

ICF Incorporated, L.L.C
100 Cambridgepark Drive #501
Cambridge, MA 02140

Table of Contents

Executive Summary	1
Introduction	5
1. Economic Impact of HSU	6
1.1 Summary of Results	6
1.2 Results by Spending Type	7
1.3 State Return on Investment.....	10
1.4 City-Level Impact	10
2. Educational Pathway, Diversity and Workforce Development	12
2.1. Supporting the Region's Education Pathway	12
2.2 Serving a Diverse Student Population.....	13
2.3. Meeting the Needs of the Regional Economy.....	16
3. Research, Innovation, and Sustainability	25
3.1 Conducting Sponsored Research	25
3.2 Creating Place-Based Learning Communities	26
3.3 Providing Regional Leadership on Clean Energy	27
4. Entrepreneurship and Small Business Development.....	31
4.1 Providing Business and Entrepreneurship Education	31
4.2 Supporting Small Business Development	32
5 Contributing Community Services and Assets.....	34
5.1 Community-Focused Research and Advocacy	34
5.2 Enriching the Humboldt Region with Community Service	36
5.3 Hosting a Center for Lectures, Arts, and Performances	37
Conclusion.....	38
Appendix A: Detailed Methodology	39
Appendix B: Study Multipliers	45
Appendix C: Updating HSU's Economic Impact	46
Appendix D: Downscaling Regional Results to Estimate Impacts in the City of Arcata.....	49

Executive Summary

Humboldt State University (HSU) is situated in the heart of rural northern California, and acts as a key engine for the region's economy. The University is responsible for attracting dynamic new residents to the region, and graduating well-prepared students, many of whom stay in the region and support the growth of the local economy. HSU impacts the region in a wide variety of ways: through direct employment and secondary industry activity and taxes generated by spending in the local economy; the quality education it offers students; the innovations it spawns; and the community services it provides. This study seeks to quantify HSU's economic impact on the region, and document the broader ways that the University impacts the region's workforce, innovation system, entrepreneurial capacity, and community assets.

Economic Impact of HSU

The economic impact of HSU can be accounted for, in monetary terms, through its spending, student activity and the incremental life-time income of its alumni. The direct economic activity associated with the University has a multiplier effect on employment, labor income and industry activity across the region. Quantifying these impacts will allow HSU to raise awareness about its crucial role in the regional economy.

Humboldt County Impact

- HSU generates over \$567 million in total annual industry activity
- Supports 6,240 jobs in Humboldt County
- Creates more than \$38 million in state and local tax revenue annually.

Utilizing the input-output model IMPLAN, ICF determine the impact of the University on Humboldt County and downscaled results for City of Arcata. In 2018, HSU-related activity supported 6,240 annual jobs and generated more than \$180 million in labor income. HSU is the largest employer in Humboldt County, and one of only three employers with over 1,000 employees.¹ ² HSU supports more than 10% of total regional employment.³ This activity drives a substantial amount of industry activity- more than \$567 million throughout the region. HSU also generated upwards of \$38 million in state and local tax revenue, or approximately \$4,914 tax dollars per enrolled student⁴. Approximately \$5.1 million of tax revenue is generated in Arcata.

Educational Pathway, Diversity, and Workforce Development

HSU attracts diverse students to the region in growing numbers, and provides education opportunity to locals of all ages. Each year HSU serves a student body of seven to eight thousand

¹ State of California, Employment Development Department. 2019. *Major Employers in Humboldt County*.

² Humboldt County, Management & Budget. 2019. *Personnel Allocation by Budget Unit for Fiscal Year 2018-19*.

³ State of California, Employment Development Department. 2018. *Humboldt County Profile*. Total employment for Nov. 2018 was 62,300.

⁴ Based on the total fall 2018 headcount (7,774)

students, many of whom will become future residents of the region. HSU students are diverse in backgrounds, with a wide range of ethnicities and over half are first-generation or low-income students.⁵

A strong primary education system is critical to a well-functioning local labor force. HSU supports the region's K-12 population with multiple programs, including Gaining Early Awareness and Readiness for Undergraduates Programs (GEAR UP),⁶ Upward Bound,⁷ and the Youth Mentoring Program.⁸ Opportunities for community members to enrich their skills exist through the College of Extended Education, Credential program in teaching, and life-long learning for the 50+ community at the Osher Institute.⁹

HSU graduates support the growth of key regional industries. Three of the most prominent sectors are forestry, fishing, and environmental engineering. Forestry-related employment has increased 123% between 2009 and 2018 in Humboldt County, replacing jobs lost due to the declining timber industry.¹⁰ HSU facilities, such as its state of the art wildland fire lab, and student interns in Redwood Rising support research and conservation of the regions forests, while numerous graduates have gone on to work in and start companies in the forestry industry. Humboldt Bay has long been a hub of activity for the fishing industry, particularly for the bivalve industry.¹¹ HSU supplies the fishing sector with graduates from the only fisheries management program in the State. Moreover, students and faculty conduct research and support activities to restore regional fishery ecosystems. Finally, HSU's environmental resources engineering (ERE) graduates have started numerous local companies, become regional leaders, and assisted in the creation of clean energy systems in the region.¹²

Research, Innovation, and Sustainability

HSU activities foster innovation, technology development, and community engagement around environmental sustainability. The University conducts a significant amount of externally-funded research, receiving \$28 million in funding in the 2017-18 academic year. Research projects are largely focused on education, natural resource management, energy, and sustainability issues. One prominent outcome of University research is the clean energy microgrid at the Redwood Coast Airport.

⁵ HSU. Enrolled Student Demographics Report Options. <https://pine.humboldt.edu/~anstud/humis/demo-AAFHEV.html>

⁶ HSU. GEAR UP. <https://gearup.humboldt.edu/>

⁷ HSU Now. College Readiness Program gets \$1.3 Million Grant. <http://now.humboldt.edu/news/with-13-million-grant-hsu-program-gets-students-college-ready/>

⁸ HSU Y.E.S. Let's spotlight the second oldest program at YES, Youth Mentoring Program (YMP)! <https://yes.humboldt.edu/ymp-spotlight>

⁹ HSU College of Extended Education. <https://extended.humboldt.edu/extended-education>

¹⁰ State of California. Employment Development Department. Employment and Wages by Occupation (OES). <https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

¹¹ HSU Now. Study: Humboldt Bay Bivalve Businesses Has a Big Local Impact. 2019. <http://now.humboldt.edu/news/study-humboldt-bay-bivalve-business-has-a-big-local-impact/>

¹² ERE Messenger, Spring 2017

HSU students are deeply engaged with local environmental issues thanks to HSU's place-based and experiential research opportunities known as Learning Communities. The Klamath connection allows students to engage in improving the health and resiliency of the region's Klamath River, while Among the Giants allows biological science students to super and conserve the biodiversity of the region. Rising Tides creates the opportunity for marine biology and oceanography students to conduct hands-on research along the regions coast-line.

The HSU Schatz Energy Research Center (Schatz Center) has been promoting the use of clean energy technologies for 30 years. Working in collaboration with local organizations and Tribes, the Schatz Center has analyzed the region's energy needs, created a plan for powering the County, and implemented vital clean energy systems. Schatz Center's development of three microgrids has paved the way for greener, more resilient energy systems across the region.

Entrepreneurship and Small Business Development

HSU's business education strengthens entrepreneurial skills and activity in and around Humboldt County, and the HSU-sponsored Small Business Development Center (SBDC) is a critical hub for small business development support services across the multi-county Northern California region. The Institute for Entrepreneurship Education (IEE) promotes enterprises education on campus and collaborates with local businesses through small business speaker series.¹³ The Entrepreneurs Club is another resource linking students, faculty, and community members passionate about entrepreneurship. The club hosts events and discussion open to community and HSU members.¹⁴ Students become actively involved with local businesses through Business School internship programs. Students support businesses in planning, social media, financing, and accounting. Over 100 local businesses and organizations have benefited from HSU interns.¹⁵ HSU students also directly help the community by serving as Volunteer Income Tax Assistance (VITA) interns, helping low-income community members correctly file taxes and maximize returns.

The HSU-based NorCal SBDC Lead Center oversees a regional small business development program for the 36 Northern California counties. HSU provides the physical space, financing, and administrative support for this hub of regional economic development. The SBDC has counseled nearly 36,000 small businesses, assisted in launching more than 2,500 new businesses, and helped create more than 18,000 jobs. Many businesses served by the SBDC now provide long needed community assets, such as the tribe-owned grocery store in Hoopa Valley, which alleviated food access issues in the area.

Community Assets and Services

HSU actively serves the surrounding community, through community-driven research conducted at the California Center for Rural Policy (CCRP). The CCRP promotes evidence-based policy and

¹³ HSU IEE <https://business.humboldt.edu/content/institute-entrepreneurship-education-ieee>

¹⁴ HSU Clubs and Activities. Entrepreneurship Club. https://clubs.humboldt.edu/club_sites/entrepreneurs-club-e-club

¹⁵ HSU School of Business. Internships. <https://business.humboldt.edu/content/internships>

planning research to address critical community need. In the past, CCRP played a vital role in ensure reliable broadband connection in rural Humboldt and Del Norte Counties.¹⁶ Ongoing CCRP efforts include evaluating community health and wellness, and ensuring food security. In 2010 the CCRP developed a set of community health indicators, which were later used by Del Norte County to determine allocation of the Building Healthy Communities grant. CCRP regularly performs assessments of community health which are used to implements effective policy solutions.¹⁷ Additionally, CCRP funds the Humboldt Food Policy Council, which brings together food system stakeholders to ensure the regional food system is equitable and sustainable.¹⁸

HSU students serve their community providing thousands of hours of service each year. Youth Education Services (YES) on campus engages 300-400 student volunteers in community service programs each semester. Annually, YES students contribute 20,000 service hours, a value of \$495,000 to the community.¹⁹ Service Learning and Academic Internships also create community-serving opportunities for students. Annually nearly 1,140 students participate in Service Learning and Academic Internship courses, serving an estimated 78,000 hours, a value near \$1.9 million to the community.²⁰

Finally, HSU provides vital cultural amenities to the region—including lectures, performances, and the public radio station KHSU—that make it a better place to live, work, learn, and play. The University hosts multiple educational conventions open to the public, such as the Sustainable Speakers Series and Zero Waste Conference.²¹ The HSU Center Arts hosts well-known musical guests and speakers. In AY 2017-18 Center Arts hosted 59 events for nearly 40,000 community and HSU participants.²² Another community asset licensed to the University is KHSU. KHSU is a public, community-supported commercial radio station that often highlights University and student activities. The broadcast educates and entertains approximately 135,000 people across Northwest California and Southwest Oregon.²³

¹⁶ CCRP. A Tale of Two Rural Broadband Victories. 2014. <https://ccrp.humboldt.edu/sites/default/files/humboldt-del-norte-broadband-case-studies.pdf>

¹⁷ Community Wellness Vital Signs: Core Community Wellness Indicators for Del Norte and Adjacent Tribal Lands, 2012, <https://ccrp.humboldt.edu/sites/default/files/community-wellness-vital-signs-for-dnatl-version-1-2.pdf>

¹⁸ HSU CCRP. Food Security & Food Policy Council, <https://ccrp.humboldt.edu/research/food-security-food-policy-council>

¹⁹ HSU. Getting Involved. <https://deanofstudents.humboldt.edu/getting-involved>

¹⁹ Each hour valued at \$24.69 by The Chronical of Philanthropy. Value of Volunteers' Time Up to \$24.69 an Hour. <https://www.philanthropy.com/article/Value-of-Volunteers-Time-Up/243207>

²⁰ Statistics provided by the Center for Community Based Learning

²¹ HSU Now. Zero Waste Conference Coming to Humboldt State. 2018. <http://now.humboldt.edu/news/zero-waste-conference-coming-to-humboldt-state/>

²² Statistics provided by HSU Center Arts

²³ KHSU Diverse Public Radio. About KHSU. <https://www.khsu.org/about-khsu#stream/0>

Introduction

Nestled on the northern California coast, Humboldt State University has long been a center of culture and learning in the region. Located in the small town of Arcata, and founded in 1913, Humboldt State University (HSU) has played a vital role in the Humboldt County region for more than 100 years. With close to 8,000 registered students during the 2017-18 academic year, and over 73,000 alumni, the social and economic impact of HSU is significant.

Often the benefit of a University is thought of as only the incalculable value of knowledge and learning that its students receive, however HSU's impact goes much further. HSU's existence in the region creates jobs and secondary spending that stimulate the economy. Student spending and, most importantly, the incremental life-time income of its alumni have a significant impact on regional industry activity, employment and tax revenue.



Source: HSU Facebook page

While the economic impacts of the University in terms of regional jobs, industry activity and tax revenues are impressive, they do not include the broader impacts HSU contributes to the region in terms of workforce, innovation, entrepreneurship and community. HSU students and alumni contribute to the workforce in key industries, lead in research and development, start and grow businesses and contribute critical hours to community projects.

To quantify the economic impact of HSU, ICF used the IMPLAN input-output model coupled with data provided by HSU related to university spending, student spending, and alumni. To gather information on the broader impacts of HSU on the region, ICF reviewed University materials, including websites, annual reports, and departmental materials, and conducted selected interviews with university faculty and staff.

This report begins with **Chapter 1** which details the quantifiable economic contributions of HSU's operations, capital expenditures, and student and alumni spending in terms of impact on regional jobs, industry activity and tax revenues. These impacts demonstrate the ways in which HSU impacts its community by stimulating the local economy. **Chapter 2** focuses on the ways in which HSU supports the educational pathway, from K-12 through life-long learning for community members and develops a workforce to support regional industries. **Chapter 3** describes the ways in which HSU serves as a hub for research and innovation, which in turn sparks regional entrepreneurship and small business development, which is discussed in **Chapter 4**. Lastly, **Chapter 5** provides some key examples of how HSU supports community amenities that make Humboldt a better region in which to live, work, learn, and play.

1. Economic Impact of HSU

Traditionally, the impact of a university is thought of as the incalculable value of knowledge and learning that its students receive. While education is indeed valuable in its own right, the economic impact of a university can be accounted for, in monetary terms, through its spending, student activity and the incremental life-time income of its alumni. The direct economic activity associated with the university has a multiplier effect on employment, labor income and industry activity across the region. Quantifying these impacts will allow HSU to raise awareness about its crucial role in the regional economy and to utilize relevant information in garnering stakeholder support for its long-term development plan.

ICF used the IMPLAN input-output model to measure the inter-industry impacts of university spending, student spending and enhanced alumni earnings on the regional economy. IMPLAN calculates the flow of expenditures from various industry sectors--e.g., university operations or construction expenditures--using a model specific to the regional economy of Humboldt County. For more information about the IMPLAN model, see Appendix A. By tracking HSU-related spending throughout the economy, the model calculates the secondary impacts of the initial spending. The results of the economic impact assessment are presented below.

1.1 Summary of Results

The following discussion details the economic ripple effect that HSU has on the Humboldt County region in terms of employment, labor income, and industry activity. ICF analyzed HSU's five spending categories including University operational, auxiliary, and capital expenditures, student spending, and alumni impact.

To gain a better understanding of the drivers of impact, the results include a separate discussion for University expenditures (which includes operational, auxiliary and capital expenditures), student spending, and alumni activity. The combined impact of University expenditures and student spending are referred to as the core HSU impacts.

Humboldt County Impact

- HSU generates over \$567 million in total annual industry activity
- Supports 6,240 jobs in Humboldt County
- Creates more than \$38 million in state and local tax revenue annually.

Table 1 presents the total economic impact of HSU's university spending, student spending and the impact of alumni activity in the region. In total, HSU-related activity supports 6,240 jobs and generates more than \$180 million in labor income. HSU is the largest employer in Humboldt County, and one of only three employers with over 1,000 employees.²⁴ ²⁵ HSU supports more than 10% of total regional employment.²⁶ This activity drives a substantial amount of industry

²⁴ State of California, Employment Development Department. 2019. *Major Employers in Humboldt County*.

²⁵ Humboldt County, Management & Budget. 2019. *Personnel Allocation by Budget Unit for Fiscal Year 2018-19*.

²⁶ State of California, Employment Development Department. 2018. *Humboldt County Profile*. Total employment for Nov. 2018 was 62,300.

activity- more than \$567 million throughout the region. HSU also generated upwards of \$38 million in state and local tax revenue, or approximately \$4,914 tax dollars per enrolled student²⁷.

Table 1: Summary of HSU's Economic Impact on the Region

Impact Type	Employment	Labor Income (Millions)	Industry Activity (Millions)	State & Local Taxes (Millions)
University Operating Expenditure	3,320	\$72.4	\$244.7	\$13.8
University Auxiliary Expenditure	550	\$20.7	\$37.9	\$2.5
University Capital Expenditure	50	\$2.6	\$7.9	\$0.3
Student Spending	670	\$19.4	\$69.8	\$5.5
Regional Alumni Impact	1,660	\$65.1	\$206.9	\$16.2
Total	6,240	\$180.2	\$567.1	\$38.2
<i>Multiplier</i>	<i>1.37</i>	<i>1.40</i>	<i>1.56</i>	<i>1.50</i>

Source: IMPLAN analysis. Note, numbers may not sum due to rounding. All output values are in 2018 dollars

The university operating budget accounts for more than half of the total employment impact, while alumni spending generates the majority of state and local tax revenue.

1.2 Results by Spending Type

University Spending

The impacts from university operational, auxiliary, and capital expenditure are summarized together as HSU University Impacts. Direct spending related to HSU's educational mission totaled \$199.7 million in 2017-18. This figure includes:

- \$168.5 million²⁸ in university operating expenses related to instruction, research, public service, academic support, student services, institutional support, student grants and scholarships, and other related needs.
- \$25.7 million in auxiliary enterprise expenses related to campus organizations such as bookstores, campus restaurants, research institutes, etc. Approximately \$16 million was attributed to campus dining services and roughly \$9.7 million was categorized as housing and parking expenditure. This category captures a portion of on-campus food purchases and other student-related purchases. Therefore, to avoid double-counting the student spending analysis (more detail included in Appendix B), this category does not include the portion of on-campus spending by students.

²⁷ Based on the total fall 2018 headcount (7,774)

²⁸ ICF relied on financial statements provided by HSU for operational and auxiliary expenditures for the 2017-18 school year.

- \$5.5 million in annual construction and capital expenditures. To account for the high degree of variability in capital expenditure year to year, the spending input was developed using a 3-year average from academic years 2015/16 – 2017/18. HSU has already spent \$5.5 million in 2018/19 and expects to spend an additional \$33 million on capital projects over the course of 2018 and 2019.²⁹ While not modeled in our analysis, this investment demonstrates HSU's continued commitment to improving university facilities through capital spending projects.

For more information about the methodology used to calculate the direct spending inputs, see Appendix A.

University expenditures supported a total of 3,920 jobs in Humboldt County, as well as over \$96 million in labor income and more than \$293 million in industry activity. \$110 million in industry activity is attributable to indirect and induced effects alone. University spending generates a total of \$16.7 million in state and local tax revenue. Table 2 describes the impacts of university expenditures in terms of employment, labor income, and industry activity. University expenditures produce \$16.7 million in state and local taxes, or approximately \$2,148 generated per current student.

Table 2: University Spending Impact

Impact Type	Employment	Labor Income (Millions)	Industry Activity (Millions)
Direct	3,090	\$65.7	\$182.8
Indirect	450	\$15.6	\$62.7
Induced	380	\$15.0	\$47.7
Total	3,920	\$96.3	\$293.2
<i>Multiplier</i>	<i>1.27</i>	<i>1.47</i>	<i>1.60</i>

Source: IMPLAN analysis. Note, numbers may not sum due to rounding. All output values are in 2018 dollars

The indirect and induced effects of spending can be characterized by each multiplier. For example, \$1 of direct industry activity produces a total effect that is 1.60 times greater than the initial spending. Thus, for every dollar of direct industry activity, \$1.60 is generated in the regional economy. Similarly, each dollar of direct labor income creates a total of \$1.47 as a result of indirect and induced effects.

Student Spending

ICF developed an estimate of student spending on books and supplies, food, housing, transportation, and other miscellaneous spending. Total student spending for the 2017-18 academic year was approximately \$101.7 million. For more information about the methodology used to calculate the direct student spending, see Appendix A.

²⁹ ICF relied on HSU financial statements for capital project expenditures. The input for this impact category was developed using a 3-year average from 2015/16 – 2017/18.

This activity supported nearly 670 regional jobs, generated over \$19 million in labor income and drove nearly \$70 million in industry activity across the region. Total student spending generated more than \$5.5 million in state and local tax revenue.

Table 3: Student Spending Impact

Impact Type	Employment	Labor Income (Millions)	Industry Activity (Millions)
Direct	500	\$13.4	\$50.4
Indirect	90	\$2.9	\$9.8
Induced	80	\$3.0	\$9.6
Total	670	\$19.4	\$69.8
<i>Multiplier</i>	<i>1.34</i>	<i>1.45</i>	<i>1.38</i>

Source: IMPLAN analysis. Note, numbers may not sum due to rounding. All output values are in 2018 dollars

The direct industry activity associated with student spending in 2017-18 created a total effect that is 1.38 times greater than the initial spending. Thus, for every dollar of direct industry activity, \$1.38 is returned to the region's economy. Each dollar of direct labor income created a total of \$1.45 as a result of indirect and induced effects.

Alumni Impacts

University and student expenditures alone tell us nothing about the long-term economic impact of a quality HSU education and an advanced degree. Students who attend a college or university and obtain a bachelor's, master's, or doctorate degree experience higher earning power over the course of their lifetimes than they would have without that degree. These increased earnings impact the regional economy when alumni spend their incremental wages in the local economy. The U.S. Census Bureau estimates that in the United States, bachelor's degree holders earn, on average, nearly one million dollars more than high-school graduates³⁰ over the course of their working life.

University education has a powerful economic impact not only on individual degree earners, but also on the economy as a whole. Close to 58,000 HSU alumni are still in the workforce. While an impressive 71% of HSU alumni remain within California, an equally

The enhanced earning power of HSU degree holders:

- Contributes \$206.9 million in regional industry activity,
- Generates \$65.1 million in regional labor income, and
- Supports 1,660 additional jobs in the Humboldt county region
- On average, a degree from HSU adds \$966,862 in wages over a life-time

³⁰ Bachelor's degree holders that work full-time, year-round throughout their career can expect to earn an average of \$2.1 million over their lifetime, compared to \$1.2 million for workers with a high school diploma only. Source: U.S. Census, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings*

impressive 23% of alumni are retained in the immediate Humboldt County region³¹. In 2017-18, HSU degree holders living in Humboldt County earned \$972.5 million in wages, and HSU degree holders statewide earned more than \$3 billion. ICF estimated that \$349.4 million in incremental wages per year can be attributed to HSU degrees in Humboldt, and over \$909.3 million in incremental earnings can be attributed to degrees across the state of California. The enhanced earning power of alumni in Humboldt supports an additional 1,660 regional jobs, \$65.1 million in labor income, and generates close to \$207 million in industry activity. Additionally, HSU alumni generate \$16.2 million in state and local tax revenue annually.

Based on our analysis, on average, a degree from HSU adds approximately \$966,832 in wages over a life-time³².

1.3 State Return on Investment

As a public university in the California State University System, HSU receives a portion of its annual funding from the State of California. Return on investment (ROI) measures the gain or loss generated on an investment relative to the amount of money invested. In this case, the state's ROI is the magnitude of HSU's regional economic impact relative to the state's annual investment in the university. In 2017-18, the state's total appropriation for HSU was \$82.7 million. This investment generated a total of approximately \$38.2 million in state and local taxes. For every dollar the state invests in the university, the impact of HSU-related expenditures alone creates \$4.35 in total regional industry impact. When the impact of the enhanced earnings of HSU graduates is included, the ratio rises to \$6.85 in total industry impact for every dollar the state invests in the HSU.

- For each \$1 invested by the state, HSU generates \$4.35 dollars in regional industry activity
- When accounting for enhanced earnings by graduates, the annual return rises to \$6.85 for each dollar invested.

1.4 City-Level Impact

To gain a better understanding of the portion of HSU's total regional economic impact generated in the City of Arcata, ICF downscaled the regional results based on economy-wide key statistics from the Economic Census.³³ HSU is a key driver of economic activity in the City of Arcata as can be seen in Table 4, below, which presents the downscaled results. Based on this

³¹ HSU estimates that 23% of alumni reside in Humboldt County, and that 71% reside in California. For more information about the methodology used to calculate the alumni spending impact, see Appendix A.

³² ICF calculated the annual enhanced earning of HSU degree holders by averaging the annual increased wage rates of bachelor's and master's degree holders across age brackets defined by the U.S. Census. ICF estimated that 11,932 bachelor's degree holders and 1,300 post graduate degree holders (including master's and certificate program graduates) are working in the regional economy based on HSU alumni graduate counts from 1979 to present. ICF did not include alumni over the age of 64, who were assumed to be retired.

³³ U.S. Census Bureau, American FactFinder. 2012. All Sectors: Geographic Area Series: Economy-Wide Statistics: 2012 (Humboldt County, CA & Arcata, CA)

conservative estimate, approximately \$5.1 million in state and local tax revenue is generated in Arcata and almost \$9 million in tax revenue is generated within the city if you include the impact from alumni.

Table 4: City of Arcata Impacts

Impact Type	Employment	Labor Income (\$Millions)	Industry Activity (\$Millions)	Tax Impact (\$Millions)
University and Student Spending	1,060	\$23.2	\$33.1	\$5.1
Total (Including Alumni Impact)	1,440	\$36.4	\$55.3	\$8.8
Percent of Regional Impact	23%	20%	18%	23%

Source: IMPLAN Analysis. ICF calculations based on data from the 2012 Economic Census of the U.S. All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2012. Output values are in 2018 dollars

More information on the methodology used to downscale the regional results is included in Appendix D.

2. Educational Pathway, Diversity and Workforce Development

Humboldt State University contributes to the regional educational pathway and workforce development by supporting K-12 as well as the life-long learning of local residents, and providing quality higher education and research in the industries that drive Humboldt's economy. University programs, faculty, and students interact with and benefit local K-12 students. The University offers opportunities for Humboldt-region residents to renew their skills and remain competitive in the job-market. HSU is committed to providing educational opportunities to the region's underserved populations and attracts a diverse student body. Lastly, HSU has deigned curricula and programs to respond to the needs of the Humboldt region, such as in environmental protection, social work, and education and supports the competitiveness of the region's key industries, namely the forestry, fisheries and environmental engineering and energy sectors.

2.1. Supporting the Region's Education Pathway

A successful regional economy relies on a strong educational pathway providing the region's residents with opportunities from growth (K-12) to advancement (higher education) and renewal (continuing education), preparing them—and constantly updating their skills—to match the most current needs of the region's economy. HSU provides this pathway to the region, while also being the largest employer in the region.

Serving Local K-12 Populations

HSU has worked extensively to create partnerships and synergies between the University and local school districts. HSU is making groundbreaking efforts in delineating a clear path for high school graduates to college in order to strengthen the pathway between K-12 education and higher education.

The Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) helps at-risk students in Humboldt and Del Norte Counties prepare for college. Under this 6-year, \$3 million federal grant, HSU works with local partners Decade of Difference, Humboldt County Office of Education, Humboldt Area Foundation, the Yurok Tribe, and the Del Norte County Unified School District. The program provides a variety of support services including mentoring, counseling, tutoring, college-preparatory courses, and financial aid options to low-income, disadvantaged students and their families. During the 2018-2019 academic year (AY), GEAR UP partnered with Del Norte High School, Hoopa Valley High School, and Eureka High School.³⁴

Another college readiness program at HSU is called Upward Bound. Funded by a \$1.3 million grant from the Department of Education, Upward Bound helps local high school students enroll and succeed in higher education. As of August 2017, the program served 60 students from six local high schools. These students have the potential to thrive in college, are low-income, and are

³⁴ HSU. GEAR UP. <https://gearup.humboldt.edu/>

the first in their families to attend college. The program also includes a summer outreach program to stop potential incoming college freshman from giving up on college aspirations.³⁵

HSU students have a long-standing commitment to partner with local K-12 schools. Established in 1969, HSU's Youth Mentoring Program (YMP) is the second oldest Youth Educational Services (YES) program at the University. YMP student volunteers establish one-on-one mentor relationships with local elementary and middle school students. While the mentorship is set to be one year long, student often volunteer for multiple years to maintain relationships. In total the program has ten volunteers each year.³⁶

Outside of campus programs, HSU staff and faculty are also actively engaged with the areas K-12 schools. In a given year HSU staff and faculty participate in community outreach activities with over two dozen local schools, such as Arcata Elementary School and the Northern Humboldt Union High School District.³⁷

Advancing and Renewing the Region's Workforce

HSU is committed to lifelong learning. Through the College of Extended Education, in 2018 over 3,000 people took an extended education course and 60 degrees and certificates were awarded. There are over 950 extended education courses offered in person and online at HSU over a wide range of certificate and degree programs.³⁸ These programs focus in areas such as art and design, business management, ecological management, social work, technology, and many more. Additionally, Open University at HSU allows for anyone who is not enrolled at the University to take courses that interest them.

Specifically for the 50+ community, the Osher Lifelong Learning Institute (OLLI) at HSU creates opportunity for academic engagement, civic involvement, personal growth, and fun for Humboldt community residents. Courses range from culturally-focused, to sustainability, to iPhone basics, to recreational activities like kayaking. OLLI also hosts brown bag lunch presentations that are free and open to the public, and highlight talented and creative contributors.³⁹

2.2 Serving a Diverse Student Population

HSU offers a world-class education to the state's diverse and underserved populations. A fundamental goal of the California State University System's 2025 Graduation Initiatives is to reduce opportunity gaps for traditionally underrepresented and first-generation students, and to promote a diverse student body. In pursuit of this mission, HSU has made great improvements in the education it provides to many of Humboldt's most underrepresented communities. Following

³⁵ HSU Now. College Readiness Program gets \$1.3 Million Grant. <http://now.humboldt.edu/news/with-13-million-grant-hsu-program-gets-students-college-ready/>

³⁶ HSU Y.E.S. Let's spotlight the second oldest program at YES, Youth Mentoring Program (YMP)! <https://yes.humboldt.edu/ymp-spotlight>

³⁷ HSU Community Outreach Survey. Results provided by Connie Steward, HSU Director of Special Projects

³⁸ HSU College of Extended Education. <https://extended.humboldt.edu/extended-education>

³⁹ HSU College of Extended Education. OLLI. <https://extended.humboldt.edu/olli/courses/brown-bag-lunch-presentations>

the trend of most colleges since the 1970's⁴⁰, HSU has about 1,00 more female than male students. In Fall 2018 approximately 50% of HSU's student population were students of color.⁴¹ In fact, from 2010 to 2016, the number of students from traditionally underrepresented groups increased by 85%.⁴² In 2013 HSU was recognized as a Hispanic Serving Institution (HSI), and as such received a \$3 million federal HIS-STEM grant to support place based learning in the College of Natural Resources and Science.⁴³

Over half of the HSU student population are students of color, 55% are first-generation students, and 54% are low-income.

HSU serves the highest proportion of Native American students in the CSU system.⁴⁴ While the HSU demographic report shows that only about 1% of the student population is Native American, federal reporting guidelines often cause American Indian/Native American populations to be underreported. When examining all ethnicities students may self-select, HSU's American Indian/Native American enrollment is about 5%.⁴⁵ Figure 1 displays the breakdown of student ethnicities in the Fall of 2018.

⁴⁰ Forbes. The Male-Female Ratio in College. 2012. <https://www.forbes.com/sites/ccap/2012/02/16/the-male-female-ratio-in-college/#6dcb5ea3fa52>

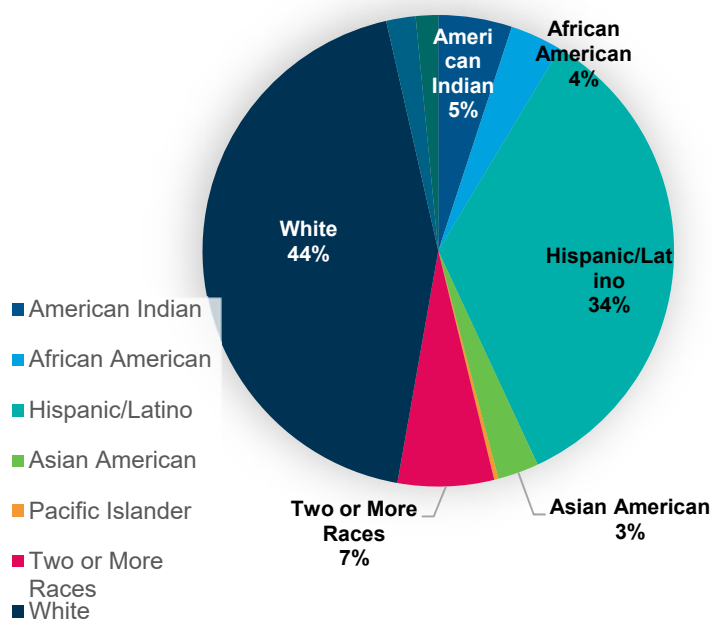
⁴¹ HSU. Enrolled Student Demographics Report Options. <https://pine.humboldt.edu/~anstud/humis/demo-AAFHEV.html>

⁴² HSU Graduation Initiative 2025: Academic Year 2017-18. https://grad2025.humboldt.edu/sites/default/files/humboldt_state_university_gi_2025_april_2017_submission_2.pdf

⁴³ HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf

⁴⁴ HSU. Vacancy Announcement. 2018. https://hraps.humboldt.edu/sites/default/files/vacancy_announcements/1920-12_esm_environmentallaw_vacancyannouncementfinal.pdf

⁴⁵ HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf

Figure 1: Fall 2018 Student Ethnicity

Sources: HSU. Enrolled Student Demographics Report Options. <https://pine.humboldt.edu/~anstud/humis/demo-AAFHEV.html>. HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf.

HSU has several programs that are specially aimed at advocating for and supporting Native American students. The Indian Tribal and Educational Personnel Program (ITEEP) supports HSU's many Native American students within the Arts, Humanities and Social Science, Natural Resources and Sciences, and Professional studies colleges. ITEEP staff assists students to build networks on and off campus, connect with tribal representatives, set career goals, and apply for scholarships, internships and graduate schools. HSU has also recently worked on increasing the number of Native American faculty members on staff, reinstated the President's Native American Advisory Committee in 2016, and has been increasing University focus on recruiting local Native American students.⁴⁶

In 2017, over 55% of HSU students were first generation college students, and 54% were low income.⁴⁷ To support first generation and low-income students in particular, HSU has Student Support Services (SSS) and the Educational Opportunity Program (EOP). The SSS program focuses on assisting students considering continuing on to graduate or professional schools. The program provides financial aid, advising, mentoring, and career support services to low income and first-generation HSU students. In 2015, HSU received the \$1.87 million Federal TRiO grant from the US Department of Energy (DOE) to fund the SSS program. The EOP program "serves

⁴⁶ HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf

⁴⁷ HSU. Fast Facts 2017. https://ie.humboldt.edu/fast_facts

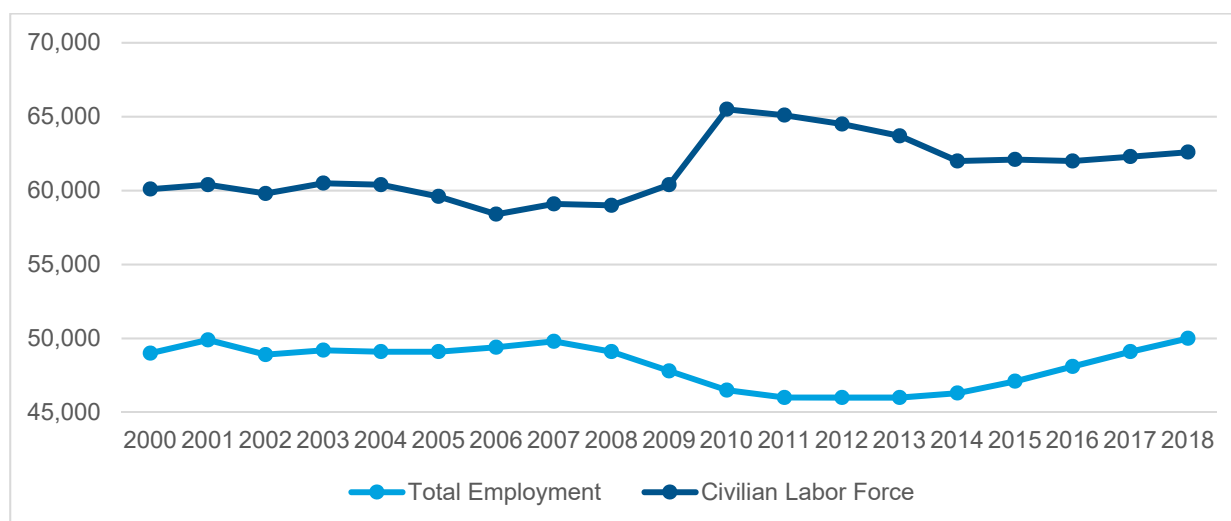
as a primary vehicle for the CSU in increasing the access, academic excellence and retention of California's educationally and economically disadvantaged students."⁴⁸ Over 90% of students in the program are first generation college students, and 60% are members of ethnic groups underrepresented in higher education.

2.3. Meeting the Needs of the Regional Economy

HSU is the most northern and rural of all the California State University campuses, and as such plays a unique role in the regional economy. Arcata has a population of roughly 18,000, and Humboldt County approximately 136,750. HSU has a student body of around 8,000 students, and therefore contributes as much as 45% of the total Arcata population. In the County the total labor force is 64,400, with an unemployment rate of 3.3%.⁴⁹

According to the California Employment Development Department, total employment in Humboldt County has been relatively flat over the past two decades, with only 2% growth from 2000 to 2018, as shown in Figure 2. The significant job losses in manufacturing have been offset by increases in service-providing jobs, particularly education, health service and government jobs. While the number of jobs available has been slowly increasing, there have been growing concerns over a decreasing labor force⁵⁰, a void which HSU students and graduates can help to fill.

Figure 2: Humboldt County Total Employment and Civilian Labor Force



Source: California Employment Development Department, Employment by Industry Data, <https://www.labormarketinfo.edd.ca.gov/data/employment-by-industry.html>

⁴⁸ HSU EOP. <https://eop.humboldt.edu/>

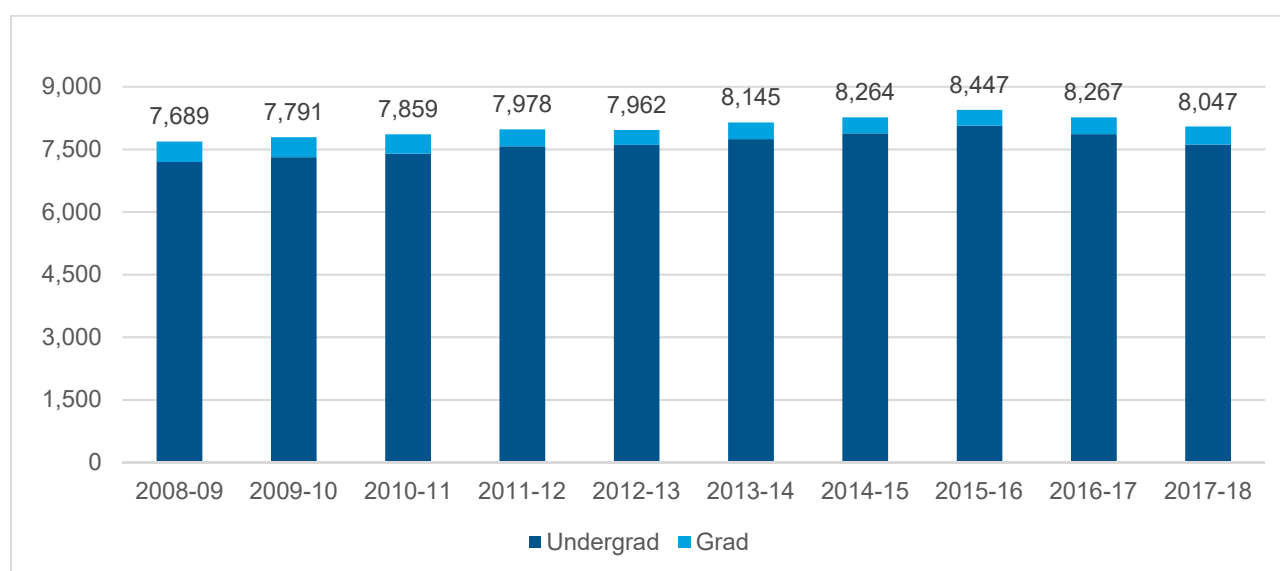
⁴⁹State of California. Employment Development Department, Humboldt County Profile, <https://www.labormarketinfo.edd.ca.gov/cgi/databrowsing/localAreaProfileQSResults.asp?selectedarea=Humboldt+County&selectedindex=12&menuChoice=localAreaPro&state=true&geogArea=0604000023>

⁵⁰ California Economic Summit, Humboldt County: An Economy in Transition, 2018 <http://caeconomy.org/reporting/entry/humboldt-county-an-economy-in-transition>

Attracting a Regional Workforce

Humboldt County is a rural region several hours from the closest metropolitan area. Each year HSU attracts the majority of its student body from outside the region, and these students become the future workforce of the region. While roughly 7% of students come to HSU from the local community, 87% come from other areas across California, 4% come from the 13 other Western Undergraduate Exchange (WUE) states, 2% from other parts of the United States, and less than 1% are international students. Enrollment has decreased by 400 students since the peak in the 2015-16 academic year, due mainly to higher high school GPA requirements for incoming freshmen and an increase in prerequisite courses required for transfer students.⁵¹ Figure 3 illustrates the trend in HSU enrollment from 2008 to 2018.

Figure 3: HSU Enrollment 2008-2018



Source: HSU Enrollment Reports, <http://pine.humboldt.edu/anstud/cgi-bin/filter.pl?relevant=majorsall AY U.out>

HSU estimates that 23% of alumni remain in Humboldt County after graduation. Alumni have had a strong connection to the University as early as the 1920s, supporting HSU by housing current students and providing student loan programs.⁵² This connection with HSU and Humboldt County continues today, as many HSU graduates go on to become staff or faculty members at the University, serve on local city councils or as mayors, and start local businesses. For example, in Spring 2017 there were over 190 Environmental Resource Engineering (ERE) alumni working in the region, with an estimated additional 300 retired local alumni over ERE's 50-year history⁵³.

⁵¹ HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf

⁵² Jarad Petroske. HSU Alumni, Who They Are. Where They Are. And Where They're Going., 2011, <http://magazine.humboldt.edu/fall11/hsu-alumni/>

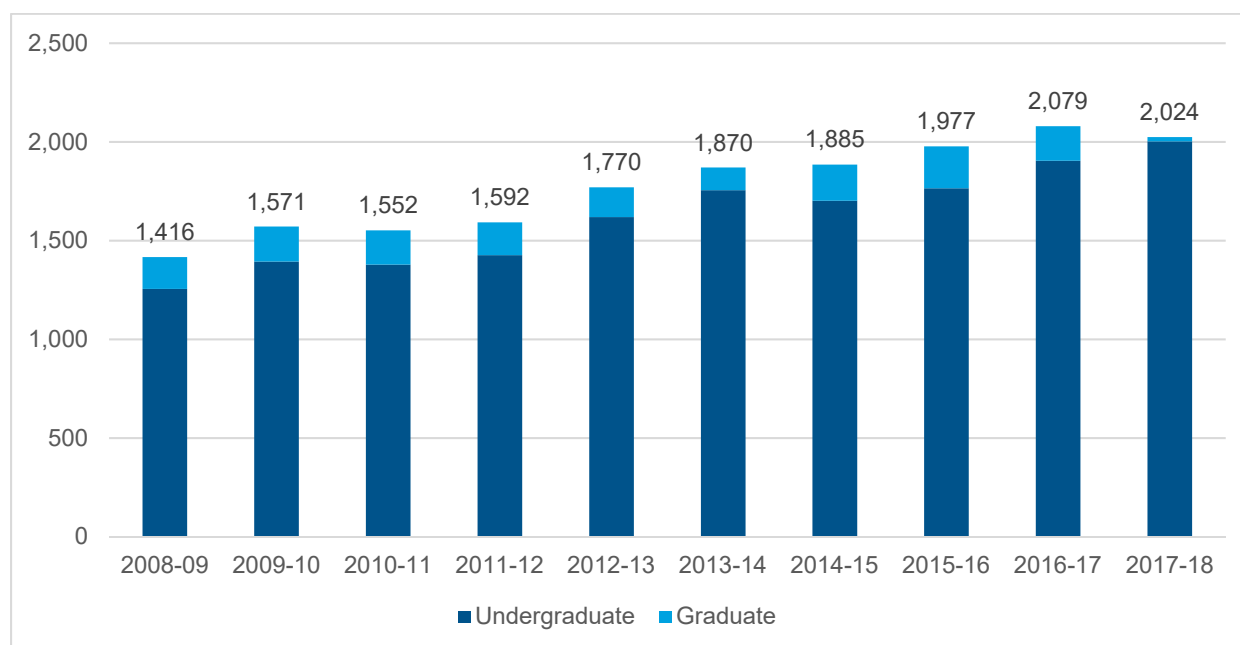
⁵³ ERE Messenger, Spring 2017

Filling the Workforce Needs of the Region's Key Industries

HSU prepares graduates for success in the growing industries in the Humboldt region. ICF identified three key sectors of growing importance in the regional economy where HSU has most significant contribution: fishing, forestry, and environmental engineering. These three are given spotlights in this section.

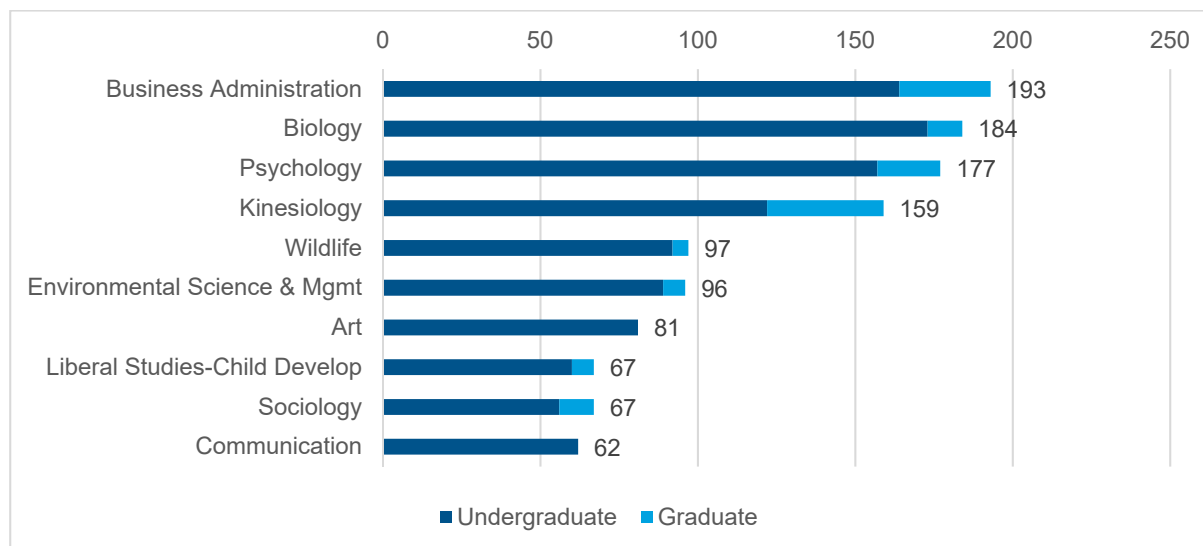
Figure 4 displays the HSU graduation trends from 2008 to 2018. The number of degrees awarded has remained relatively consistent, increasing by an average of 5% each year between AY 2008-09 and AY 2016-17. Between AY 2016-2017 and AY 2017-18 the number of graduates declined by 3%, following the declining enrollment trend.

Figure 4: HSU Degrees Awarded 2008-2018



Source: HSU, Degrees Granted Reports, http://pine.humboldt.edu/anstud/cgi-bin/filter.pl?relevant=degreesall_U.out

Highly-qualified graduates use skills honed at HSU to create positive impacts in industries that drive Humboldt's regional economy. HSU creates and supports the retention of high-quality jobs and wealth in the Humboldt region through its annual graduation of workforce-ready graduates. Moreover, the presence of HSU helps attract new employers to the region who want access to graduates in these rapidly-growing industries. Figure 5 shows the most popular fields of study at HSU, the top three being business administration, biology, and psychology. HSU has a significant number of students who focus in environmental-related fields, such as environmental resource engineering and environmental science and management.

Figure 5: HSU Top 10 Degrees Awarded, AY 2017-18

Source: HSU, Degrees Granted Reports, http://pine.humboldt.edu/anstud/cgi-bin/filter.pl?relevant=degreesall_U.out

Business-related positions are consistently a significant source of jobs in Humboldt County, employing nearly 30% of employed residents in 2018.⁵⁴ Business administration at HSU has consistently been one of the most popular majors, with about 10% to students earning degrees in the area of study each year.

Two growing industries in Humboldt County that have been facing labor shortages are social work and healthcare. In the Arcata area there is approximately one psychiatrist for every 4,600 residents, demonstrating the shortage felt by the community.⁵⁵ Between 2009 and 2018 the number of social workers⁵⁶ in Humboldt County increased by 77% to 3,500 social workers, though it is still not enough to meet growing demand.⁵⁷ In 2018 HSU graduated over 750 undergrads in social work/psychology, and 119 graduate students. These students have the potential to go on to serve those in need in the region, in positions like community and social service specialists and mental health specialists. The shortage of healthcare professionals in the Humboldt region is a long-standing issue that many rural communities face. In early 2018 the California Healthcare Workforce Policy Commission considered registering Humboldt County as a nursing shortage

⁵⁴ State of California. Employment Development Department. Employment and Wages by Occupation (OES). <https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

⁵⁵ HSU. We Are Here. A Snap Show of HSU's Current Conditions, Circumstances, and Influences, 2018. https://ie.humboldt.edu/sites/default/files/oie_enviro_scan_01_26_2018.pdf

⁵⁶ Number of people employed in community and social service occupations. Source State of California. Employment Development Department. Employment and Wages by Occupation (OES). <https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

⁵⁷ State of California. Employment Development Department. Long-Term Occupational Employment Projections. <https://data.edd.ca.gov/Employment-Projections/Long-Term-Occupational-Employment-Projections-Nort/hs4j-ebj6>

area because of evident issues like long emergency room waits and patient care violations.⁵⁸ From 2009 to 2018, the number of healthcare professionals increased by 14%,⁵⁹ however again this growth is not keeping up with community need. The number of registered nurses in the North Coast region is expected to continue to increase by about 2% annually up to 2024.⁶⁰ While not specific to nursing, HSU's numerous biology graduates can play an important role in meeting the community need for health care professionals. In AY 2017-18, 173 HSU students graduated with biology degrees. HSU unfortunately had to cut its nursing program in 2011, further exacerbating the nursing shortage, though the university plans to reopen the program in 2020.⁶¹ See Community Health and Wellness discussion in Section 5.1 for more details.

In 2018, the education sector employed 9% of the total working population in the County.⁶² With a roughly 2% annual growth rate from 2009 to 2018, the education sector will continue to demand qualified teachers. Education/child development is one of the top 5 most popular majors among HSU students, with over 110 undergraduates and graduates earning degrees in the education field in 2018. Additionally, HSU offers credential programs in elementary, secondary, and special education, as well as an Educational Leadership credential program for processions currently working in schools. All three programs focus on preparing education professionals to serve in California schools and to work directly with youth of diverse ethnic, socioeconomic, and cultural backgrounds.⁶³ The total enrollment in these credential programs in 2017 was 98 students, a 4% increase from the previous year.⁶⁴

HSU graduates support the growth of key regional industries, the three most prominent of which are forestry, fishing, and environmental engineering. The snapshots below provide a detailed look at each industry in Humboldt County and HSU's contributions.

⁵⁸ Redwood Times. State may spotlight Humboldt County's nursing shortage. 2018.

<https://www.redwoodtimes.com/2018/01/16/state-may-spotlight-humboldt-countys-nursing-shortage/>

⁵⁹ State of California. Employment Development Department. Employment and Wages by Occupation (OES).

<https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

⁶⁰ State of California. Employment Development Department. Long-Term Occupational Employment Projections.

<https://data.edd.ca.gov/Employment-Projections/Long-Term-Occupational-Employment-Projections-Nort/hs4j-ebj6>

⁶¹ North Coast Journal. HSU Hope to Open New Nursing Program in 2020. 2019.

<https://www.northcoastjournal.com/NewsBlog/archives/2019/01/31/hsu-hopes-to-open-new-nursing-program-in-2020>

⁶² State of California. Employment Development Department. Employment and Wages by Occupation (OES).

<https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

⁶³ HSU School of Education. Credential Programs. <https://education.humboldt.edu/content/credential-programs>

⁶⁴ HSU. Fast Facts 2017. https://ie.humboldt.edu/fast_facts

Forestry Sector

Historically, the timber industry has been a large contributor to the Humboldt economy. Since the early 1990's the industry has been in decline, due to prior clear cutting and a rise of environmental activism.⁶⁵ This has led to the perseveration of the Redwoods, but also significant losses in mill jobs. Lost mill jobs are rapidly replaced by new positions in forest conservation, such as natural resource technicians, environmental planners, and restoration ecologists. In fact, forest-related employment, such as forest conservation workers and foresters, increased by 123% between 2009 and 2018,⁶⁶ signifying the vast expansion in the industry.

HSU plays a significant role in the region's forestry industry, namely through the attraction of talent to the region due to its campus facilities and programs. From 2010 to 2014 the HSU Forestry and Wildlife department has averaged an intake of 50 freshmen and transfers each year, and anticipates enrollment growth.

HSU facilities draw talent to the region while offering unique training opportunities. The HSU Wildland Fire Lab is among the most well-equipped fire research facilities in the country. The University is one of only three schools to have a fire lab complete with a fire platform and ventilation hood⁶⁷. A recent project undertaken at the Wildland Fire Lab looked at the impacts of prescribed fire treatments at Whiskeytown National Recreation Area and the Sierra Nevada Stanislaus Experimental Forest, such as insect survival and vegetation response to fire.



Source: HSU Facebook Page

Redwood Rising is a new collaboration program between the HSU Forestry department, Save the Redwoods League, the National Park Service, and California State Parks. During the summer of 2018, eight Humboldt students participated in the apprentice program, setting out to restore 80,000 acres of young, densely-growing redwoods in the local area.⁶⁸ During the school year, the semester-long internships gives students a choice of focusing on fire management, rare and invasive plant surveys, or a phenology project for their 90 hours of field work. Given the rich and unique hands-on experience afforded by the program, many students have been hired after completing their internships.⁶⁹

HSU graduates impact on the forestry industry in the region is evident. Take for example Green Diamond Resource company. In a 6-month span in 2008, this 118-year old forest product company filled 31 of its 43 management and technical positions with HSU graduates and students.⁷⁰ Today, at least 30 HSU alumni work at the Green Diamond Resource company.

⁶⁵ North Coast Journal. Humboldt Then and Now. 2015. <https://www.northcoastjournal.com/humboldt/humboldt-then-and-now/Content?oid=3282665>

⁶⁶ State of California. Employment Development Department. Employment and Wages by Occupation (OES). <https://www.labormarketinfo.edd.ca.gov/geography/humboldt-county.html>

⁶⁷ HSU. Wildland Fire Lab. <http://www2.humboldt.edu/firelab/lab.html>

⁶⁸ Save the Redwoods League. Redwoods Rising Apprentices Help Restore Redwood National and State Parks. 2018. <https://www.savetheredwoods.org/blog/redwoods-rising-apprentices-help-restore-redwood-national-and-state-parks/>

⁶⁹ Interview conversation with Kacie Flynn, Executive Director, HSU SPF

⁷⁰ HSU Now. Natural Resource Jobs in High Demand. 2008. <http://now.humboldt.edu/news/natural-resource-jobs-in-high-demand/>

Fisheries Sector

Fishing has long since been an important sector in the Humboldt-regional economy, and HSU has played a significant role in supporting the industry. By 1970, over half of the fish produced and consumed in California were landed in Humboldt Bay, while recreational fishing further supported the local economy.⁷¹ A recent study, published in 2018 by HSU Professor Laurie Richmond and team, showcases the growth of Humboldt's oyster industry. As the oyster capital of California, Humboldt Bay's bivalve industry's local economic impact in 2016 was about \$20 million in direct and indirect impacts. The industry provides about 100 full-time jobs, with expansion plans over the next five years.⁷² The industry often collaborates with HSU graduate students on research projects and other HSU activities. Of the three oyster companies with employment information available online, Coast Seafoods Company, Hog Island Oyster Co, and Aqua-Rodeo Farm, all have at least one employee that is an HSU alumnus.



Source: HSU Facebook Page

HSU's undergraduate fisheries program is one of the largest and best in the United States. It is also the only fisheries management type program in California, and one of only a few west of the Rocky Mountains.⁷³ Fisheries biology graduates go on to work with state Fish and Game agencies, federal agencies, and numerous private and consulting firms.

HSU regularly collaborates with government agencies to have a greater impact on the regions fisheries and ecosystems. The California Cooperation Fish and Wildlife Research Unit is a collaborative effort between HSU, the California Department of Fish and Wildlife, the United States Department of the Interior, Geological Survey, the Wildlife Management Institute and the United States Fish and Wildlife Service. The cooperative program creates an opportunity for research to be conducted to support and restore fish and their ecosystems, as well as training graduate fisheries and wildlife management students to become competent fisheries and wildlife scientists⁷⁴. Research topics vary widely, one example being a project from 2008-2013 that examined the declining Pacific salmon populations in the local Klamath River.⁷⁵

A notable ongoing program in the Marine Mammal Education and Research internship program is the Stranding Network. Led by an HSU grad student, students systematically walk every beach in Humboldt County looking for stranded marine life. The group is developing and sampling protocols for the entire North Coast region, and potentially all of the western United States.⁷⁶

⁷¹ Eureka Fishing Community Profile. 2010.
<https://caseagrant.ucsd.edu/sites/default/files/ERKprofile.pdf>

⁷² HSU Now. Study: Humboldt Bay Bivalve Businesses Has a Big Local Impact. 2019.
<http://now.humboldt.edu/news/study-humboldt-bay-bivalve-business-has-a-big-local-impact/>

⁷³ HSU. Fisheries Biology.
<https://www.humboldt.edu/programs/fisheries-biology>

⁷⁴ HSU, California Cooperative Fish & Wildlife Research Unit, <https://cuca.humboldt.edu/>

⁷⁵ Cooperative Research Units. Klamath REMS, Fisheries.
<https://www.coopunits.org/California/Research/Complete/d/2.7130482688E10/>

⁷⁶ HSU Stranding Network.
<https://sites.google.com/site/hsummerp/stranding-network>

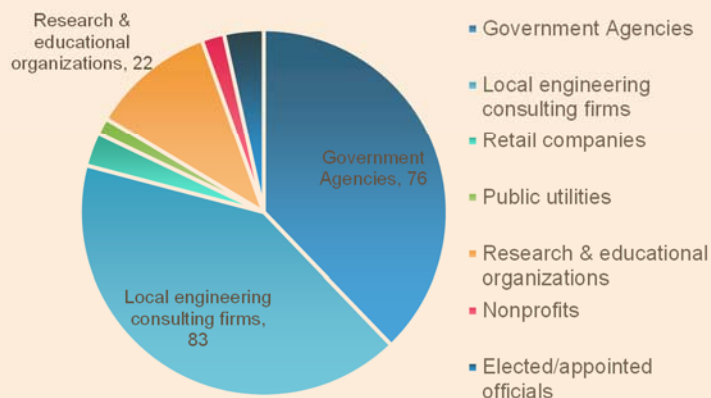
Engineering & Energy Sectors

Graduates from HSU's Environmental Resources Engineering (ERE) program have found themselves filling positions in a wide variety of industries in the region following graduation. As shown in Figure 6, these industries include government agencies, local engineering consulting firms, retail companies, public utilities, research and educational organizations, and nonprofits. Notably, 55 ERE grads currently work for Caltrans, and most of the retail workers own or have cofounded their companies (ERE Messenger, Spring 2018). Engineering occupations are expected to increase over 1% annually until 2024 in the North Coast region⁷⁷, likely with many HSU grads filling the positions.

Environmental Resource Engineering at HSU is one of the oldest and largest environmental engineering programs in the United States. In fact, HSU graduates 5-10% of the nation's graduates from accredited environmental engineering programs.⁷⁸ While at HSU, students support the community while gaining the skills need to be successful in their future careers. At the Arcata Marsh and Wildlife Sanctuary students research and identify operational strategies for treatment marshes to improve solid and biological oxygen demand inefficiencies. One of the main community assets of ERE student and faculty research is the Schatz Energy Research Center, further discussed in Section 3.3.

One of many HSU ERE grads leading organizations with significant community impact is Matthew Marshall. Matthew is currently the Executive Director of the Redwood Coast Energy

Figure 6: ERE Graduate Jobs, As of Spring 2018



Source: ERE Messenger, Spring 2018

Authority (RCEA), a joint powers agency founded in 2003. Along with Matthew, the RCEA currently employs 25 other HSU graduates.⁷⁹ RCEA has worked closely with HSU's Schatz Energy Research Center to develop renewable energy-powered microgrids in the region, and is currently leading the coordination effort to plan and research offshore wind development off Humboldt Bay. With 100-150 megawatt capacity, the Redwood Coast Offshore Wind Project would allow the region to obtain more locally generated energy, and diversify California's renewable energy portfolio. A recent report from the Center for Labor Research and Education at the University of California, Berkeley suggests that offshore wind energy could play a leading role in creating green, quality jobs that also benefit the community.⁸⁰

⁷⁷ State of California. Employment Development Department. Long-Term Occupational Employment Projections. <https://data.edd.ca.gov/Employment-Projections/Long-Term-Occupational-Employment-Projections-Nort/hs4j-ebj6>

⁷⁸ HSU. ERE's Top Ten Highlights. <https://engineering.humboldt.edu/academics/undergraduate-emphases/highlights>

⁷⁹ Redwood Coast Energy Authority LinkedIn employees. <https://www.linkedin.com/company/redwood-coast-energy-authority/people/>

⁸⁰ University of California, Berkeley. High Road for Deep Water. 2017. <http://laborcenter.berkeley.edu/pdf/2017/High-Road-for-Deep-Water.pdf>

Regional Leadership

HSU students often develop a strong connection with the Humboldt region while at school, and many go on to take up leadership roles in regional businesses, government, and community organizations. Currently there are 76 local ERE graduates that work in government agencies at the local, tribal, state, and federal levels. In fact, the three highest ranking engineers in Humboldt County city governments are all HSU graduates. Michael Winkler, a 1997 ERE graduate, has served on the Arcata City Council since 2008. During that time, he has served two terms as Mayor, and two as Vice-Mayor.

Four of the five most recent Mayors of Arcata have been HSU graduates, each of whom have incorporated the HSU culture into their initiatives.

The Arcata City Council is filled with HSU graduates, as it has been for years. Currently four of the five council members are HSU alumni, with the one outlier coming from another CSU. Four of the five most recent Mayors of Arcata have been HSU alumni, all of whom incorporated the sustainability culture of HSU into their initiatives during their time as Mayor and City Council members.

The 2018 Mayor, Sofia Pereira, a recent HSU graduate who was featured on the CSU website, discussed how her time at HSU influenced her actions in her role as Mayor. Pereira graduated from HSU in 2009 with a major in communications and minor in social advocacy. While at HSU Sofia was a member of the speech and debate team and became the president of Associated Students at HSU. After graduation she interned and worked on local political campaigns, leading her to the Arcata City Council and election as Mayor in December of 2017. Even now she is the youngest member of the City Council. Pereira has many goals for the city that were shaped by her time at HSU, such as her Zero Waste Action Plan. Pereira stated that the environmental stewardship and sustainability focused culture at HSU influences her still, saying “[My time on campus] inspired me to further work on issues surrounding climate change, including energy usage, water conservation and waste diversion.” Aside from being Mayor, Pereira also services as the community managers of a nonprofit aimed at getting more women into politics, She Should Run.⁸¹

HSU alumni go on to start and grow companies that meet the needs of the regional economy. In the field of social services for instance, HSU alumna Brandie Wilson ('09, Sociology, '11, M.A. Sociology) founded the Humboldt Area Center for Harm Reduction (HACHR), a non-profit seeking to improve Humboldt County's overall rating on the Health Community Index. Former business administration student Tim Rine, who graduated from HSU in 1997, now serves as the executive director of the North Coast Clinics Network (NCNN). NCNN is an association of community health centers that support underserved residents in Humboldt, Del Norte, and Trinity counties. Health care is an area of growing need in the region, and HSU students are able to help support those in need through knowledge of rural health care and social justice.⁸²

⁸¹ CSU. Sofia Pereira. <https://www2.calstate.edu/impact-of-the-csu/student-success/Profiles/Pages/Sofia-Pereira.aspx>

⁸² HSU Now. Meet our 2018 Distinguished Alumni!, 2018, <http://now.humboldt.edu/news/meet-our-distinguished-alumni/5>

3. Research, Innovation, and Sustainability

Universities are critical centers of knowledge generation, innovation, and technology development. Humboldt State's research activities—particularly related to the natural sciences, clean energy and sustainability—are key drivers of innovation, provide thought leadership, and have significant impacts on pressing regional issues.

HSU's dedication to environmental responsibility and developing innovative green technologies is mirrored by the culture of Humboldt County itself. The community's values and the university's strengths continually reinforce each other. HSU Faculty and students pursue innovative and collaborative research projects concerning the environment, sustainability and social-ecological resilience. And in doing so, HSU research catalyzes knowledge mobilization about the environment, and engages community partners and policy makers to foster positive impacts at local and international levels about the environment.

The sections below highlight a range of HSU research activities that foster innovation, technology development, and community engagement around environmental sustainability. Specifically providing an overview of HSU's sponsored research activities, a discussion of HSU's place-based Learning Communities; and profiling the Schatz Energy Research Center's regional leadership on clean energy.

3.1 Conducting Sponsored Research

HSU conducts a significant amount of externally-funded research for a university of its size, and these research activities generate new innovations, new technologies, and economic benefits to the region. In AY 2017-18 there were more than 180 new research grants awarded to HSU, totaling \$28 million.

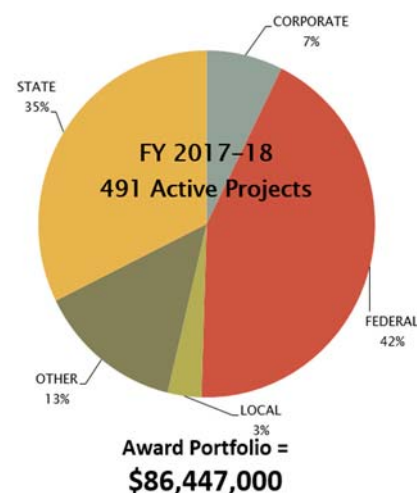
HSU's Sponsored Programs Foundation (SPF)—which provides the Humboldt State community with grant contract services and is responsible for administering nearly all external grants to the university—is currently managing 491 active sponsored research grants, totaling over \$86 million.

HSU's research activities attract significant funding to the region and generate over 1,000 local jobs annually. In AY2017-18, SPF managed research activities provided employment for 111 full-time auxiliary staff, 611 part-time staff and faculty, and 342 students.

Beyond these economic impacts, HSU research—which is largely focused on issues related education, natural resources management, energy, and sustainability—leads to the development of new approaches and technologies which directly address the needs of the region and improve the quality of life of its residents.

Some recent examples of such externally-funded HSU research projects include:

Figure 7. Active Research Grants (FY17-18)



Source: HSU Sponsored Programs Foundation

- **Education:** \$2.7 million grant from U.S. Department of Education to establish pathways into teacher education programs for Latino and Latina students, helping to meet the critical need for qualified teachers in the region.
- **Clean Energy:** \$5 million grant from the California Energy Commission to develop a cutting-edge microgrid at the Redwood Coast Airport that will generate local renewable energy, strengthen resilience for critical facilities, and provide regional economic benefits. (See Section 3.3 below for details.)
- **Wildfires:** A series of awards, including a recent grant from the U.S. Bureau of Land Management's Joint Fire Science Program, to study forest density thinning and other fuel reduction treatments that could increase resilience of forests in the face of climate change, and reduce future damage caused by wildfires, such as those that have recently had devastating impacts on Northern California's forests and communities.

3.2 Creating Place-Based Learning Communities

HSU has developed Learning Communities, a series of place-based and experiential research opportunities for students. These programs, which deepen HSU students' connections to the region, simultaneously enrich the student experience and positively impact the region.

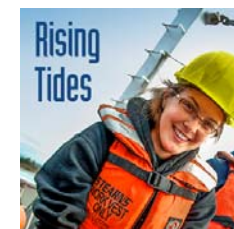
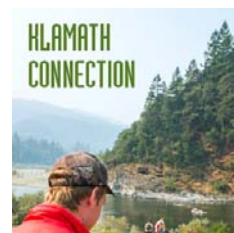
Learning Communities are a curricular approach that links a cluster of courses around an interdisciplinary theme and enrolls a common cohort of students. The programs—which include a summer program, fieldwork, and seminars—offer unique opportunities for students to deeply immerse themselves in their area of study and get hands-on experience in the region's varied ecosystems. The programs are designed to support student's connection both to their chosen field of study and to the beautiful and fragile region in which they live. Several of HSU's environmentally-oriented programs are described below.

Klamath Connection:⁸³ HSU students from a range of scientific and natural resources disciplines conduct experiments alongside scientists working on water quality, habitat restoration, and fish and wildlife conservation that are helping to improve the health and resiliency of the region's critical Klamath River.



Among Giants:⁸⁴ Students majoring in the biological sciences participate in this immersion program focused on studying and conserving the rich biodiversity of the HSU region's forests and terrestrial ecosystems.

Rising Tides:⁸⁵ Students majoring in marine biology and oceanography conduct hands-on research to better understand and protect the region's wild and vibrant coastline and marine ecosystems.



⁸³ <http://www2.humboldt.edu/klamathconnection/>

⁸⁴ <https://amonggiants.humboldt.edu/>

⁸⁵ <http://www2.humboldt.edu/risingtides/>



Global Humboldt:⁸⁶ First-year, undeclared students participate in global Humboldt in order to explore interests, gain new strengths and experiences, and grow their own way at HSU. This learning community is designed for students who hope to make a difference but want to first learn more about the world around them. Students in the programs study food, culture, Native American studies, rural economic development, air, and the environment in their first year at Humboldt.

3.3 Providing Regional Leadership on Clean Energy

One of the most dynamic centers of research, technology development, and thought leadership at HSU is the Schatz Energy Research Center. For thirty years, the Schatz Center has been working to promote the use of clean and renewable energy technologies, both within the HSU region and around the world.⁸⁷

The Schatz Center pursues this goal through:

- **Research:** Performing lab and field research, and engaging in scientific and policy analysis;
- **Education:** Providing graduate fellowships and work opportunities for student engineers and scientists, and educating the public about clean and renewable energy;
- **Collaboration:** Implementing collaborative programs that support the deployment of clean energy systems;
- **Projects:** Designing, demonstrating, and deploying clean and renewable energy technologies in the region.

HSU has provided critical support to the range of Schatz Center's activities from its creation, and the relationship between the university and research center remains vital. The founding director of the Center, Peter Lehman, and current director Arne Jacobsen, both also serve as professors at HSU. And all of its current and past directors, as well as the managing research engineers and most other professional staff at the Center, are HSU alumni. Thus, the Schatz Center's impacts on the region can also be thought of as HSU impacts.

Applied Research

The Schatz Center began its research with a focus on hydrogen as a storage medium for intermittent renewable energy. This evolved into R&D on fuel cells, electric vehicles, and hydrogen fueling infrastructure, and today the Center's research activities encompass the full range of clean and renewable energy technologies, including smart grids, bioenergy, offshore wind, and clean transportation.⁸⁸

At the regional level, the Schatz Center has worked with Redwood Coast Energy Authority (RCEA) for over a decade to analyze and plan for the Humboldt region's energy needs. In 2009, the two organizations received a \$200,000 grant from the California Energy Commission to develop the

⁸⁶ <https://global.humboldt.edu/>

⁸⁷ <http://schatzcenter.org/>

⁸⁸ <http://schatzcenter.org/research/>

RePower Humboldt Strategic Plan. This plan found that the county could meet all of its energy needs using local renewable energy sources, and that the local community had a strong desire to influence energy planning decisions. This early work planning helped lay the groundwork for the region to pursue community-based energy supply options such as Community Choice Aggregation.

In addition to its widely recognized work on microgrids (discussed below), the Schatz Center is also currently conducting an in-depth feasibility analysis to assess the potential for offshore wind development on the northern California coast. While there remain a range of technical, legal, and stakeholder issues to address, development of this resource could significantly help to achieve local renewable energy supply goals and have major impacts on the regional economy.

Education and Thought Leadership

The Schatz Center's educational mission is to "increase energy and environmental awareness, and to engage students and community members firsthand with clean and renewable energy technologies."⁸⁹ The Center is affiliated with HSU's Environmental Resources Engineering department, and also works closely with department faculty in Environmental Science and Management, Environmental Systems, Economics, and Forestry.

The Center pursues its educational mission through the following range of activities:

- **Curriculum Development:** Schatz Center engineers and educators work together to design curriculum for elementary through university students.
- **Off-Grid Energy Access Training:** SERC provides training to solar product testing labs worldwide, under the Lighting Global program.
- **Graduate Fellowships & Assistantships:** Providing graduate fellowships and work opportunities for student engineers and scientists.
- **Educational Outreach:** Educating K-12 classes and the general public on clean energy technologies through interactive lectures and hands-on activities tailored to the audience.

Regional Collaboration on Community Power

The Schatz Energy Center has had a long and fruitful collaborative relationship with the Redwood Coast Energy Authority (RCEA), which was formed in 2003 and has since evolved into an important force in the region's development. In recent years, the Center has worked with RCEA to establish it as a community choice aggregator (CCA), an innovative type of public utility that allows local governments to provide electric power to residents, typically with lower prices, higher percentages of renewable energy and lower greenhouse gas emissions.

By supporting generation of local renewable power, including from Humboldt Redwood Company's biomass power plant in Scotia, the Schatz Center and RCEA are helping to keep millions of energy dollars in Humboldt County that would otherwise go elsewhere, and working to build a locally-controlled energy economy.⁹⁰

⁸⁹ <http://schatzcenter.org/education/>

⁹⁰ https://engineering.humboldt.edu/sites/default/files/documents/mess_2018s.pdf

Regional Microgrid Projects

Among the Schatz Center's most significant and visible regional impacts have been its design, development, and deployment of several innovative, community-scale, low-carbon microgrids.⁹¹ Microgrids are an important technology approach that can help enable and accelerate the clean energy transition. Microgrids can simultaneously enable greater renewable energy generation (by using their energy storage capabilities to smooth the effects of intermittent power generation from solar and wind), increase overall grid stability, and increase energy resilience (through their ability to maintain local power in the case of system outages). Several of SERC's recent microgrid projects are highlighted below.

- **Blue Lake Rancheria:**⁹² The Schatz Center was instrumental in establishing a low-carbon microgrid at the Blue Lakes Rancheria, funded in part by a \$5 million grant from the California Energy Commission (CEC). Deployed in July 2017, this system integrates a large solar photovoltaic array, battery energy storage, sophisticated microgrid management controls, and a backup generator. In addition to providing the community with a cleaner source of power, the microgrid enables the Rancheria to function as a regional Red Cross emergency evacuation center.
- **Solar+ System:**⁹³ The Center's second project at the Blue Lake Rancheria is a pilot "Solar+" design system. This project aims to create a replicable system design (with solar, storage, and advanced controls) at a lower price-point for gas station/convenience stores. There are 12,000 of these stores across the state of California alone, and many share a similar building plan and energy needs. The project will generate an "out of the box" package to help store owners and energy planners assess sites for viability and implementation of solar+ systems.
- **Redwood Coast Airport Renewable Energy Microgrid:**⁹⁴ With another \$5 million grant from the CEC and \$6 million in funding from RCEA, the Schatz Center is helping to build a cutting-edge microgrid to serve the region's airport, and to demonstrate an effective business case for microgrid deployment. This system will feature the largest solar electric system in Humboldt County, coupled with a large battery, and will be the first multi-customer microgrid on PG&E's system, serving 18 customer accounts. This project will provide a test bed for the policies, tariff structures, and operating procedures necessary to



⁹¹ A microgrid is an autonomous power grid that can operate both in tandem with and when "islanded" from a utility grid. At minimum, a microgrid combines onsite energy generation and storage with system controls that allow the microgrid to connect/disconnect from the main grid and to operate independently. Microgrids may also include responsive battery deployment and tiered load-shedding.

⁹² <http://schatzcenter.org/blrmicrogrid/>

⁹³ <http://schatzcenter.org/solarplus/>

⁹⁴ <http://schatzcenter.org/acv/>

integrate microgrids into California's electric grid. At the same time, the microgrid will provide energy resilience for critical regional facilities, including the Humboldt County airport and U.S. Coast Guard Air Station.

The Schatz Center's cutting-edge research, thought leadership, and project development have helped establish Humboldt County as a statewide leader in the planning and deployment of community-scale renewable energy.

4. Entrepreneurship and Small Business Development

Universities are key actors within the entrepreneurial ecosystem as they provide the region with skilled and entrepreneurially-minded graduates. While at HSU, students not only learn necessary business skills, they get hands-on experience working with local businesses through a variety of internship programs. Furthermore, HSU supports the growth and development of new businesses across the region by providing a range of supports, including, and most notably by hosting and financing the Northern California (NorCal) Small Business Development Center (SBDC).

4.1 Providing Business and Entrepreneurship Education

HSU initiates free enterprise throughout the region with its many programs dedicated to promoting and teaching an entrepreneurial mindset. The Institute for Entrepreneurship Education (IEE) promotes entrepreneurship education on campus while also collaborating with local businesses. The IEE hosts small business speaker series, and offers courses focused in small business consulting, entrepreneurship, and an entrepreneurship minor for business students. One prominent program under IEE is the Undership program, offering hands-on learning opportunities for graduating sections. Underships provide a great opportunity for local businesses looking for help on a project. Student Unders provide 30-40 hours of support to a local business, with mentoring from their business supervisor and the IEE Director.⁹⁵

Another great resource for students looking to become future entrepreneurs is the Entrepreneurship Club. The club is a campus resource for students, faculty, and community members “who have passionate ideas and need help getting started.”⁹⁶ Throughout the year the club hosts events and discussions, and helps link students to regional business networks.

Beyond the Underships offered by IEE, the HSU School of Business gets students actively involved in local businesses through numerous internship opportunities, many of which are paid. Since 2012, HSU business administration students in the Community Internship program have been working directly with local businesses and supporting them on activities ranging from business planning to social media assistance to accounting and finance. Over 100 local businesses and organizations have been served by the Community Internship program, including: Redwood Region Economic Development Commission, Humboldt Bay Harbor District, Humboldt Redwood Company, Green Diamond Resource, Humboldt Distillery, US Forest Service, Coast Central Credit Union, Humboldt Blood Bank, Southern Humboldt Community Healthcare District, Fortuna Chamber, Six Rivers Solar, and many more.⁹⁷

Additionally, the Volunteer Income Tax Assistance (VITA) Internship program provides a critical service to the community in the form of free tax preparation support to low income households in the community. As VITA interns, students meet and interview community members, and use on-line tax preparation programs to prepare accurate and complete Federal and State tax returns for

⁹⁵ HSU IEE <https://business.humboldt.edu/content/institute-entrepreneurship-education-ieee>

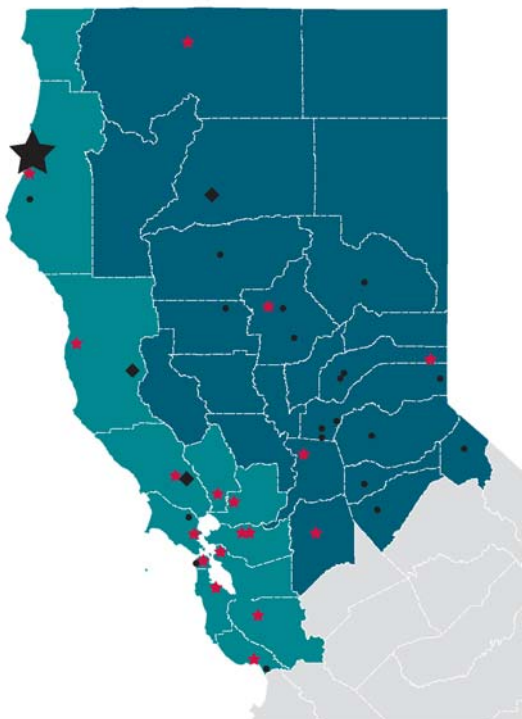
⁹⁶ HSU Clubs and Activities. Entrepreneurship Club. https://clubs.humboldt.edu/club_sites/entrepreneurs-club-e-club

⁹⁷ HSU School of Business, Internship Sites <https://business.humboldt.edu/content/school-business-internship-sites>

VITA clients, helping clients to maximize tax returns. Another important role of interns is to understand the current tax law and be able to explain its application to the client's situation. Students who complete this internship program gain the hands of experience that many accounting firms in the area are looking for.⁹⁸

4.2 Supporting Small Business Development

Since its founding in 2006, the HSU-based NorCal SBDC Lead Center has overseen the SBD program for 36 Northern California counties along the coast from the Oregon border to Santa Cruz.



NorCal SBDC Locations

HSU supports the NorCal SBDC by providing physical space and offering financing and administrative support. Thanks to the NorCal SBDC's many far reaching locations, including 4 lead centers at HSU, 18 centers, 5 satellite offices, and 34 outreach locations, the SBDC is able to serve all parts of the NorCal region. The map to the left shows the numerous NorCal SBDC locations throughout the region.

SBDC offers a range of business support services, including one-on-one advising on financing, technology, and public procurement. Since 2006, the NorCal SBDC has spent nearly 350,000 hours counseling over 49,250 clients in the 36 counties the SBDC serves. About 15% of those clients served have been in the 5-county region closest to HSU, Humboldt, Del Norte, Trinity, Siskiyou, and Mendocino. In addition to one-on-one advising, SBDC hosts business seminars on accessing capital and funding, human resource management, legal and business issues, and more subjects that help business owners and employees strengthen

new skills. NorCal SBDC has hosted over 11,300 of these trainings for nearly 146,600 attendees over its life time, 18% of trainings held in the 5-county region.

The impact of SBDC services is significant. In 2018 alone over 450 NorCal SBDC clients started businesses, and created more than 2,500 jobs. NorCal SBDC was also instrumental in saving close to 980 jobs that were in jeopardy in 2018. From 2006 to 2018 NorCal SBDC clients generated \$1.3 billion of taxable revenue, and over \$104.9 million in the local 5-county region.⁹⁹ Business supported or recovered by SBDC clients are important generators of tax income for state and local governments as well.

⁹⁸ HSU School of Business. Internships. <https://business.humboldt.edu/content/internships>

⁹⁹ Data provided by NorCal SBDC via Kristin Johnson, Director

Native American Tribes are often SBDC clients. In early 2019, SBDC supported the Hoopa Tribe to open a tribally-owned grocery store that opened in early March. SBDC provided 27 hours to counseling to the Hoopa Tribe, helping the client secure a \$4.2 million loan, and hire many local employees. Since the only other grocery store in Hoopa Valley closed its doors in 2016, the Tribal lands have been facing a food desert situation. The opening of the Hoopa Shopping Center gives Valley residents the convenience of a local grocery store once again. In 2018 Karuk Tribe member and Marine veteran Crispin McAllister, pictured with his family to the right, launched the wild fire and consulting service company, C Karuk C. The company provides the critical service of water delivery to CalFire and the Karuk Tribe in an isolated, fire-prone area. Mr. McAllister, with assistance from the SBDC, negotiated deals for trucks and equipment; secured qualified drivers; obtained CalFire, FedFire, and Tribal approvals and certifications; secured a \$255,000 loan from Redwood Region Economic Development Commission (RREDC), and a \$60,000 loan from the Karuk Tribe Community Development Corporation for equipment purchase and a \$50,000 line of credit from RREDC for equipment warehousing.¹⁰⁰



Crispin McAllister and his family

Aside from housing and financing many SBDC services, HSU students are directly involved in promoting small business success in the Northern California region. In the summer of 2018, ten HSU students served as paid interns, placed at NorCal SBDC offices. Students were given the opportunity to work in their own hometowns, creating local connections and learning professional skills while giving back to their communities. The interns furthered their knowledge of programs like Microsoft Excel and Constant contact while getting hands-on experience gathering research, assisting clients, and coordinating workshops.¹⁰¹

¹⁰⁰ Success story and photo provided by NorCal SBDC

¹⁰¹ Northern California Small Business Development Center. Summer Interns 2018. Document provided by Kristin Johnson.

5 Contributing Community Services and Assets

HSU contributes a broad range of services and amenities that make the Humboldt County region a better place to live, work, learn, and play. The university's Center for Rural Policy conducts research and advocacy on critical issues facing the region; students and faculty contribute thousands of hours of volunteer service in the community; and the university is an important regional hub for cultural performances and events. Overall, HSU is an immeasurable public good that enhances the region's quality of life.

5.1 Community-Focused Research and Advocacy

The Humboldt region faces the same issues that many rural communities across the country face: lack of internet access, health care, and social services. The HSU California Center for Rural Policy (CCRP) is dedicated to improving the lives of rural Californians. Staffed by many HSU alumni and student researchers, CCRP is another example of the fact that HSU alumni remain in and contribute to the community after graduation. Today CCRP operates as a community-driven research center, promoting evidence-based policy and planning research of rural communities. The center works on identifying areas of inequality to inform policy aimed at reducing disparities. Specifically, the CCRP tracks areas like health and wellness indicators, internet access, food security, access to healthcare, economic opportunities, and education in the area.¹⁰² CCRP demonstrates HSU's responsiveness to the needs/priorities of the region and explicitly providing services to meet those needs, and by doing so providing thought leadership on key local issues.

Rural Broadband

One successful initiative that CCRP took part in was to improve local broadband access. Roughly 25 million Americans, 19 million living in rural communities, do not have access to reliable broadband connection.¹⁰³ HSU's CCRP has been working with the local rural community to try to address this issue in the region. In 2011 and 2014 CCRP successfully expanded and strengthened the broadband networks in two rural communities. Due to lack of reliable internet connectivity in Humboldt and Del Norte Counties, natural disasters and accidents often cut internet service to these communities entirely. The solution was to create multiple routes for cabling to travel, known as route diversity. Both counties achieved were able to achieve route diversity, Humboldt in December of 2011, and Del Norte in January 2014.¹⁰⁴

¹⁰² HSU CCRP. <https://ccrp.humboldt.edu/home>

¹⁰³ Microsoft. The rural broadband divide: An urgent national problem with can solve. 2018. <https://blogs.microsoft.com/on-the-issues/2018/12/03/the-rural-broadband-divide-an-urgent-national-problem-that-we-can-solve/>

¹⁰⁴ CCRP. A Tale of Two Rural Broadband Victories. 2014. <https://ccrp.humboldt.edu/sites/default/files/humboldt-del-norte-broadband-case-studies.pdf>

Community Health and Wellness

In 2010, CCRP completed its ambitious project to develop and determine a common set of community health indicators in the region. Working in collaboration with numerous other community groups, such as local hospitals and tribes, CCRP identified 48 community health indicators with solid data, and 44 other useful indicators that lacked data. This report identified areas that were in need of improvement, such as a shortage of specialty physicians, low childhood immunization rates, and decreasing high school graduation rates.¹⁰⁵ These findings will allow prioritization of community health issues so that they can be addressed. For example, the findings of this 2010 report were utilized in 2012 as part of Del Norte County and adjacent tribal lands participation in the Building Healthy Communities (BHC) initiative. Twenty core community health indicators were selected to show that in Del Norte County and adjacent tribal lands transportation is a common problem affecting a high percentage of adults living in poverty or low-income, the percentage of woman with late or no prenatal care increased from 2003 to 2009, and nearly half of students are overweight or obese.¹⁰⁶ This knowledge allowed funding from the BHC grant to be targeted to best address community need.

CCRP also participates in an ongoing effort to identify hunger problems in the region. The Humboldt Food Access and Pantry survey, completed in 2005, 2011, and 2017, aims to assess the food security status of clients and any additional needs. Funding for the project was provided by the Community Benefits Department of St. Joseph Health – Humboldt County, while CCRP performed survey analysis and summarized results. The survey was designed and performed collaboratively by Food for People, CCRP, and St. Joseph's Health.¹⁰⁷ To ensure that efforts to improve access to healthy food is not just limited to these surveys, the CCRP also funds the Humboldt Food Policy Council (HFCP). HFCP is a diverse network of food system stakeholders who are focused on ensuring the regional food system is equitable, culturally appropriate, and environmentally and economically sustainable. The group meets bi-monthly to discuss and find solutions to the regions food insecurity issues.¹⁰⁸

In 2011, due to budget limitations, HSU made the difficult decision to discontinue its Bachelor of Science in Nursing (BSN) program. Health-care providers in the region have made very clear the importance of having a 4-year BSN program in the area to maintain health care access in the region. To meet community need HSU in 2017 began exploring a partnership between HSU and the nearby College of the Redwoods to create a Registered Nurse to Bachelors of Science in Nursing (RN-to-BSN) program, known as the North Coast Nursing Program.¹⁰⁹ In March of 2019 it was announced that the non-profit healthcare organization, St. Josephs Health, Humboldt

¹⁰⁵ HSU CCRP. Rural Community Vital Signs. 2010. <https://ccrp.humboldt.edu/sites/default/files/rural-community-vital-signs.pdf>

¹⁰⁶ Community Wellness Vital Signs: Core Community Wellness Indicators for Del Norte and Adjacent Tribal Lands, 2012, <https://ccrp.humboldt.edu/sites/default/files/community-wellness-vital-signs-for-dnattl-version-1-2.pdf>

¹⁰⁷ HSU CCRP. Humboldt Food Access & Pantry Service Report. 2017. https://ccrp.humboldt.edu/sites/default/files/2017_humboldt_county_report_pdf_1.pdf

¹⁰⁸ HSU CCRP. Food Security & Food Policy Council, <https://ccrp.humboldt.edu/research/food-security-food-policy-council>

¹⁰⁹ HSU Now. HSU and CR Exploring New Nursing Program. 2017. <http://now.humboldt.edu/news/hsu-and-cr-exploring-new-nursing-program/>

County, will be supporting the RN-to-BSN program at HSU with a two-million-dollar grant. The program is set to start enrolling students by Fall 2020, and set a curriculum centered around the needs of the region. The creation of the North Coast Nursing Program is a step towards ensuring a more resilient health care system for the North Coast region.¹¹⁰

5.2 Enriching the Humboldt Region with Community Service

HSU students are continually volunteering in the local community. Through the University Youth Education Services (YES) program, each semester 300-400 student volunteers engage in 12-16 community service programs. Five students are employed under YES as Program Coordinators, and 28 serve as Student Directors. Community service programs range from mentorships and advocacy to programming for seniors and youth from at-risk communities. Annually, students volunteer 20,000 service hours, providing services to 1,500 children and adults as well as 30 community organizations and schools.¹¹¹ Student service with YES creates a community asset equal to \$495,000.¹¹²

In Service Learning courses on campus, students typically conduct 20-30 hours of community service throughout the duration of the course.¹¹³ Service Learning offers students real-world opportunities to apply their area of study to issues in the community. Community issues students are involved in include child development, inequalities in the social justice system, and rural economic development. In academic year 17-18 nearly 700 students participated in 28 Service Learning Courses, contributing over 24,000 hours of service to the community.¹¹⁴

Academic Internships not only provide students with real world experience, they also create a tremendous benefit to the local community. During the 2017-18 academic year over 360 students participated in 24 Academic Internship courses, serving nearly 44,000 hours. Typically, these courses require students to complete anywhere from 60-150 hours of service. Internships include teaching at local community college, high schools, and elementary schools, income tax assistance and computer science work at local businesses



Annual impact of the Center for Community Based Learning

¹¹⁰ HSU Now. St. Joseph Health Invests \$2 million in North Coast Nursing Program. <http://now.humboldt.edu/news/st-joseph-health-invests-2-million-in-north-coast-nursing-program/>

¹¹¹ HSU. Getting Involved. <https://deanofstudents.humboldt.edu/getting-involved>

¹¹² Each hour valued at \$24.69 by The Chronicle of Philanthropy. Value of Volunteers' Time Up to \$24.69 an Hour. <https://www.philanthropy.com/article/Value-of-Volunteers-Time-Up/243207>

¹¹³ HSU. The Center for Community Based Learning, Service Learning. <http://www2.humboldt.edu/ccbl/service-learning>

¹¹⁴ Statistics provided by the Center for Community Based Learning

or government agencies, and work with local public and private environmental management firms.¹¹⁵

The Center for Community Based learning estimates that students participating in Academic Internships and Service Learning courses contribute \$1.9 million worth of service to the community annually, serving 435 organizations with 78,000 hours.

5.3 Hosting a Center for Lectures, Arts, and Performances

HSU plays host to community events and educational conventions. One such example is the Sustainable Speaker Series. Established in 2005, the series, sponsored by the Environment and Community Program and the Schatz Energy Research Center, is open to members of the public. The series facilitates discussion and collaboration around community issues related to energy, the environment, and society. Another conference recently held at HSU was the Zero Waste Conference in early November 2018. The conference aims to reduce waste, promote resource recovery and conservation, and minimize landfill-bound waste. One of the key speakers at the conference was a local official, Ted Ward, the Director of the Del Norte Solid Waste Management Authority.¹¹⁶

HSU also plays an essential role in attracting artists and performers to the region. The HSU Center Arts hosts numerous musical guests and speakers including five-time Grammy nominated pianist Ursula Oppens¹¹⁷, Grammy winner Rosanne Cash, and the Russian National Ballet to perform Swan Lake. In the 2017-2018 academic school year, Center Arts hosted 40 seasonal/special events for 26,808 participants. Additionally, there were 10 Associated Student events at Center Arts for over 5,700 participants. Associated Student events are HSU student-centered, but are also open to the public. Finally, Center Arts also hosted 9 Artists & Schools events, which are performances for local elementary school children. These 9 events had over 5,600 participants.¹¹⁸

KHSU Public Radio, a community-supported, non-commercial radio station is licensed to HSU, and often highlights the activities of the University and its students.¹¹⁹ The KHSU broadcast reaches approximately 135,000 people across Northwest California and Southwest Oregon. Through it's innovative, high quality programming, KHSU hopes to educate, enrich, enlighten, and entertain its listeners on local, national, and international issues.¹²⁰

¹¹⁵ HSU. The Center for Community Based Learning, Academic Internships. <http://www2.humboldt.edu/ccbl/academic-internships-2>

¹¹⁶ HSU Now. Zero Waste Conference Coming to Humboldt State. 2018. <http://now.humboldt.edu/news/zero-waste-conference-coming-to-humboldt-state/>

¹¹⁷ HSU Now. Five Time Grammy Nominated Pianist Ursula Oppens to Perform at HSU. <http://now.humboldt.edu/news/five-time-grammy-nominated-pianist-ursula-oppens-to-perform-at-hsu/>

¹¹⁸ Information provided by Rou Furshpan, Director of Center Arts

¹¹⁹ KHSU, HSU Students. <https://www.khsu.org/term/hsu-students#stream/0>

¹²⁰ KHSU Diverse Public Radio. About KHSU. <https://www.khsu.org/about-khsu#stream/0>

Conclusion

HSU is a significant economic driver in the region, not only due to the opportunities the University presents for its students, but also due to the ripple effects that HSU spending has on industries throughout the regional economy. University and student spending generates more than \$360 million in economic activity per year in the Humboldt region and supports almost 4,600 regional jobs, including those in secondary industries that depend on the spending of HSU and its students. HSU's regional activities also generate significant tax revenue streams for state and local governments—approximately \$22.1 million annually. The enhanced earning power of an HSU degree is a valuable asset not only for alumni, but also for the regional and state economy. Roughly \$207 million in industry activity is generated annually in Humboldt County alone as a result of the incremental wage increases supported by a degree from HSU. Altogether, this activity drives just under \$570 million in industry activity, supports 6,240 regional jobs and generates \$38.2 million in state and local tax revenue.

Beyond these quantifiable economic impacts, HSU supports the regional education pathway by providing higher education to a diverse student body of nearly 8,000, assisting underserved high school students, and offering opportunities for lifelong learning. That diverse student body is then able to help meet regional workforce needs before and after graduation by stepping into key regional industries. Students and faculty at HSU contribute research and innovations on important regional issues through various university departments, programs, and centers. And HSU strengthens entrepreneurship in the region through its business education and its support for the NorCal SBDC. Finally, HSU actively serves its community through CCRP's research on key rural issues, contributions of student and faculty volunteerism, and by providing a physical hub for performances, conventions, and cultural events.

Appendix A: Detailed Methodology

This section provides an overview of the economic impact modeling methodology, including an introduction to the IMPLAN model, an overview on the model input data and methodology, and a discussion of the output metrics used to describe the impacts.

To estimate the economic impacts of HSU on the regional economy, ICF used the economic impact modeling software IMPLAN (version 3.1), which is created and maintained by the Minnesota IMPLAN Group (MIG) and widely used throughout the United States and internationally. State and local government agencies and authorities use IMPLAN for a variety of applications, including transportation and aviation projects. The IMPLAN model is a static input-output framework used to analyze the effects of an economic stimulus on pre-specified economic regions; in this case Humboldt County. The IMPLAN model is based on the input-output data from the U.S. National Income and Product Accounts (NIPA) from the Bureau of Economic Analysis. The model includes 536 sectors based on the North American Industry Classification System (NAICS). The model uses state-specific multipliers to trace and calculate the flow of dollars from the industries that originate the impact to supplier industries. These multipliers are thus coefficients that describe the response of the economy to a stimulus (a change in demand or production). IMPLAN's outputs include three types of impacts:

- **Direct impacts**, which are impacts in the primary industries where spending by the University and its students would be focused, such as university operations, construction-related expenses, local student housing, bookstores, and restaurant/food purchases.
- **Indirect impacts**, which are impacts in the industries that supply or interact with the primary industries, for example when University capital projects require the purchase of construction-related building materials.
- **Induced impacts**, which represent increased spending by workers who earn money due to the proposed projects, such as when faculty and staff use their wages at local restaurants.

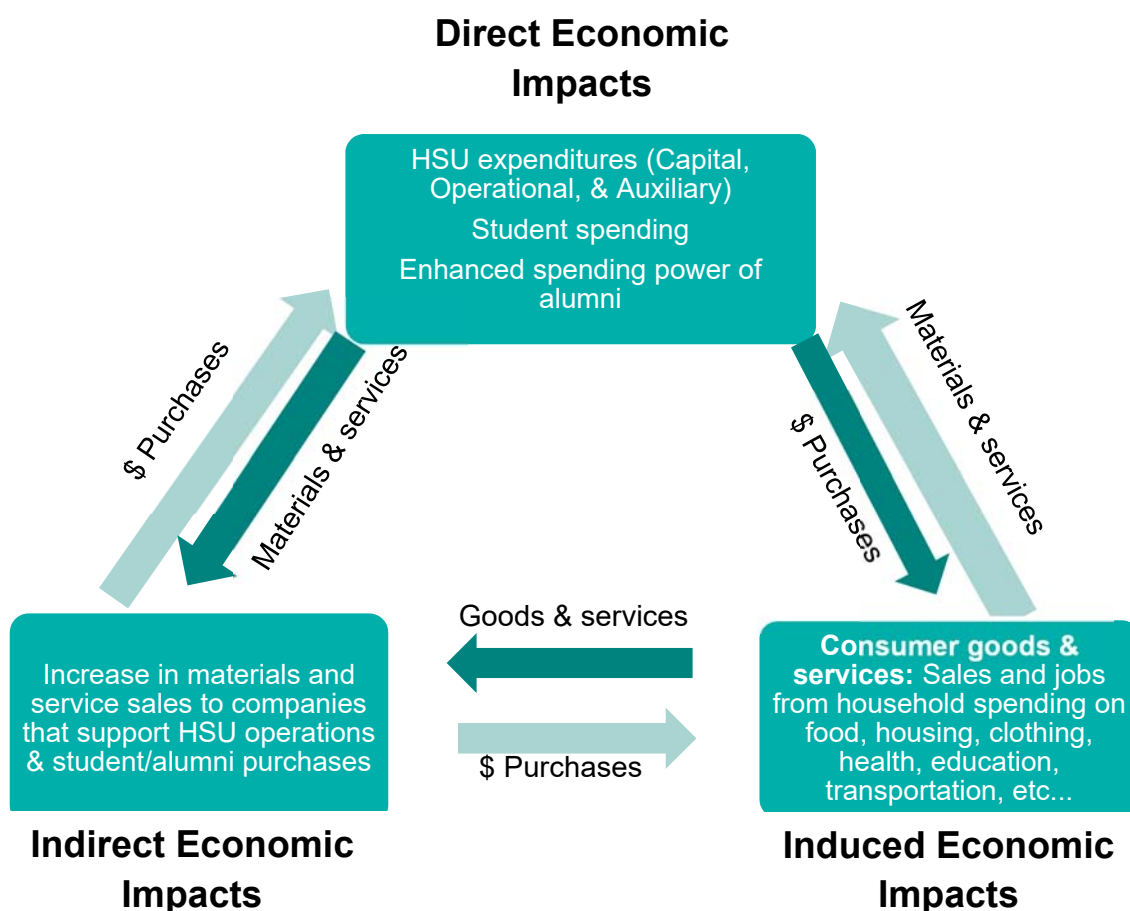
The IMPLAN model was used to assess the economy-wide and industry-specific impacts of the direct spending associated with operational expenditures, capital expenditures, student spending and the incremental wage increases that alumni gain as a result of their HSU education. The results of this analysis are reported using four commonly-used metrics, consistent with best practices across economic impact analysis. A summary of each metric is provided below:

- **Employment**: Represents the jobs supported in each industry, based on the output per worker and output impacts for each industry.
- **Labor Income**: Includes all forms of employment income generated by the direct input, including employee compensation (wages and benefits) and proprietor income.
- **Industry Activity**: Represents the total value of industry activity generated by the direct spending.

- **Tax Impact:** Represents the breakdown of taxes collected by state and local government, including corporate taxes, household income taxes, and other business taxes.

Model-Based Analysis

HSU creates economic impact via multiple pathways, from operational purchases and capital spending to student spending activity and increased salaries for alumni. Direct spending by HSU and its students is the most straightforward economic impact of the University—HSU purchases goods and services from the surrounding economy, invests in its infrastructure, and serves as an important regional employer. This direct University activity initiates economic impact throughout the economy. However, this direct spending represents only a portion of the University-generated impact. Direct spending in primary industries generates indirect and induced impacts in secondary industries throughout the economy. The direct spending by the University—on its operations, auxiliary enterprises, capital expenditures, and students—and the multiplier effect of this direct spending is a major part of the University’s overall economic impact on the region. However, the value of HSU is much more than just the impact of its own direct, indirect, and induced spending because of its alumni, who contribute significantly to the broader regional economy.



The full economic impact of the campus on the regional economy, including indirect and induced impacts in sectors beyond the initial spending categories, can be assessed through economic impact modeling. Regional economic modeling is founded on the principle that industry sectors are interdependent: one industry purchases inputs from other industries and households (e.g., labor) and then sells outputs to other industries, households, and government entities. Therefore, economic activity in one sector causes an increased flow of money throughout the economy. The section below explains this model and the data and calculations ICF used to create model inputs.

Model Inputs

This analysis uses the modeling software IMPLAN to calculate economic impacts. IMPLAN is widely used by municipalities, institutions and other organizations and thus the results of this analysis are comparable to other similar assessments of university impacts. The following discussion details the data and calculations ICF used to calculate the inputs for the IMPLAN model. ICF modeled five separate categories of spending:

- **Operational Expenditures**
- **Auxiliary Expenditures**
- **Capital Expenditures**
- **Student Spending**
- **Alumni Incremental Income Spending**

University Spending

Although the results for operational, auxiliary, and capital expenditure are analyzed together in the report, they were modeled as three separate input vectors. ICF relied on financial statements provided by HSU for operational expenses, auxiliary enterprise expenses and capital expenditures for the 2017-18 school year. Operational expenditures totaled \$168.5 million, auxiliary expenditures were \$25.7 million and capital expenditures were \$5.5 million on average (see below). In accordance with current best practice, spending associated with student grants and scholarship (financial aid) and depreciation and amortization is not included in the modeling.

HSU's operating expenses include: instruction, research, public service, academic support, student services, operation and maintenance, and institutional support. HSU's auxiliary enterprise spending was split between dining hall services (\$16 million) and housing and parking (\$9.7 million). The input for capital expenditure was developed using a 3-year average from 2015/16 – 2017/18. HSU has already spent \$5.5 million in 2018/19 and expects to spend an additional \$33 million on capital projects over the course of the 2019/20 and 2020/21 academic years.

Student Spending

The student spending calculations were based on the University's 2018 fall headcount, which included 7,195 undergraduates, 481 graduate, post baccalaureate, and doctoral students and 98 credential students. ICF received an estimate of undergraduate students living on-campus, off-

campus, and with their parents from the HSU Residence Life Office. ICF assumed that all postgraduate and certificate students live off-campus.

ICF used the average “Cost of Attendance” estimates from the HSU Financial Aid Office¹²¹ to calculate the total student spending impact. ICF calculated a total of six spending categories including: books and supplies, food (on-campus), food (off-campus/other), housing (on-campus), housing (off-campus), transportation, and miscellaneous. ICF assumed that students living on campus spent approximately 2/3 of their food expenditures at campus dining halls or food stores, while students living off campus only spent 1/3 of their food expenditures on campus. ICF assumed no housing costs for students living with their parents. The HSU financial aid office estimates that on-campus and off-campus housing costs are equal. ICF calculated a total of \$101.7 million in off-campus spending and \$33.5 million in on-campus spending for 2017/18. Only off-campus student spending was modeled in this analysis to avoid the potential for double-counting. Additionally, student spending on tuition and fees was not modeled for that reason.

Once University expenditures and student spending were estimated, ICF allocated this spending to appropriate IMPLAN sectors. The list of IMPLAN sectors used for this analysis are detailed in Table A1.

Table A1: NAICS codes and IMPLAN Sectors

IMPLAN Sector	IMPLAN Description
400	Retail: Food & Beverage Stores
404	Retail: Sporting goods, hobby, musical instrument and book stores
405	Retail: General Merchandise
473	Junior colleges, colleges, universities, and professional schools
55	Construction of New Educational and Vocational Structures
501	Full-service restaurants
502	Limited-service restaurants
503	All other food and drinking places
412	Transit and ground passenger transportation
440	Real estate

Spending was modeled using local purchase coefficients, meaning that while spending is occurring locally, not all of the direct economic activity is assumed to be retained in the region. A certain percentage of this spending “leaks” to other regions; therefore, for each spending category, the actual spending does not necessarily equal the direct impact calculated by IMPLAN.

It should be noted that the methodology used to estimate student spending in this study differs from the methodology used by ICF in a 2010 study titled, “The Impact of the California State

¹²¹ HSU, Financial Aid. 2018. *Cost of Attendance - 2018/19*. <https://finaid.humboldt.edu/costs/attendance-cost>

University System”.¹²² For the current study, ICF analyzed the off-campus living expenses of all students, regardless of their county of residence. This approach, while consistent with other similar studies conducted, differs from the 2010 analysis, which analyzed only those students who came from outside of the region to attend HSU. The current methodology provides a more precise estimate of total student spending compared to the previous analysis.

Alumni Earnings

Alumni impacts are treated separately from the other spending categories in this analysis because they are not expenditures by the University or its students on local goods or services. Instead, the alumni impacts represent the additional earning power of HSU graduates and the economic activity generated by these increased wages, when spent in the local economy.

To only account for alumni in the workforce, ICF applied an age cutoff based on the state’s average retirement age of 64.¹²³ Using national salary data from the U.S. Census Bureau, ICF estimated the increase in alumni salaries due to their HSU degrees, and used IMPLAN to determine the statewide economic impact of this additional income.

Specifically, ICF employed the following methodology:

1. Using the average age of an undergraduate and graduate degree recipient, the age of each year’s graduating class was determined and the number of HSU graduates remaining in Humboldt County in each of the U.S Census age cohorts (25-34, 35-44, 45-54, and 55-64) was calculated.
2. Data from the U.S. Census Bureau’s Current Population Survey (CPS) were used to estimate the average salary of HSU bachelor’s and master’s degree-level alumni based on their age. The CPS data provides average salary, by age and sex, for Americans of different levels of educational attainment, including high school graduates, individuals with some college but not holding degrees, bachelor’s degree recipients, and master’s degree recipients.¹²⁴ The weighted average salaries for each age cohort are presented below:

Table A2: U.S. Census CPS Educational Attainment and Earnings

Age Cohort	Educational Attainment			
	High School	Some College	Bachelor’s Degree	Master’s Degree
25-34	33,605	35,979	57,152	75,896
35-44	43,920	47,091	74,390	91,879
45-54	43,875	52,979	80,447	94,163
55-64	46,354	51,299	78,463	99,108

¹²² ICF. 2010. Office of the Chancellor, *Working for California: The Impact of the California State University System*. <https://www.calstate.edu/impact/docs/CSUImpactsReport.pdf>

¹²³ Smartasset. 2018. *The Average Retirement Age in Every State in 2015*. <https://smartasset.com/retirement/average-retirement-age-in-every-state>

¹²⁴ U.S. Census Bureau. 2017. *PINC-04. Educational Attainment--People 18 Years Old and Over, by Total Money Earnings, Work Experience, Age, Race, Hispanic Origin, and Sex*. <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc/pinc-04.2017.html>

3. For each graduation year, the total earnings of HSU alumni were calculated by multiplying the number of bachelor's degree recipients remaining in Humboldt by the weighted average bachelor's degree salary for that year. The calculation was repeated for master's degree holders, and the two totals were summed. This total, summed for every year dating back to 1979-1980 for undergraduates, and 1986-87 for master's degree holders, provides an estimate of the total annual earnings of HSU alumni still living in Humboldt.
4. The amount of total earnings attributable to the alumni's HSU degree is the difference between the weighted average salary associated with their final educational level minus the weighted average salary associated with their previous educational level. For individuals with a master's degree, for example, the amount of earnings that is attributable to the alumni's HSU master's degree is the weighted average master's salary minus the weighted average bachelor's salary. For bachelor's degree holders, the amount of earnings attributable to the alumni's HSU degree is the weighted average bachelor's salary minus the weighted average salary for either a high school graduate or transfer student who already had some college credit.
5. Some students come to the HSU with a high school diploma only; others transfer after completing some college. The salary differences between bachelor's degree recipients and high school graduates were calculated as well as the salary difference between bachelor's degree recipients and transfer students with some college credits. These two differences were weighted based on historical data for the split between the two sources of students in the California State University system that was used in the 2010 CSU Economic Impact Study.¹²⁵ Lastly, a total earnings differential attributable to the HSU degrees was calculated.

ICF's calculation of alumni wages represents a conservative approach as it relied on national averages for wages by age and degree type rather than state-specific data. California wages tend to be higher than the national average. In 2017, California real per capita income was approximately \$2,650 dollars higher than the U.S. national average.¹²⁶

It should be noted that the methodology used to estimate alumni impact in this study differs from the methodology used by ICF in 2010. The previous assessment used a cumulative annual chance that an alumnus had left California to determine the number of alumni remaining in the region year to year. Since ICF was able to rely on direct inputs from HSU alumni data, the current study uses a flat percentage chance that alumni will remain in the region or state. Because of this methodological difference, the alumni and total impacts reported in 2010 are not directly comparable to the findings reported in this study. The current methodology provides a more precise estimate of the total number of remaining alumni compared to the previous analysis. The difference between the methodologies results in approximately 4,421 fewer in-region alumni.

¹²⁵ ICF. 2010. Office of the Chancellor, *Working for California: The Impact of the California State University System*. <https://www.calstate.edu/impact/docs/CSUImpactsReport.pdf>

¹²⁶ Department of Numbers. 2017. *California Household Income*. <https://www.deptofnumbers.com/income/california/>

Appendix B: Study Multipliers

HSU's direct economic activity has a multiplier effect on employment, labor income, and industry activity across the Humboldt region. The magnitude of this indirect and induced activity can be summarized through each spending multiplier. Table B1 below shows the activity multipliers for employment, labor income, total value added, and industry activity.

Table B1: Economic Multipliers across Spending Categories

Spending Category	Employment	Labor Income	Total Value Added	Industry Activity
University Operating Expenditure	1.27	1.55	1.85	1.62
University Auxiliary Expenditure	1.25	1.25	1.51	1.57
Capital Expenditure	1.62	1.36	1.54	1.44
Student Spending	1.32	1.44	1.33	1.38
Average	1.37	1.40	1.56	1.50

HSU can use these industry multipliers to understand the economic impacts of a change in spending. For example, HSU has already spent \$5.5 million on capital projects in 2017-18, but the university plans on spending an additional \$33 million over the course of the next year and a half. Assuming they spend half of the total \$33 million in 2018-19, HSU can estimate the indirect and induced economic impacts of an additional \$16.5 million in capital spending.

Looking at the multiplier for capital expenditure, we see that \$1 of direct industry activity in Humboldt produces a total effect that is approximately 1.44 times greater than the initial spending. \$16.5 million in direct industry activity supports an additional \$7.3 million in indirect and induced activity or a total of \$23.8 million in industry activity across Humboldt County.

While initial spending and direct output (industry activity) have a one to one ratio, direct output will likely be slightly lower than the input value because some of the initial spending "leaks" out of the Humboldt County region. Direct labor income and value added effects represent the labor income dollars or the total value added per \$1,000,000 of production in the industry. For Employment, the direct effect represents the number of jobs per \$1,000,000 of production in the Industry.

Appendix C: Updating HSU's Economic Impact

The 2018 analysis of HSU follows a previous study conducted by ICF in 2010, which analyzed the economic impact of the California State University System on the state and key regions using 2008-2009 data. It should be noted that the previous study's methodology is not directly comparable to the current study. Due to the differing regions of analysis in each study, different input assumptions and modeling frameworks were used. That said, it is necessary to be able to articulate the differences in the study designs and outcomes in order to interpret the results of the 2018 analysis.

Table C1 below shows a comparison of the total impacts by key output metrics excluding the alumni impact.

Table C1: Comparison of Impact Results, excluding Alumni Impact

Input Category	2010 Study* (\$ Millions – 2018 Dollars)	2018 Study (\$ Millions)
Industry Activity	\$218	\$360.3
Employment	2,280	4,590
State and Local Taxes	\$12.2	\$22.1

* Dollar figures have been converted to 2018 dollars. Employment figure is from 2010 and does not account for any inflation or change in worker productivity.

To understand the contrast across these results, it is important first to understand any differences in inputs. Table C2 below shows a comparison of the direct spending (model inputs) analyzed in each study for each of the three main spending categories.

Table C2: Comparison: Direct Activity (Inputs)

Input Category	2010 Study (\$ Millions)	2018 Study (\$ Millions)
University Operating & Auxiliary Expenditure	\$160.1	\$194.2
Capital Expenditure	\$30.1	\$5.5
Student Spending	\$42.2*	\$101.7
Total	\$232.2	\$301.4

Source: ICF study. 2010. *Working for California: The Impact of the California State University System*.

* Previous ICF study only accounted for spending from students residing outside of the campus region.

Student Spending

The key methodological difference between the inputs used in the two studies relates to how the direct student spending values were analyzed. The student spending input in the 2018 study is over \$53 million (109%) larger than the 2010 input when converted to 2018 dollars. There are several reasons for this increase despite a consistent number of students enrolled.

First, the 2010 study only accounted for spending from students residing outside the campus region, while the 2018 study includes all current students. This update in methodology is consistent with current best practices for single-campus studies and will allow the 2018 study to be comparable with other similar studies. If not for HSU, in-region students may leave the region to attend another university or find employment elsewhere, thus it is appropriate in a region-specific study to include their impact. Due to this difference in methodology, the 2018 Study accounts for the spending of approximately 3,000 more students than the 2010 study. Table C3 below provides a comparison of the enrollment data informing the student spending inputs for each study.

Table C3: Student Enrollment Data Comparison

Data Inputs	2010 Study	2018 Study
Number of Students	7,800	7,774
Number of Students Residing in the Campus Region	3,030	N/A
Number of Student Residing Outside of the Campus Region	4,770 ¹²⁷	N/A
Total Students	4,770	7,774

Not only does the total number of students accounted for differ across studies, but the living situation and per-student expenditures differs as well. The 2010 study estimated that of the 4,770 students from outside the campus region, approximately 34 percent of students lived on-campus and 64 percent of students lived off-campus. This distinction is important as living situation influences per student expenditure. For the 2018 study, ICF received an estimate of number of students and per student cost associated with living on-campus, off-campus, and with their parents from the HSU Residence Life Office. The 2018 per-student spending data provided by HSU results in a per-student spend that is approximately \$2,500 higher for on-campus students and \$2,200 higher for off-campus students compared to the 2010 study. The difference in number of students by living situation and average spending per student contributes to the large variation in direct off-campus student spending, (a difference of close to \$60 million). The 2018 methodology provides a more accurate estimate of the economic activity attributable to student spending as it relies on current housing and financial data from HSU.

Table C4 provides a breakdown of this comparison.

Table C4: Housing and Student Spending Estimates (Portion of Spending Included in the Study)

Data Inputs	2010 Study ¹²⁸	2018 Study
Number of Students in On-Campus Housing	1,612	2,049
Number of Students in Off-Campus Housing	3,158	5,635
Number of Students Living with Parents	N/A	90
Average Annual per On-Campus Student Spend	\$3,180 (\$3.654*)	\$6,167
Average Annual per Off-Campus Student Spend	\$11,730 (\$13,479*)	\$15,673
Average Annual Spend per Student Living with Parents	N/A	\$7,973
Total Student Spending	\$42.2 Million (48.5M*)	\$101.7 Million

*Student expenditures were converted to 2018 dollars for the purposes of comparison

To investigate what the current student spending results would look like if these methodological differences were accounted for, ICF first downscaled the total portion of the input value attributable to the per-student spending differences for on-campus and off-campus students mentioned above (approximately \$17.8 million). ICF then discounted the student spending input sectors in the 2018 study using the percentage of “out-of-region” students from the 2010 study (61%). This approach decreases the total student spending input by approximately \$50.5 million. The table below shows the side-by-side results when the student spending methodological differences are accounted for. Using this adjusted approach, the total industry activity impact is approximately \$35 million lower than the 2018 analysis results.

Table C5: Hypothetical Impact Results, excluding Alumni Impact

Input Category	2010 Study* (\$ Millions – 2018 Dollars)	2018 Study – Adjusted Inputs (\$ Millions)	2018 Study – Original Inputs (\$ Millions)
Industry Activity	\$218	\$325.6	\$360.3
Employment	2,280	4,250	4,590
State and Local Taxes	\$12.2	\$19.3	\$22.1

Source: ICF study. 2010. *Working for California: The Impact of the California State University System*. Results do not include alumni impact.

* Dollar figures have been converted to 2018 dollars. Employment figure is from 2010 and does not account for any inflation or change in worker productivity.

The additional discrepancy between the total economic impact estimated in the 2010 study and the adjusted 2018 study is attributed to the direct effect leakage factors in each of the models used. In economic modeling terminology, leakage is described as the portion of the spending that “leaks” out to other regions in exchange for goods that are not produced locally. In comparing the direct effect leakage factors for the two models, we see that the factor in the 2010 study is approximately 30 percent higher than in the 2018 study. The 2018 study relies on underlying model data from 2017, while the 2010 study relied on underlying model data from 2008. Because of the lower leakage factor in the 2018 study, 30 percent more of the initial spending is staying in the study region before being applied to the secondary impact multipliers, which compounds the difference in the overall effect, resulting in an overall higher impact of over \$100 million. Because the employment impact can not be adjusted by inflation, the employment impact differential appears even more significant. Economies typically become more robust over time. As economies develop, a higher percentage of goods and services are able to be sourced locally and thus the impact on the region is more significant, both in terms of industry activity as well as employment.

University Operating & Auxiliary Spending

While less significant than the effects of the student spending methodology, other input vectors also differed across the two studies. The direct University and Auxiliary expenditures increased by \$34.1 million in the 2018 study, or approximately 21%. This increase is in line with the University’s overall growth. Since 2013-14, the University’s operating budget has grown at an average annual rate of 4 percent.¹²⁶

Capital Spending

Capital spending is highly variable year to year and thus the estimates used in ICF’s analyses are 4-year averages. While the 2018 study figure is much lower than the estimate used in the 2010 study, HSU expects capital expenditure to increase over the coming years. Notably, the university expects to spend an additional \$33 million on capital projects over the course of the 2018 – 2019 academic year.

Alumni Impact

The 2010 methodology for estimating state-based alumni uses an average annual cumulative chance of an HSU graduate leaving the state, opposed to actual campus-specific data used in the 2018 study. The difference between methodologies resulted in 4,421 fewer alumni in the 2018 analysis, however the 2018 methodology provides a more precise estimate.

Appendix D: Downscaling Regional Results to Estimate Impacts in the City of Arcata

This section provides an overview of the methodology used to downscale the regional IMPLAN results to estimate the portion of HSU's economic activity generated in the City of Arcata.

In order to downscale the results, ICF found the proportion Humboldt County's economic activity occurring in the City of Arcata. These estimates were based on three key metrics from the 2012 Economic Census of the U.S. including (1) Value of sales, shipments, receipts, revenue, or business done, (2) Annual payroll, and (3) Number of employees. Table D1 below shows the three economic metrics for both Humboldt County and the City of Arcata.

Table D1: USCB Economy-Wide Key Statistics: 2012

Geographic Area	Value of sales, shipments, receipts, revenue, or business done (\$1,000)	Annual payroll (\$1,000)	Number of employees
Humboldt County, CA	\$3,706,444	\$885,813	29,864
Arcata City, CA	\$683,959	\$178,704	6,899
Arcata Percent of Total	18%	20%	23%

Source: U.S. Census Bureau, American FactFinder. 2012. All Sectors: Geographic Area Series: Economy-Wide Statistics: 2012 (Humboldt County, CA & Arcata, CA)

These proportions were applied to output metrics from the IMPLAN analysis. Employment and tax revenues were scaled based on the number of employees, labor income was scaled based on annual payroll, and output was scaled based on the value of sales, shipments, receipts, revenue, or business done.

The downscaled estimates of employment, labor income, industry activity and tax impact are likely conservative estimates of the total economic activity generated in Arcata. This is due to the fact that HSU's direct spending occurs within city limits, and thus the total economic impact in Arcata is likely higher than the average City-County relationship for each factor provided by the U.S. Economic Census metrics.