University of Wyoming
Economic and Innovation Ecosystem Growth Plan

Contents

1a. Introduction

Wyoming serves as a model for place-based innovation and economic prosperity in rural America. With no town above 60,000 people and state population below 600,000, it is among the most rural states. Its economy is heavily dependent on energy and extractives (half of Wyoming's GDP), tourism and outdoor recreation, and agriculture (primarily ranching). In 2022, the Wyoming Business Council (WBC), the State's economic development agency, contracted Harvard's Growth Lab to assess the state economy and identify gaps. It noted vulnerability in a narrow reliance on energy and mineral exports, and recommended collaboration among our research university, the University of Wyoming (UW), Wyoming's community colleges, communities, and state agencies to diversify and cultivate economic opportunity. One of Wyoming Governor Gordon's key initiatives, Wyoming Innovation Partnership (WIP) supports collaboration among its IHEs to catalyze innovation, workforce development, and economic prosperity. WIP committed $69 million in FY23-25 for many projects, such as a network of makerspaces, coordinated curricula for workforce development aligned with the industry needs, preparing workforce for the emerging industries in the state, and seed funding for creative economy startups.

UW is Wyoming's only university (8,250 undergraduate enrollment) (1) and serves the dual role of a land-grant university and a flagship university. Thus, UW has a servant leadership role in engaging with the eight community colleges and local economic development organizations in advancing innovation and prosperity. With $150 million in research expenditures in FY23 (2), UW has a strong research base for robust innovation through acceleration of research translation to commercialization and societal impacts. The resulting growth

in technology startups, enhanced technical assistance to the existing industry, stronger connections to businesses, and increased knowledge-based jobs in the state will result in economic prosperity in communities with UW presence. UW President Seidel has made entrepreneurship, innovation, and economic prosperity cornerstones of his UW tenure since his arrival. These are now priorities for Deans as well as Vice Presidents (VPs). Consequently, the last four years were a time of unprecedented changes and new opportunities. President Seidel has marshalled UW resources, coordinated with key stakeholders, assembled statewide partnerships, and paved a path towards an inclusive and innovative ecosystem working towards economic prosperity and stronger communities.

UW's new Strategic Plan (3) integrates innovation and economic development activities throughout its goals of student success, faculty excellence, and state-wide engagement. VP Parag Chitnis is responsible for the Research and Economic Development Division (REDD) which includes 21 offices, centers, and institutes, including Small Business Development Center (SBDC) network, Manufacturing Works (MW), Technology Transfer Office (TTO), Center for Entrepreneurship and Innovation (CEI), IMPACT 307, and Office of Industry and Strategic Partnerships (OISP). VP Chitnis leads the Innovation and Economic Prosperity (IEP) designation activities, including self-assessment and implementation of UW's growth and improvement plan. Recent federal grants (EDA's University Centers grant, National Science Foundation's (NSF) Accelerating Research Translation grant, NSF's CO-WY Innovation Engine grant) demonstrate UW's potential for innovation and economic engagement. The IEP self-assessment and plan have allowed UW to identify priorities that address critical gaps and stakeholder needs.

1b. Review of Existing Infrastructure

The UW self-study work, led by REDD in collaboration with relevant campus units, formally kicked off in Fall 2023. President Seidel and REDD VP Chitnis created the taskforce to comprehensively review UW's economic and community engagement profile, incorporating existing reporting and collection of new data to identify goals. The taskforce represented a diverse set of perspectives, expertise, and disciplines ranging from economic development and community engagement to communications and academic units (1).

Self-assessment included two approaches: 1) collect and analyze recent self-studies and reports relevant to IEP designation and 2) conduct more surveys that complete the comprehensive analysis of UW's activities with diverse campus communities as well as external statewide partners.

Assessment of UW economic engagement assets and their effectiveness commenced prior to the formal efforts for IEP designation in Fall 2023. Resource mapping and overall economic development plan were formulated in early 2023, identifying REDD strengths, weaknesses, and capacity in these areas. Building from that momentum, President Seidel and VP Chitnis committed the institution to IEP designation pursuit, carrying out strategic planning sessions in the last quarter of 2023 and in the second quarter of 2024.

Additionally, input/feedback sessions with community stakeholders across the state and surveys created a foundation of data and plans for advancement of UW's economic engagement performance and capacity (2, 3, 4).

The timeline of these strategy and input sessions is as follows:

>   -May 2023- REDD Communications Plan Development and synthesis of UW economic development strategies
>   -June 2023- Mapping of University Entrepreneurial Resources Available
>   -September 2023- Strategic Planning- Incubation and Entrepreneurship Support

-December 2023- REDD Strategic Planning, IEP briefing to the President's cabinet
-February 2024- Sheridan-area Entrepreneurial, Small Business, and Economic Development Stakeholders Feedback Session
-March 2024- Cody-area Stakeholders Feedback Session
-March 2024- Casper-area Stakeholders Feedback Session
-May 2024- Service to Campus Strategic Planning
-July 2024- Process Improvement Strategic Planning, IEP briefing to the President's cabinet as well as the research council (associate deans or deans of colleges and schools)

Survey and Interview Design and Results

In Summer 2024, internal institution-wide survey and external key stakeholder interviews were conducted using the CECE tools. The two-methods approach was chosen to collect quantitative and descriptive information on which strategic and improvement conclusions and plans could be based.

The Wyoming Survey & Analysis Center developed the survey and analyzed the data to assess the current state of UW's economic engagement through all UW employees, to assure largest and widest participation (of UW offices throughout the state). Totaling 41 two-part ranked questions, the survey measured perceived importance placed by UW in specific areas and performance in those areas (footnote, internal survey). The survey questions were categorized by IEP instrument core blocks, scoring with Likert scale 1 to 7, measuring 'not at all important' to very important, and performing 'poorly' to 'very well'.

The survey response rate was 10.9% and received 466/4,273 responses (5). Respondent composition was representative of the distribution of UW employee categories (staff, faculty, administration).

To assess UW's impact across the state, the Association of Public & Land-grant Universities (APLU) IEP external survey tool was adapted into interview format, measuring partner perception of how UW should value/play a role in specific economic engagement activity, and how UW performs in those areas (6). The survey group conducted one-on-one interviews with leaders of nine key stakeholder economic and community engagement organizations and agencies across Wyoming, with whom UW partners on various projects and initiatives and/or represent other agencies and companies that partner with UW: Regional Small Business Association (SBA), Regional Economic Development Administration (EDA), Wyoming Governor's Office, Wyoming Economic Development Association (WEDA), WBC, Wyoming Business Alliance (WBA), Wyoming Community College Commission (WCCC), Wyoming Women's Business Center, and Wyoming Community Foundation (WCF).

High-level internal survey results showed UW should place high importance on all areas measured. The average for all importance scores was 5.7 out of 7. "Performance scores" were lower than "importance scores" on all questions. Performance scores were an overall average of 4.1 out of 7. The Engages and Asserts Institutional Leadership block scored the highest overall and on individual question scoring, demonstrating internal recognition of UW relationships and engagement in state economic growth. "Creates Supportive Culture" was the lowest scoring block, showing the need to better engage and incentivize faculty in economic engagement and improve agreement processes (7).

Interviews revealed comparable results, with elevated levels of statewide stakeholder engagement in economic and research engagement, with a notable increase in commitment to partnerships under the current institutional administration. Clearly communicating programming and points of contact, engagement across

internal units, faculty involvement, and user-friendly agreement/contract processes were repeatedly identified as areas to improve (8, 9).

Following the self-study, the taskforce presented to and received feedback from President Seidel, his Cabinet and other campus groups including the Research Council (10). Each group recognized the institution's roles in strengths and weaknesses and endorsed the improvement and collaboration plan and the IEP designation pursuit.

The self-study over the past 14 months comprises of the identification of UW economic engagement strengths, principal improvement areas, and associated action plans. The tools from CECE and their training helped in ensuring that the self-assessment through asset control and surveys lead to a growth and improvement plan that could potentially transform UW's trajectory in economic development.

1c. Economic Engagement Enterprise

Economic engagement at UW is not limited to establishing startups based on research translation. It includes a comprehensive approach to engage internal and external stakeholders to leverage UW resources and provide a coordinated approach to address economic, innovation, and community ecosystem needs. Community and economic engagement are promoted across research, education, and outreach activities at UW. Key external stakeholders include the community colleges, tribal groups and agencies, and state agencies such as WEDA, WBA, and the WBC. UW leadership has prioritized strengthening relationships with external stakeholders. The internal stakeholders are university faculty, staff, and students and the units/offices across UW interested in or engaged in fostering innovation, community, and economic engagement.

In our self-assessment activity, we identified the key units in REDD and at UW that contribute to economic engagement function.

The Small Business Development Center (SBDC) has nine locations in Wyoming and provides education, consulting, market research reports, classes and webinars, publications, web services, federal procurement (through APEX), federal Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) research dollars, and referrals to related agencies.

Manufacturing Works (MW) supported by NIST's Manufacturing Extension Program and WBC. MW provides broad technical help, engineering solutions, business assistance, marketing assistance, and financial counseling to Wyoming's growing manufacturing industry.

The Center for Business Economic Analysis at UW's College of Business, supports the economic growth and diversification of Wyoming's economy through services to businesses and communities such as amenities valuation, data analytics, economic and fiscal impact, economic modeling and forecasting, and access to faculty across UW.

Innovation WYrkshop provides an experiential learning environment across makerspaces to foster community innovation, creativity, curiosity, and entrepreneurship. These makerspaces are housed at educational institutions, public libraries, or community centers in six communities and through mobile trailers. UW provides oversight, programming, and coordination.

Great Plains Hub of NSF Innovation Corps (I-Corps) provides entrepreneurial training for researchers. The TTO, CEI, and IMPACT 307 described below leverage I-Corps to enhance entrepreneurship capacity.

UW Extension's rural vitality programming is key in aiding community development in all 23 Wyoming counties which have UW Extension offices.

IMPACT 307 has two business incubators (Laramie and Casper) committed to growing and strengthening the entrepreneurial community by providing resources and support for startups to thrive. IMPACT 307 is refocusing on high growth-oriented technology-based companies.

Technology Transfer Office (TTO) supports economic development for Wyoming through transfer of UW intellectual property to startups and established industries. In the last several years, the office underwent staff loss, causing reduced results. With new leadership at UW, TTO is now being restaffed with new vision of market-driven innovation strategy.

The Center of Entrepreneurship and Innovation (CEI) was formed recently to integrate innovation across the campus in collaboration with statewide agencies and organizations and for coordinating entrepreneurial educational activities at UW.

The Office of Industry and Strategic Partnerships (OISP) is a newly formed joint effort between REDD and the UW Foundation (UWF), tasked with developing industry engagements. OISP's goal is to increase industry/partner engagement and with economic, workforce, and educational agencies and organizations.

The Research Development Office (RDO) is focused on helping UW researchers to find funding opportunities and aid in proposal preparation, along with leading EPSCoR programming on campus.

UW is developing a core process for interacting with external stakeholders in a planned and cohesive manner to develop and implement an innovation, entrepreneurship, and community engagement ecosystem. Over the last year, UW has engaged more closely with its external stakeholders at all levels starting with the President, resulting in a better understanding of how it can work with and for them. UW's support of its state-wide initiatives has resulted in several notable achievements. And, as always, there is room for substantial improvements in establishing and fostering relations with external and internal stakeholders that can lead to greater success.

1d. Economic Engagement Planning

With UW's engagement enterprise in place, what challenges UW seeks to address, and how, must be carefully considered. Including the self-study for the IEP designation, UW continuously undertakes learning and growth efforts. Under the leadership with President Seidel and VP Chitnis, there is an ardent desire to build on the research, economic development, innovation, and entrepreneurship ecosystems that currently exist at UW. This is shown by the current UW Strategic Plan that integrates innovation and economic engagement commitments throughout the plan:

-"Prepare students for life and adaptation to a changing and increasingly digital world"
-"Value and reward all teaching, research, extension, engagement, innovation, inclusion, and service contributions to UW's mission and strengthen relationships with external stakeholders"
-"Invest in resources that enhance the health and well-being of the UW community"
-"Support Wyoming's economic and community development using the assets and expertise of all colleges and schools"
-"Enhance UW's connections with and service to the people of Wyoming"

However, challenges also exist. A recent study (April 2024) conducted by the Building State Capacity group at the Harvard Kennedy School identified several challenges to economic engagement in Wyoming and in Laramie (1). These include lack of collaboration, low tax revenues, remoteness, lack of economic diversification, job market mismatches, low diversity and population, culture and mindset, and low population density.

Independently, UW also recognizes these challenges that need to be addressed: low collaboration with local and state agencies, lack of housing in Laramie, lack of diversification of industry in Laramie and Wyoming, development of programs to train its faculty and student entrepreneurs, and access to capital and space for startups.

Going forward, UW's areas of focus for improvement (details in Growth and Improvement Plan) are to complete the internal infrastructure to support entrepreneurship and innovation ecosystems, accelerate culture changes within UW, expand and enhance communication with stakeholders and partners, and to unite these efforts to fully realize an interconnected innovation ecosystem across the state with the University fully engaged in facilitation.

The desire of REDD to engage and overcome the above challenges points to engaging more proactively with communities; industry; and local, state, and federal agencies. These collaborations are vital to the success of UW's efforts throughout Wyoming and are elaborated in the Growth and Improvement Plan.

To this end, UW leaders prioritized strong ties with the WBC, WEDA, WIP, state legislators, and other stakeholders. In addition, UW is actively engaged on two fronts to map the entrepreneurship and innovation ecosystem (in partnership with WBC and WIP) and develop a network of regionwide organizations and investors through IMPACT 307 and the TTO with funding through the Growth Accelerator Fund Competition at the SBA (2).

UW's support of its state-wide initiatives through its units has resulted in several notable achievements (detailed in the Summary of Accomplishments). However, as always, there is room for substantial improvements in establishing and fostering relations with external and internal stakeholders that can lead to greater success. UW is engaged in discussions on how to best implement its strategic goals as there are multiple focus areas that involve units across UW whose responsibilities range from communication,

community engagement, and social impact to economic development, industry engagement, and startups. The intent is to inculcate a holistic approach by UW to engage all stakeholders in Wyoming's economy.

Key REDD units responsible for this are the OISP, TTO, IMPACT 307, the CEI, and the RDO, along with other UW units such as the Office of Community Engagement (OCE) and Institutional Marketing and Communications. These offices will foster and encourage engagement between UW academic and research units and programs with industry, community, and economic development partners.

1e. Promotions and Communication

Key Communication & Planning Stakeholders: Engaging key stakeholders is essential to promoting economic goals. UW's internal audiences include students—future leaders and innovators, faculty—who drive research and innovation while highlighting and supporting community engagement initiatives. Staff and faculty provide crucial leadership and support in implementing initiatives. UW Trustees provide strategic oversight and guidance, university goal alignment, and extension of program's reach and impact. Alumni are key ambassadors and supporters, leveraging their networks and resources.

Externally, UW engages with a diverse range of stakeholders. These relationships include routine exchange of programming ideas and formal collaborations that extend services and opportunities in Wyoming. Industry partners align research and education with market needs. Governments at local, state, and federal levels provide funding, policy support, and collaboration opportunities. Not-for-profits and community organizations enhance community impact through partnerships. Collaborations with other institutions of higher education foster knowledge exchange and joint research. The Controlled Environment Agriculture collaboration between the University, community colleges, government, and companies, is generating research, workforce, and student opportunities, with funding from the WBC and Governor's Office, with all parties promoting the work (1).

Economic Engagement Communication Strategies: UW employs comprehensive methods to communicate and promote economic engagement efforts internally and externally. UW Institutional Marketing and Communications, in collaboration with REDD, manages internal communication strategies. The university website serves as a hub for news, updates, and resources. Regular updates are sent to the campus community through internal newsletters and bulletins, also serving to engage stakeholders about institutional events and meetings. Social media platforms offer broad outreach to the university community, and regularly distributed donor and alumni publications highlight achievements and opportunities.

Externally, communications strategies include distribution of the Annual Report (2), highlighting UW contributions and impact, regular engagement with media outlets (digital media, newspapers, radio, TV). Institutional Marketing and Communications media relations maximizes coverage and audience awareness. Social media reaches a broad external audience with updates and stories, paid advertising promotes key initiatives and events, and community outreach events, such as public lectures and Undergraduate Research and Inquiry Day (3), offer additional public engagement.

Effectively Sharing the Story: Outlined in the Growth and Improvement Plan section, UW commits to effectively sharing its economic engagement story through a comprehensive communication strategy. Recognizing need to continually strengthen communication and connection with community, Institutional Marketing and Communications has coordinated a series of 15 "UW in Your Community" outreach events across Wyoming in which UW team members travel to communities, connecting with local industry, education, and broader community members to share and hear about UW impact on talent, innovation, and place (4). REDD, in collaboration with Institutional Marketing and Communications, regularly publishes media releases to ensure timely updates on economic development news and works with press to communicate UW's contributions and impact.

Recognizing that UW has fallen behind in communicating innovation and economic engagement activities, REDD took a significant step by creating its own Marketing and Communications group. This group collaborates closely with Institutional Marketing and Communications to amplify internal and external communication efforts. It uses metrics-informed strategies and decision-making to enhance communication

effectiveness, produces in-depth videos, podcasts, and web articles for long-form storytelling, and coordinates social media publications to ensure broader reach and engagement.

REDD is also forming an action committee to address the communication gap found in the self-study. This committee will explore issues in depth developing a comprehensive set of solutions to improve the dissemination of innovation and economic engagement information. Additionally, this year, REDD is starting to publish a regular 16-page section in UWyo Magazine, which appears three times annually and has a distribution of 30,000 subscribers. The first issue of 2025 will feature an edition entirely dedicated to UW innovation and economic development.

This strategic approach ensures UW effectively communicates its economic engagement efforts to and with internal and external stakeholders, enhancing visibility and impact.

1f. Advancing University Engagement Practice

UW's commitment to advancing economic engagement is best characterized by its support of the community of practice with internal and external stakeholders, and active engagement with organizations to share best practices, make connections, and be a catalyst for collaboration.

Key leaders at UW have strong background in growing the research enterprise, engaging in economic development, providing entrepreneurship training, and creating robust workforce development initiatives. This includes President Seidel; VP Parag Chitnis; Deputy VP for Research and Innovation, Arundeep Pradhan; Senior Director of Strategic Partnerships, Curtis Biggs, and Director for the CEI, Robert Macy. The latter three positions are newly created and represent UW's commitment to its mission to participate in and develop the entrepreneurial and innovation ecosystem around the institution and across Wyoming.

As a result of this expertise and leadership there is a strong desire to plan and build on the current innovation and entrepreneurship ecosystem that exists at UW. This is evidenced by the five goals in the current UW strategic plan, as outlined in the Economic Engagement Planning section of this application. The UW strategic plan addresses preparing students for a digital world, investing resources in the UW community, supporting Wyoming's economic and community development, enhancing connections, and valuing and rewarding community, economic, and entrepreneurship activities.

UW will build on these commitments and develop strategies to implement its objectives through the creation of a team comprised of representatives from the offices and outside stakeholders engaged in activities that support innovation and community engagement. UW has several groups and committees that already operate in this area (e.g., Associate Deans for Research Council), and in the first year, UW will identify the appropriate group or committee with which to task these activities. In addition, the University has recently created and filled a key position, the Deputy VP for Research and Innovation, that will play a critical role in the establishment and execution of the strategies to achieve the University's objectives (1).

It will also be important to engage with a broader set of organizations that include the community colleges in Wyoming and the cities in which they are located - Sheridan, Rock Springs, Cheyenne, Casper, Riverton, Gillette, Torrington, and Powell to better understand the needs of the communities in which they are located and how the UW can collaborate with the community colleges to address those needs.

Externally, UW is engaged with multiple organizations such as the APLU, AUTM (previously the Association of University Technology Managers), the Association of University Research Parks, Network of Academic Corporate Relations Officers, National Academy of Inventors, University Economic Development Association, and University Industry Demonstration Partnership. Participation in events led by these organizations allows UW to learn and share practices that will enable UW to incorporate best practices in its efforts to develop the entrepreneurial and innovation ecosystems for Wyoming. Representatives from UW now regularly attend and participate in events hosted by these organizations. In addition to the national organizations listed above, UW is also actively engaged with chambers of commerce across Wyoming, WEDA, Ecosystem Builders Leadership Network, Harvard Growth Lab, and the Interagency Working Group – hosted by the state budget office to help obtain grant funding.

Other initiatives at UW include the Presidential Leadership Academy, Presidential Fellows on economic development that provide incentives for UW employees to participate in economic development and community engagement (2).

UW hosts or participates in local and regional events such as the John P. Ellbogen $50K Entrepreneurship Competition and Entrepreneurial Ecosystem Competition (held annually since 2001), WIP summit, Governor's Business Forum (collaboration with WBA, now being held on UW campus), Hackathons, SBDC related events, and SBIR/STTR webinars.

Successful engagement programs include Library to Business presentations, the Community Navigator Pilot Program, and SBA small business award winners (3,4,5).

2. Summary of Accomplishments

Through the self-study process, UW has achieved accomplishments in three broad areas necessary to develop, foster, and maintain a vibrant and engaged entrepreneurship and innovation ecosystem: Strengthening Place; Fostering Talent, and Creating Strong Foundations for an Effective Ecosystem for Innovation. These accomplishments map to the goals elaborated in the Growth and Improvement Plan.

The self-study included a thorough review of past activities, initiatives, programs, ongoing efforts, conversations with external and internal stakeholders, and connecting with groups across campus and Wyoming. The process provided a holistic assessment method for getting to the heart of the UW's economic and community engagement, development, and impact. Preparing the application for IEP designation showed certain strengths and achievements echoed throughout this undertaking. Some notable accomplishments outlined below are categorized by how they address the needs of the entrepreneurship and innovation ecosystem and how they relate to goals outlined in the Growth and Improvement Plan.

Accomplishment 1. Strengthening Place through Commitment to Engagement and Impact

These accomplishments focus on strengthening the community, entrepreneurship, and innovation ecosystem. UW's continual commitment to engagement and impact shines in its values, partnerships, and efforts of units, that are shaping campus culture, which has been positively received by internal stakeholders. Additionally, external stakeholders agreed that the university had high engagement levels across Wyoming. Some notable accomplishments are:

> -UW's successful 2023 application for Carnegie's Foundation's Elective Classification for Community Engagement highlighted this ongoing work across the institution and state (1). (Goal 2)
> -Creation of a "roadmap" of best practices to direct community engagement and deepen facilitation and support of engagement. The roadmap identified gaps and allowed UW to develop and implement strategies to address existing gaps through innovative approaches and evaluate the university's community, social, and cultural impact through engagement (2). (Goals 2 and 3)

UW Extension, based out of the College of Agriculture, Life Sciences, and Natural Resources, has offices in each of Wyoming's 23 counties and the Wind River Reservation (3). External stakeholders view Extension as an asset for economic growth. Standout Extension accomplishments include:

> -Cent$ible Nutrition Program, which is focused on making cooking and eating affordable for low-income homes and financial literacy programs for individuals and families as part of UW's Community Development Education Program (4). (Goals 2)
> -A strong 4H program that has many technology-based outreach and an interest in integrating entrepreneurship training with their programming.

In 2023 UW reestablished the OCE (formerly known as the Office of Engagement and Outreach) (5). This symbolized UW's continued commitment to engagement and impact statewide. In Spring 2024, OCE hosted the Community-Engaged Faculty Institute (6). The sessions served to educate faculty on integrating experiential and service-learning into the classroom, hosting community partners to share expertise and build relationships. OCE's work is highly regarded and valued by internal stakeholders as it conveys UW's high regard of engagement, fostering a campus culture, and prioritizing impact. A notable and significant result of this effort and relationship-building was:

> -A faculty course design that provided students hands-on educational and professional development opportunities supported by regional partners. (Goals 1 and 2)

IMPACT 307, MW, and SBDC have a physical presence throughout the state. For example, IMPACT 307, through a grant from EDA, conducted statewide startup challenges, resulting in 309 startups created over a 3-year period.

This focus connecting internal and external stakeholders, activities to achieve impact, exploring opportunities such as experiential learning and mentorship is an area external stakeholder also saw as a strength. These endeavors contribute to the sentiment expressed by both internal and external stakeholders that UW is a strong collaborator with government, business, and community leaders. Further, there is an increasing awareness and appreciation of UW's support of actionable economic growth priorities in Wyoming communities.

Additionally, UW has a strong record of accomplishment in engaging with communities in other settings. Examples include K-12 Roadshow by UW's Science Initiative that visited over a dozen schools and reached over 2000 students annually (over 4,000 in Fall 2023) (7). Similarly, UW organizes UW in Your Community events once a month that involves UW President, administrators, and local UW students engaging with communities around the state.

Accomplishment 2. Fostering Talent On Campus and Statewide

The themes of talent development and innovation were woven throughout the self-study process and emphasized by stakeholders as assets within the professional and academic arenas. In addition, partnerships with local and state agencies and industry were viewed overall as a strong suit of UW by internal stakeholders (8). UW units such as SBDC, MW, and IMPACT 307 speak directly to talent development and innovation fostered by UW units statewide. Programs, events, and trainings developed by IMPACT 307, SBDC, MW, TTO, and the CEI have been and are delivered across UW and Wyoming through partnerships with local economic development organizations and community colleges.

-Programs through IMPACT 307 and SBDC were spoken of highly by external stakeholders as building blocks of Wyoming's entrepreneurial ecosystem and as a basis for ongoing talent development and innovation opportunities (7, 9, 10). (Goals 1 and 3)

   -UW's College of Business endeavors interject talent development and innovation into campus and Wyoming. Its annual John P. Ellbogen $50K Entrepreneurship Competition, now on its 24th year, advances these values through encouraging community college and university students to formulate original business ventures and work with a network of organizations, entrepreneurs, and community investors (11). (Goals 1 and 3)

   -The College of Business' SparkTank is another innovative program pushing professional, academic development, and community engagement. Comprised of students from the college's Ethics Club, members work with regional nonprofit organizations, getting to know these organizations and their missions, and helping them craft and finalize pitches. These pitches are presented, and funding is awarded to the most promising pitches, supporting the community while also supporting student development (12). (Goal 1)

   -The College of Business's Entrepreneurship Bachelor of Science and Venture Master of Business Administration degree programs encourages students to work with local startups and businesses on business and capital plans (13, 14). (Goal 1)

   -UW's College of Law Practicum pairs students with local companies to address simple legal needs (15). (Goal 1)

-WIP announced 10 $25,000 awards in July 2024 to businesses and individuals in the Creative Economy in Wyoming (16). (Goal 1)

-The CEI has initiated student-facing programs focused on talent and workforce development. Students were connected to principles of innovation through partnership with companies and communities, including Plenty and the City of Laramie. In collaboration with these partners, students learned about and tackled real-world challenges facing Wyoming, applying principles to what they learn about Wyoming's economic and innovation ecosystem (17). (Goal 3)

-The positive impact of these endeavors is visible in the views of external stakeholders and internal stakeholders, who concluded that workforce development/training and entrepreneurial/innovation support, and prioritizing economic growth, respectively, are areas where UW is doing well (18, 19, 20).

-All these activities and accomplishments align with the internal and external stakeholder views that UW is strong in its collaboration with business and community leaders, in fostering private-public relationships, and with external stakeholder conversations on comprehensive entrepreneurial training and experiential learning and mentorship (18, 19, 20).

Accomplishment 3. Generating an Ecosystem for Innovation

Cultivating an environment that fosters innovation has been a key focus at the UW and has emerged as a successful cornerstone of the institution. This success is supported by a strong campus culture, leadership, and partnerships highlighted as assets of UW by internal stakeholders. External stakeholder feedback emphasized that one of UW's fortes is in entrepreneurial and innovation support and engaging with economic development initiatives which drive innovation.

A longstanding UW innovation effort is the Wyoming SBIR/STTR initiative (21), which works to connect small businesses and innovators with innovative technologies to federal government research and development funds, through providing statewide outreach through workshops, webinars, and mentoring. Through the SBIR/STTR initiative, innovation opportunities are generated and economic ecosystems are reinvigorated with innovative technologies, ideas, and knowledge. Over the last five years, companies in Wyoming had 78 proposals funded resulting in $30,637,151.86 in funding (22). (Goal 1)

The Wyoming Community Navigator (SBA-funded) program successfully provided support services to Wyoming businesses in underrepresented/underserved communities; the program received a 2023 WEDA Innovation award (23).

Another innovation driver at UW and in Wyoming was the WIP, an ongoing cooperative economic development effort launched in 2021 that is a partnership between UW, Wyoming Governor's Office, WBC, Wyoming's community colleges, Wyoming Department of Workforce Services, Wyoming Department of Education, and the WCCC (24). WIP is the focal point of efforts by UW's President Seidel and Provost Carman to prioritize community engagement and economic development statewide. WIP implements entrepreneurship, innovation, and business skill programs across the state, such as the Wyoming Outdoor Recreation, Tourism, and Hospitality Initiative (WORTH) (25). WORTH supports Wyoming's second-largest economic sector by developing partnerships with industry and community leaders to provide experiential learning for students, professional development for the workforce, and outreach services to Wyoming's tourism industry. WORTH notably co-hosts the Inter-Tribal Tourism Summit in partnership with the High Plains American Indian Research Institute (HPAIRI), a conference engaging directly with the sovereign nations and inhabitants of the Wind River Indian Reservation, with 27 presenters, 7 presentations, and 80

attendants (26). WIP's priority through these partnerships and initiatives is to develop innovations that build Wyoming's economy and workforce. (Goal 1, 2, and 3)

The OISP symbolizes UW's forward-looking focus on innovation. Formed in January 2024 as a venture between UW and the UWF, it establishes partnerships between the university, industry, and non-industry partners to foster innovation and economic impact. This new office is a vehicle for UW to bolster university-industry collaboration and innovation, speaking to the university's prioritization of economic development and partnerships, and further shaping a campus culture of innovation (27). (Goal 1)

In addition, UW is actively restructuring and refocusing TTO, IMPACT 307, and CEI to be more proactive and responsive to all stakeholders. Each of the above offices is engaged in creating new positions, setting roles and responsibilities, and actively recruiting for those positions: three FTEs in the TTO, two FTEs in IMPACT 307, and one FTE in CEI.

UW's engagement with communities, stakeholders and companies extends beyond the examples presented above. UW is a leader in innovation for major Wyoming industries, including its largest—energy resources.

-UW's Center for Innovation for Flow through Porous Media (COIFPM) (28) this year began a public-private partnership for research aimed at revitalizing legacy oil fields in Campbell, Converse, and Johnson counties, under the Wyoming Gas Injection Initiative (29). Full implementation of the technologies looks ahead to 2026 and the project will extend to 2030 and beyond. COIFPM facilities are unique and the only kind in the world. Small and large local and multinational companies seek to collaborate with the expertise at COIFPM to further their needs. COIFPM has already created successes for companies internationally and will do the same for Wyoming. (Goals 1, 2, and 3)

-In addition to COIFPM, the School of Energy Resources (SER) is a unique resource of expertise. SER is dedicated to energy-driven economic development for the state of Wyoming. Created in 2006, SER enhances the university's energy-related education, research, and outreach (30). SER directs and integrates innovative energy research and academic programs at UW and bridges academics and industry through outreach programs. SER's outreach program furthers engagement with stakeholders - communities, researchers, and industry - helping SER understand the needs of communities as well as potential employers and continually evaluate how to best prepare students; SER's expanding outreach program also informs its research priorities. (Goals 1, 2, and 3)

These exemplars of UW's efforts highlight the breadth and scope of how UW engages with a variety of groups and communities to address community needs and participate in the development of entrepreneurial and innovation ecosystems to address those needs. This engagement occurs across the UW campus through several programs, offices, and units. These efforts have been started by individuals or programs interested in activities to engage the community. The IEP self-study highlighted the synergies that exist at UW and can be better coordinated for an even greater impact.

3. Growth and Improvement Plan

The self-study results (internal survey and external interviews) identified three overarching areas of improvement needed to grow UW's innovation and economic engagement as outlined in Goals 1, 2, and 3 below. Addressing these key goals will enhance UW's ability to impact communities in Wyoming beyond the classroom through community engagement and research translation. Each growth and improvement goal described below has a champion responsible for implementing the goal over the next five years (identified in the table).

Goal 1: Construct and complete the innovation and economic engagement ecosystem.

1.1. Reinvigorate and reimagine the technology transfer, entrepreneurship, and innovation units.

Need: The self-study revealed that a functional and proactive TTO, supportive incubator/ accelerator (IMPACT 307), and training through the CEI are essential for vibrant innovation system; and that these units are not fulfilling that role.

Readiness: TTO, IMPACT 307, and CEI receive significant funding (about $3M per year). In 2023 UW began restructuring these units to be proactive and responsive to the UW community. Recent hires Arundeep Pradhan, Deputy VP for Research and Innovation, and Robert Macy, Director of CEI have extensive experience in these areas. Recruitment of directors for TTO and IMPACT 307 is underway.

Improvement Plan Activities:

When fully staffed, TTO will have 4.5 FTE (two times more than in the past). UW contracts with APIOiX and CSU-STRATA (Colorado State University's TTO) to provide technology transfer and entrepreneurial training, mentoring, and outreach to ensure a fully functional TTO in 2024. Using the Accelerating Research Translation grant (1) as a catalyst, the TTO will be more proactive in bringing market, industry, and community information to UW researchers and entrepreneurs to result in higher quality disclosures, patent applications, licenses, and startups.

IMPACT 307 lost its focus on technology-based startups. With a new mandate and staff, IMPACT 307 will engage entrepreneurs across UW in the business, legal, and R&D aspects of startups. IMPACT 307, TTO, and CEI will work closely to provide programming, mentoring, and education to UW entrepreneurs. IMPACT 307 will also work with local organizations in communities across Wyoming to provide services and support for technology-based startups.

CEI will launch three innovative programs to increase the innovation and entrepreneurship capacity of UW:

-An undergraduate innovation and consulting course, in collaboration with the SBDC, in which interdisciplinary undergraduate students work with businesses and non-profits to address their needs.

-A graduate technology commercialization fellowship program, in collaboration with TTO, in which interdisciplinary teams are paired with university technology startups, and/or patents from the university patent portfolio, to further commercialize these technologies.

-A master craftsman program, in collaboration with the department of Visual Arts, in which students gain training and hands on skills from ideation to prototype.

-CEI will increase its collaboration with other UW units, e.g., launching a UW chapter of the Collegiate Entrepreneurship Organization to establish a formal mentoring program for UW entrepreneurs and grow the NSF I-Corps at UW.

1.2. Fully establish and functionalize the Office of Industry and Strategic Partnerships (OISP)

Need: UW has a strong record of industry collaborations, 4-6% of research expenditures, which is comparable to industry-sponsored research at larger universities. However, UW's efforts are concentrated in the energy sector and fragmented in different colleges and schools (UNITE 2024 survey). The self-study revealed that UW needs infrastructure and processes for coordinating corporate engagement to advance its research agenda and to foster student success through industry engagement including internships.

Readiness: In 2023, UW committed significant resources to establish the OISP, a joint effort between UW and the UW Foundation to be more responsive and efficient in developing industry engagements. OISP's goal is to increase industry/partner engagement and deepen relationships with economic, workforce, and educational agencies and organizations resulting in higher numbers of grants, contracts, gifts, and internship opportunities for UW students. OISP serves the needs of all colleges and schools, leveraging their efforts and supporting them in making new connections.

Improvement Plan Activities:

-OISP will expand from 4 to 6 FTEs in 2025, adding key staff to support partnering with governmental, nongovernmental, and nonprofit entities.

-Form an OISP campus governance council, comprised of key members from UW to provide crucial ideas and feedback on OISP initiatives.

-Build a campus shared data community, with a goal toward unified systems and trust across units.

-Partner with corporate engagement consultant (UNITE) to optimize UW teams and create the framework for industry engagement.

1.3. Establish UW research park and enhance venture capital access.

Need: The self-study identified two critical resource gaps, space and access to capital, that limit growth of startups and early-stage technology-based companies. UW needs to identify and partner with stakeholders to develop and build these resources. This is a high-risk high-impact objective and will require working closely with the UW Board of Trustees for approval.

Readiness: IMPACT 307 facilities are not suitable for startups that need wet lab space or for startups that need to expand. UW executed an MOU with the Western Research Institute in Spring 2024 to house/mentor startups in the energy and minerals sectors. In 2024, UW also collaborated with the Laramie Chamber Business Alliance and WBC, the statewide agency for economic development, to identify space and facilities resulting in two companies (Plenty and Safran Passenger Innovations) moving their R&D activities to UW's Cirrus Sky Technology Park, resulting in over 300 technology jobs in Laramie.

Improvement Plan Activities:

-Work with city and state agencies to identify opportunities for developing infrastructure at the Cirrus Sky Technology Park where companies can take advantage of UW's research enterprise and access a qualified workforce.

-Identify and implement strategies to convert vacant wet labs in the UW Bureau of Mines building to create an incubator; develop strategies to raise funds for the conversion (six companies currently leasing space from UW can be moved to the proposed incubator).

-Leverage existing opportunities for startups (SBIR/STTR funding, Gener8tor, Wyoming Venture Capital) to develop and implement a gap funding program for technology development and a seed fund for startups with the UWF and key interested stakeholders.

Goal 2: Enhance the entrepreneurship, innovation, and economic engagement culture at UW

UW will change its culture by providing opportunities, incentives, reducing barriers, and recognizing accomplishments for translational research, entrepreneurship, and economic engagement activities.

2.1. Recognize faculty engagement with research, community, industry, and economic development partnerships

Need: As indicated by the internal survey, there needs to be an alignment of these activities with the reward system (review, promotion, and tenure) internally; and, as per both internal and external stakeholders more efficient processes for industry and faculty to engage.

Readiness: UW has proposed inclusion of community, industry, and economic development activities in the review, promotion, and tenure policies. These new policies are being evaluated and implemented at the college and department levels.

Improvement Plan Activities:

-Work with the provost, deans, and department chairs in implementing policies that reward faculty economic engagement involvement/contributions. The College of Engineering and Physical Sciences and the Mechanical Engineering department are adopting these new guidelines.

-Create a database of faculty expertise and make it available to stakeholders.

-Encourage faculty participation in opportunities related to community, industry, and economic development.

-Provide translational research funding opportunities for researchers.

-Improve the service orientation to leverage experts, university departments, and colleges to proactively address issues facing Wyoming communities.

2.2. Streamline processes to reduce barriers for collaborations and partnerships with community, industry, and economic development agencies.

Need: Current processes at UW are perceived as cumbersome and siloed with little communication between offices responsible for implementing and executing collaborations and partnerships. UW has a process for corporate engagement that can be adapted to identify community and other research partners. For example, WCF grants help pay for non-profit employees to take courses toward a master's in public administration.

Readiness: UW has over the last year focused on restructuring TTO and IMPACT 307, creation of the OISP and the RDO, and increased staffing of the Pre-awards office.

Improvement Plan Activities:

-Assemble task force to identify current issues and processes that create delays in establishing partnerships and collaborations and identify workable solutions.

-Create and adopt a systematic and phased approach for engaging economic development, research, non-profits, and non-industry strategic partners.

-Create a "Front Door" for external partners that would guide external partners to the appropriate units, offices, and faculty at UW via a relationship manager i.e., 'concierge'.

-Streamline procedures for contracts and agreements, faculty-company collaborations, and creating connections between UW, entrepreneurs, and organizations.

-Identify best practices, metrics for success, training partners, and successful communication process.

2.3. Develop a systematic approach to grow the research enterprise and identify and develop strategic economic development and research partnerships.

Need: Based on internal feedback, there is a need to grow the research enterprise and effective partnering mechanisms. Current UW approaches are siloed with limited focus on translational research.

Readiness: UW established the RDO and has also undertaken an analysis of its research capacity to determine where and how it can grow the research enterprise.

Improvement Plan Activities:

-Work with department chairs, deans, and UW senior leadership to develop strategies and incentives for growing the research enterprise.

-Increase awareness of the Research Development Office.

-Engage more closely with the state Grants Management Office, other state agencies, and universities to address research and workforce development opportunities.

-Create/Provide opportunities for faculty engagement in economic and community partnerships.

Goal 3: Expand strategic communication and training to maximize innovation and economic engagement awareness.

Goal 3.1. Implement a comprehensive communication and outreach strategy

Need: The self-study indicated a critical state-wide need for a comprehensive communication strategy to disseminate information on success stories, partnerships, connections, innovations, and economic engagement. Internal and external stakeholders also noted difficulty in finding relevant information on the UW website.

Readiness: UW's "World Needs More Cowboys" campaign established UW's presence throughout the state as being responsive to communities. UW is leveraging the relationships established to engage in dialog with communities in Wyoming. Having received the Carnegie Community Engaged Campus designation, UW is prioritizing engagement and outreach through multiple UW units.

Improvement Plan Activities:

-Develop a high-level task to review the website for gaps and implement strategies to address those gaps resulting in a user-friendly website that enables information access.

-Explore different marketing channels like YouTube, podcasts, and events to communicate effectively with internal and external stakeholders.

-Collaborate with regional leaders by utilizing UW's cultural and athletic activities.

-Partner with communities to prioritize public/private partnerships and investments that drive economic growth.

Goal 3.2. Connect continually with the internal and external stakeholders through two-way communications

Need: Self-study showed siloing across campus and between economic development ecosystem partners; and the desire to bolster collaborative efforts that bring key stakeholders for economic engagement and innovation activities together.

Readiness: UW is leveraging existing and longstanding partnerships with community and economic development organizations to build and strengthen its participation via hosting events, like the Wyoming Governor's Business Forum.

Improvement Plan Activities:

-Improve the economic development ecosystems to create networks to facilitate interactions among key UW personnel and regional economic entities.

    -Build on the success of hosting the Governor's Business Forum and facilitate more regional and statewide conferences and other events.

    -Increase participation in events like the Connect2Women conference and others that focus on workforce and economic issues affecting Wyoming.

    -Highlight UW's research success through an annual event honoring researchers that engage in entrepreneurial and economic development activities.

Goal 3.3. Develop proactive place-based economic development partnerships.

Need: Build systems of trust with rural communities through economic and workforce development partnerships.

Readiness: Leverage UW Extension's relationships with community and local businesses; existing relationships OISP and WIP have with community colleges, local, state, and federal agencies, and organizations; and the work HPAIRI engages with Tribal organizations.

Improvement Plan Activities:

-Promoting civic discourse through facilitated dialog with communities.

-Work with extension and rural entrepreneurs to bolster business support services.

-Engage more with the community colleges to share programing and support their entrepreneurial and innovation ecosystems.

-Engage more with tribal governments on economic and workforce development initiatives building on current relationships.

Links and Sources

1a.
- https://www.uwyo.edu/oia/fact-book.html (1)
- https://www.uwyo.edu/news/2024/02/uw-is-doubling-down-to-support-economic-growth-in-wyoming.html (2)
- https://www.uwyo.edu/strategic-plan/index.html (3)

1b.
- https://docs.google.com/document/d/1K5VrID-jkHh2ZN7Ai2L18LgxDUgkb9QI/edit (1)
- https://docs.google.com/document/d/18Fqqzrc_gtkxyv4zXFYZIKTMqEVttxYb/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (2)
- https://docs.google.com/document/d/1DAZua0QRIxrvWW3tBH-m72DdgI83A6sQ/edit?usp=drive_link&ouid=109802726485292366321&rtpof=true&sd=true (3)
- https://docs.google.com/document/d/1b_fxszN1Rvf933W3s-7OJrm2MOrOfP9u/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (4)
- https://docs.google.com/document/d/1-m6HMUZlTIwNhjgxXWgab4Qzh8B1Q32T/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (5)
- https://docs.google.com/document/d/1SuQfFQHA7EZgnK472PL2r4HfLhfAZmPp/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (6)
- https://docs.google.com/document/d/1g6fQow-_xvHM4ttbTLJVuYYMLacHWO0U/edit?usp=drive_link&ouid=109802726485292366321&rtpof=true&sd=true (7)
- https://docs.google.com/document/d/1SuQfFQHA7EZgnK472PL2r4HfLhfAZmPp/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (8)
- https://docs.google.com/document/d/1jyKHdWRQa6Jzh3ZQd_n88KfIPJBtbNj_/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (9)
- https://docs.google.com/presentation/d/1AmuDGooX3g8-VC3bxoJyPFNuUw-sxIEO/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (10)

1d.
- https://drive.google.com/file/d/1yGhvAiMbbPy75JR8EmwFG2xfhsCNqtcn/view?usp=sharing (1)
- https://www.sba.gov/article/2024/04/23/sba-announces-2024-growth-accelerator-fund-competition-stage-one-winners-3-million-prizes-awarded (2)

1e.
- https://ceaworkshop2024.rsvpify.com/?securityToken=cdfp0I1SJ3HCBaEUMxrcp4fTAfV2T7pS (1)
- https://www.uwyo.edu/research/research-at-uw/annual-reports.html (2)
- https://www.uwyo.edu/research/research-at-uw/undergrad/index.html (3)
- https://www.uwyo.edu/news/2024/01/uw-in-your-community-event-jan-29-in-cheyenne.html (4)

1f.
- https://www.uwyo.edu/news/2024/07/uw-appoints-pradhan-as-deputy-vp-for-research-and-innovation.html (1)
- https://www.uwyo.edu/president/initiatives/presidential-fellows/index.html (2)
- https://www.uwyo.edu/libraries/about/news-events/2021/10/wyoming-library-to-business.html (3)
- https://www.uwyo.edu/news/2023/09/uws-cnp-receives-wyoming-economic-development-innovation-award.html (4)
- https://www.uwyo.edu/news/2023/08/uws-wyoming-sbdc-network-awarded-sba-cybersecurity-grant.html (5)

2.
- https://www.uwyo.edu/news/2024/01/uw-achieves-national-community-engagement-designation.html (1)
- https://drive.google.com/file/d/1dWlUBC8DGYRByAc2nlcMWfynoR-csQN9/view?usp=sharing (2)
- https://www.uwyo.edu/uwe/ (3)
- https://uwyocnp.org/ (4)
- https://www.uwyo.edu/engagement/index.html (5)
- https://www.uwyo.edu/news/2024/05/nine-complete-uw-community-engaged-faculty-institute-program.html (6)
- https://www.uwyo.edu/science-initiative/_files/newsletters-and-reports/si-newsletter-spring-2024.pdf (7)

- https://docs.google.com/document/d/1g6fQow-_xvHM4ttbTLJVuYYMLacHWO0U/edit?usp=drive_link&ouid=109802726485292366321&rtpof=true&sd=true (8)
- https://docs.google.com/document/d/1qCkgB8fxrTRzZHZ4QyMwvF18yV4Iiz8x/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (9)
- https://docs.google.com/document/d/1b_fxszN1Rvf933W3s-7OJrm2MOrOfP9u/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (10)
- https://www.uwyo.edu/news/2024/04/uws-john-p-ellbogen-50k-entrepreneurship-competition-and-entrepreneurial-ecosystem-fair-april-24.html (11)
- https://www.uwsparktank.org/ (12)
- https://www.uwyo.edu/news/2023/01/uw-entrepreneurship-program-wins-top-national-award.html (13)
- https://www.uwyo.edu/mba/venturemba/index.html (14)
- https://www.uwyo.edu/law/experiential/practicums/business-practicum.html (15)
- https://www.uwyo.edu/news/2024/07/uw-announces-wip-creative-economy-start-up-challenge-winners.html (16)
- https://www.uwyo.edu/news/2023/04/uws-wycei-and-honors-college-offer-three-week-summer-entrepreneurship-course.html (17)
- https://docs.google.com/document/d/1g6fQow-_xvHM4ttbTLJVuYYMLacHWO0U/edit?usp=drive_link&ouid=109802726485292366321&rtpof=true&sd=true (18)
- https://docs.google.com/document/d/1SuQfFQHA7EZgnK472PL2r4HfLhfAZmPp/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (19)
- https://docs.google.com/document/d/1jyKHdWRQa6Jzh3ZQd_n88KfIPJBtbNj_/edit?usp=sharing&ouid=109802726485292366321&rtpof=true&sd=true (20)
- https://www.uwyo.edu/sbir/index.html (21)
- https://docs.google.com/spreadsheets/d/1TD5jryXrfWVtCwFUXMmYLHFqvTbA_sod/edit?usp=drive_link&ouid=109802726485292366321&rtpof=true&sd=true (22)
- https://www.uwyo.edu/news/2023/09/uws-cnp-receives-wyoming-economic-development-innovation-award.html (23)
- https://wip.wyo.gov/home (24)
- https://www.uwyo.edu/worth/index.html (25)
- https://www.uwyo.edu/worth/_files/worth-annual-report-2023.pdf (26)
- https://www.uwyo.edu/news/2024/01/new-uw-office-of-industry-and-strategic-partnerships-fosters-innovation-and-economic-impact.html (27)
- https://www.coifpm.org/ (28)
- https://www.uwyo.edu/news/2024/01/uw-porous-media-center-leads-50m-oil-field-revitalization-pilot-program-with-industry.html (29)
- https://www.uwyo.edu/ser/index.html (30)

3.
- https://www.uwyo.edu/news/2023/12/uw-receives-6m-nsf-grant-for-research-commercialization-effort.html (1)