

**Program Administrative Handbook for Local Directors**  
**Adult Education**  
**Wyoming**  
**Chapter 1: Introduction and Roles**

**Mission**

By providing innovative and cutting edge, research-based instructional practices, career pathways aligned trainings, career services, monitoring and leadership activities, Wyoming’s Adult Education programs offer the tools and strategies necessary for statewide program success. Programs will effectively and efficiently deliver quality, learner centered adult education services to out-of-school youth and adults to carry out their roles as workers, parents, citizens, and community participants.



**Vision**

Wyomingite’s will possess the knowledge and skills necessary to compete in a global economy, to exercise the rights and responsibilities of citizenship and as community members, and to be involved in the lifelong learning process for themselves and family members.

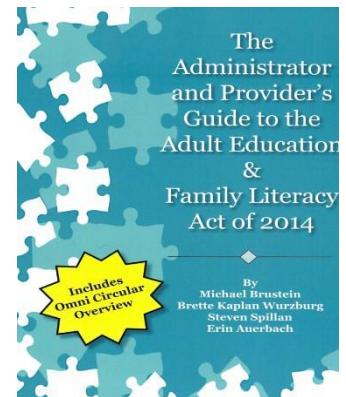
**I. Legislation and Guiding Principles for Adult Education in Wyoming**

**Adult & Family Literacy Act (AEFLA)**



As a federally support, grant funded program, Wyoming’s Adult Education programs are subject to the principles and concepts outlined by multiple federal legislations. Of utmost importance is the Workforce Innovations and Opportunities Act (WIOA) which was passed in 2014. This Act is a landmark legislation designed to strengthen and improve our nation’s public workforce system and help get American’s, including youth and those with significant barriers to employment, into high-quality jobs and careers and help employer shire and retain skilled workers.

To help local director’s understand the key concepts and principles outlined in WIOA legislation, each program has received ‘The Administrator & Provider’s Guide to the Adult Education and Family Literacy Act of 2014’. This guidebook puts WIOA legislation into laymen’s terms for AEFLA programs and is a very useful tool for director’s to utilize to begin to understand WIOA legislations impact and requirements for Adult Education. A link to WIOA legislation is available at:



<https://www.congress.gov/113/bills/hr803/BILLS-113hr803enr.pdf>.

**Legislative Key Concepts for Adult Education**

SECTION 221-225		SECTIONS IN THE LAW
<b>ADULT EDUCATION AND FAMILY LITERACY ACT (AEFLA)</b>		
State provisions	-	Section 221—State Administration
	-	Section 222—State Distribution of Funds; Matching Requirement
	-	Section 223—State Leadership Activities
	-	Section 224—State Plan
	-	Section 225—Programs for Corrections Education and other Institutionalized individuals
Local provisions	-	Section 231—Grants and Contracts for Eligible Providers
	-	Section 232—Local Application
	-	Section 233—Local Administrative Cost Limits (special rule)
General provisions	-	Section 241—Administrative Provisions (Supplement not Supplant and Maintenance of Effort)

WIOA brings together, in strategic coordination, the core programs of federal investment in skill development:

- Employment and training services for adults, dislocated workers, and youth and Wagner-Peyser employment services administered by the Department of Labor (DOL) through formula grants to states; and
- Adult Education and literacy programs and

- Vocational Rehabilitation state grant programs that assist individuals with disabilities in obtaining employment administered by the Department of Education.

The purpose of the adult education and literacy funds under AEFLA is to enable eligible providers that receive grants under the program to create local partnerships to provide adult education and literacy activities, including Adult Basic Education (ABE), Adult Secondary Education and English Language Acquisition (ELA), which also includes Corrections Education, in order to:

- assist adults to become literate and obtain the knowledge and skills necessary for employment and economic self-sufficiency;
- assist adults who are parents or family members to obtain the education and skills that are necessary to becoming full partners in the educational development of their children and lead to sustainable improvements in the economic opportunities for their family;
- assist adults in attaining a secondary school diploma education or its equivalent and in the transition to postsecondary education and training, including through career pathways; and
- assist immigrants and other individuals who are English language learners in:
  - improving their reading, writing, speaking, and comprehension skills in English; and
  - mathematics skills; and
- acquiring an understanding of the American system of Government, individual freedom, and the responsibilities of citizenship; and/or
- provide educational programs for criminal offenders in correctional institutions and for other institutionalized individuals who are likely to leave the correctional facility within five years of participation in the program, including academic programs for:
  - adult education and literacy activities;
  - special education;
  - secondary school credit;
  - integrated education and training;
  - career pathways;
  - concurrent enrollment;
  - peer tutoring; and
  - transition to re-entry initiatives and other post-release services with the goal of reducing recidivism

### *The One-Stop System*

Further, AEFLA designates grantees as one-stop partners. As one-stop partners, grantees align and contribute to the one stop delivery systems in Local Workforce Development Areas. Specifically, one-stop partners:

- Provide access through the one-stop delivery system to such program or activities carried out by the entity, including making the career services that are applicable to the program or activities available at the one-stop centers (in addition to any other appropriate locations);
- Use a portion of the funds available for the program and activities to maintain the one-stop delivery system, including payment of the infrastructure costs of one-stop centers; enter into a local memorandum of understanding with the local board, relating to the operation of the one-stop system; and
- Participate in the operation of the one-stop system consistent with the terms of the memorandum of understanding, the requirements of WIOA Title I, and the requirements of the Federal laws authorizing the program or activities



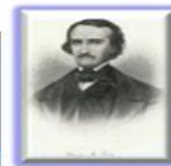
## EDGAR & OMB Uniform Guidance

After Congress passes legislation, OMB often interprets the law's main requirements, which provides guidance to federal and state agencies. Then individual federal agencies can further refine and regulate requirements, as the Department of Education has done in EDGAR.



Uniform Guidance	What it covers
2 CFR Part 200 Subpart C	<b>Pre-Award Requirements</b>
2 CFR Part 200 Subpart D	<b>Post-Award Requirements</b> <ul style="list-style-type: none"> <li>Standards for Financial and Program Management</li> <li>Performance and Financial Monitoring and Reporting</li> <li>Subrecipient Monitoring and Management</li> <li>Record Retention and Access</li> </ul>
2 CFR 200 Subpart E	<b>Cost Principles</b> <ul style="list-style-type: none"> <li>Cost allocation plans</li> <li>Direct vs. indirect costs</li> <li>Allowable vs. unallowable costs (List of 55 costs)</li> <li>Necessary, reasonable, and allocable costs</li> <li>Standards for Documentation of Personnel Expenses</li> </ul>
2 CFR Part 200 Subpart F	<b>Audit Requirements</b>
2 CFR Part 200 Appendix XI (OMB web site)	<b>Compliance Supplement</b> Information for auditors to understand the federal program's objectives, including allowable activities, matching requirements, level of effort, earmarking, period of availability of federal funds.

Regulation from EDGAR 34 CFR*	Topic	What it covers
Part 76	State-Administered Programs	<ul style="list-style-type: none"> <li>Eligibility for a Grant or Subgrant</li> <li>State Plans and Applications</li> <li>How a Grant is Made to a State</li> <li>How To Apply to the State for a Subgrant</li> <li>How a Subgrant is Made to an Applicant</li> <li>Indirect Cost Rates</li> </ul>



\* CFR – CODE OF FEDERAL REGULATIONS

## II. Wyoming Adult Education Program Concept

AEFLA funded grants are guided by WIOA legislation, but the governing body for Adult Education is the Office of Career, Technical, and Adult Education, commonly called OCTAE. OCTAE falls under the U.S. Department of Education who works hand in hand with the U.S. Department of Labor to implement WIOA legislation across the United States.



OCTAE establishes the policies and protocols for all AEFLA programs across the United States. The National Reporting System (NRS) is the agency that establishes the rules and regulations on how data is to be collected and how standardized reporting for AEFLA grants in the U.S.A. is to be done.



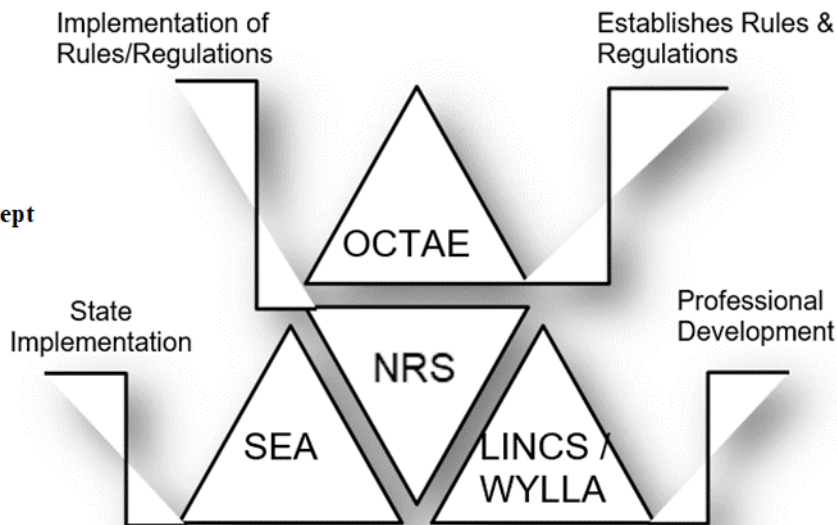
The Wyoming Community College Commission is the State agency tasked with overseeing all aspects of federally funded AEFLA grant programs.

LINCS is a professional learning space that brings together adult education teachers, program managers, and professionals worldwide who are working toward one common goal—to provide high quality, evidence-based learning opportunities to students. LINCS is a free PD resources that is supported by OCTAE and has a wide variety of materials and resources available on their website at no cost. Most AE directors in Wyoming require that instructors complete courses from the LINCS website. This is a great PD resource and programs are encouraged to use it freely.



WYLLA is the professional development arm of the Adult Education programs in Wyoming. Each AE program is encouraged to participate on the WYLLA board as WYLLA helps to establish, promote, and offer professional development opportunities throughout the State, especially the State AE Institute. The State Institute is typically held in August of each year and every program is required to send at least 80% of all program staff. Programs which do not meet this requirement are subject to State imposed Action Plan that mandates the local program provide 24 hours of program self-funded, professional development to replace the training hours missed by non-attending instructors.

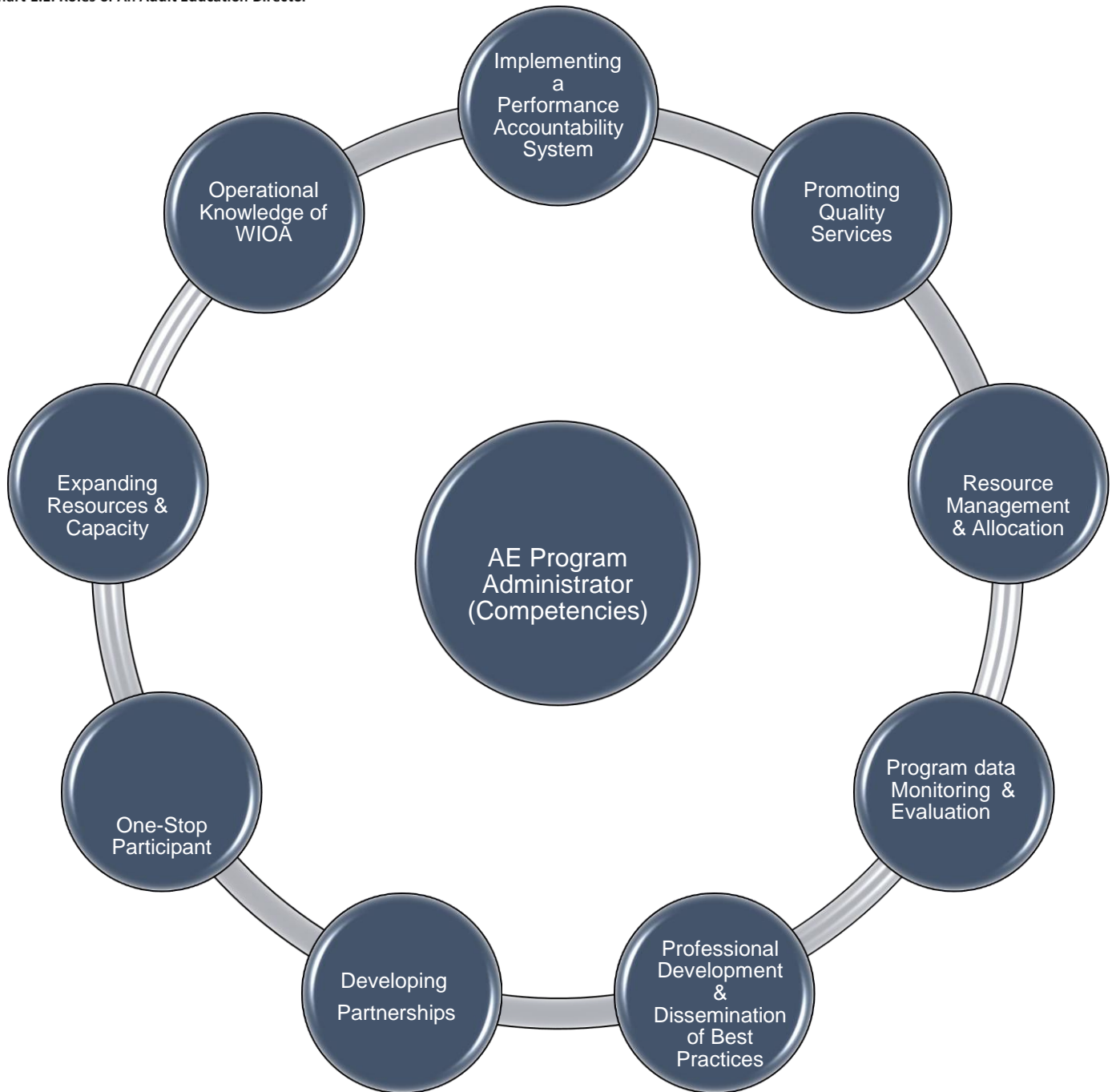
Chart 1.0: Program Concept



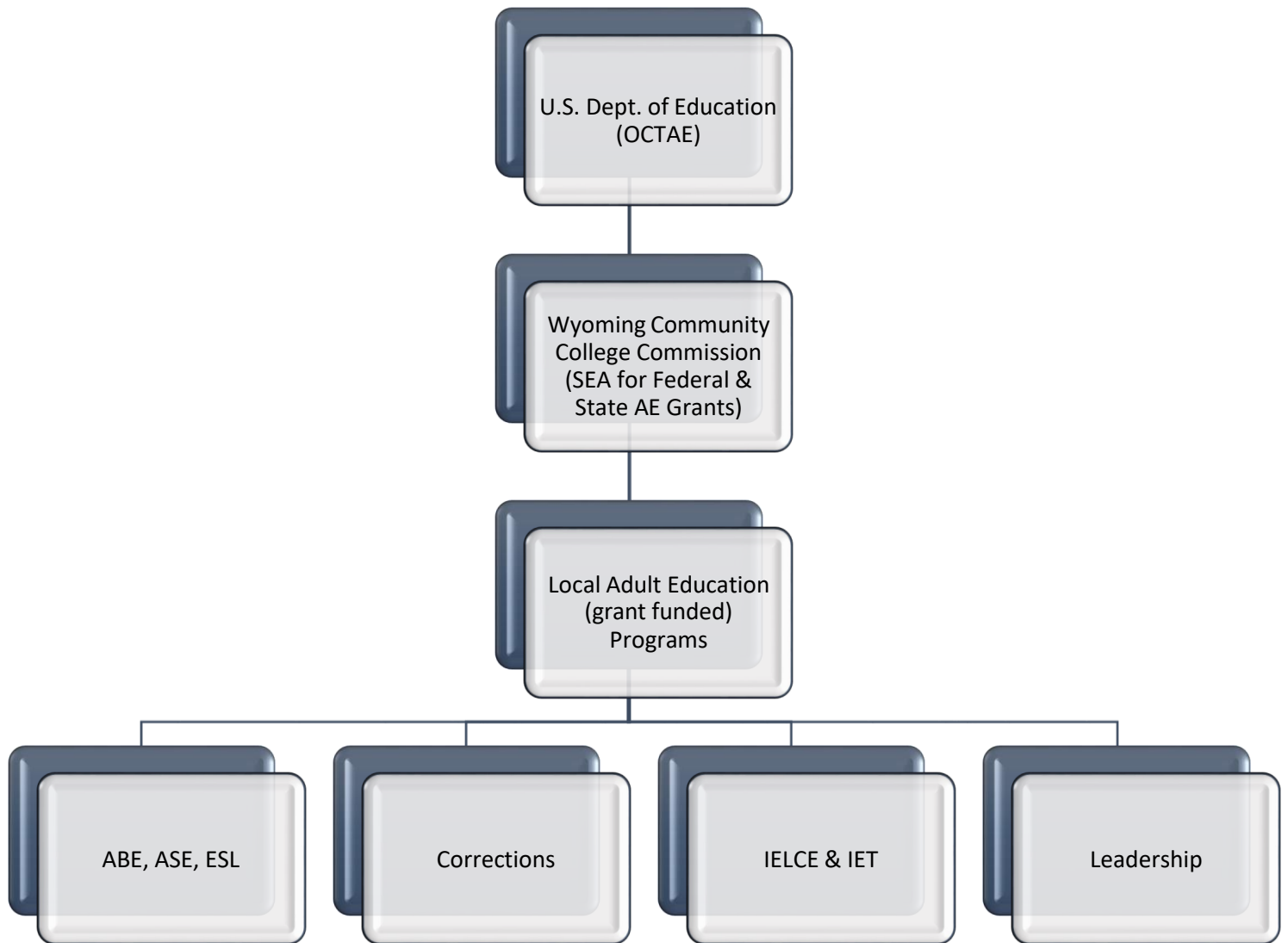
### III. Roles of an AE Local Program Director

Program directors in Wyoming have a great amount of responsibility for administering the local grant. This includes competencies in expanding state resources and capacity, resource management and allocation, program data monitoring and evaluations, operational knowledge of WIOA, implementing a performance accountability system, and promoting quality services. Chart 1.1 below shows the full range of responsibilities that a local program director in Wyoming has.

Chart 1.1: Roles of An Adult Education Director



#### IV. Adult Education Funding Flow Chart



#### V. What is Adult Education?

In accordance with WIOA Title II (Sec. 203 (4)), the term ‘adult education’ means services or instruction below the postsecondary level for an individual:

- (a) who has attained 16 years of age;
- (b) who is not enrolled or required to be enrolled in secondary school under State law; and
- (c) who—
  - (i) is basic skills deficient;
  - (ii) does not have a secondary school diploma or its recognized equivalent, and has not achieved an equivalent level of education; or
  - (iii) is an English language learner



#### *Required Local Activities*

AEFLA funded programs must use grant funds to establish or operate programs that provide adult education and literacy activities, including programs providing such activities concurrently. (Section 231(a)) AEFLA Type of Services offered include:

- Adult Education and/or English Language Acquisition Activities including Civics Education (Sec. 231) AEFLA – Adult Education RFP Narrative and required forms.
- Corrections Education and Education for Other Institutionalized Individuals (Sec. 225) AEFLA - Adult Education RFP Narrative and required forms, including information specific to this service as discussed in the Corrections Education and the Education of Other Institutionalized Individuals application instructions.
- Integrated English Literacy and Civics Education (Sec. 243) AEFLA - Adult Education RFP Narrative and required forms, including information specific to this service as discussed in the Integrated English Literacy and Civics Education application instructions.

A basic program provides program activities that are strong in intensity, duration, and rigor, allowing for individualized instruction of all students at their academic, social and emotional functioning level. Student success is a result of maintaining integrity in the quality of staff and programming and community involvement.

### *What is Intensity and Duration?*

Academic instruction using proven research- and evidence-based practices of such duration in time that allows students to achieve substantial learning gains.

### *Who is Enrolled?*

A participant is considered ‘enrolled’ for funding purposes upon completion of:

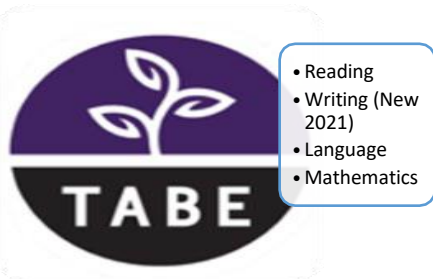
- 1) a minimum of twelve contact hours
- 2) an approved NRS assessment which establishing a beginning educational functioning level and placement marker
- 3) an intake form is signed and completed
- 4) a School District Withdrawal form (for 16 & 17 year olds only)

### *Assessments*

The National Reporting System (NRS) must approve all assessments for Adult Education Programs in Wyoming. The federal registry of NRS Approved Assessments can be found at:

<https://2ky701279qlou23p6256zftv-wpengine.netdna-ssl.com/wp-content/uploads/2021/03/2020-17301-Federal-Register-08-2020.pdf>

#### TABE 11/12 (Adult Education)



#### TABE CLAS-E (ESL)



Wyoming’s AE programs utilize two distinct assessments. TABE 11/12, for Adult Education students, tests participant levels in reading, writing (new fall 2021), language, and mathematics. TABE 11/12 has five levels and there are two forms for each level. TABE 11 is typically used for pre-testing while TABE 12 is used for post-testing; although this doesn’t always have to be the case.

TABE 11/12 can be given in paper-based form or electronically. Paper-based assessments can be scored electronically or manually. If scored manually, programs will utilize a series of cross-referencing charts provided by the test manufacture to help identify the appropriate EFL for placement into the program. The online TABE and/or paper-based tests scored electronically automatically calculate EFL’s for you.

The State of Wyoming requires that all instructors who give a TABE 11/12 to be certified. This two-part certification process is available on-line at: <https://tabetest.com/tabe-1112-certification-process/>

Once completed, instructors are required to print a copy of the end of course certification (for both courses). Copies of these certifications must be kept locally with a copy sent to the State.

As outlined in the State Assessment policy (<https://communitycolleges.wy.edu/ae-policies/>) , local directors are required to conduct yearly trainings on utilizing the TABE assessments.

TABE CLAS-E is used with non-native English speaking populations. This assessment tests language abilities in reading, writing, listening, and speaking. As with TABE 11/12, there are alternate forms for each of the four levels.

All pre-testing must be done within the first 12 hours of instruction and **MUST** be completed during a student's participation in the Career Services course. Initial pre-tests should be complete battery tests. Post-testing must follow the guidelines outlined in the Wyoming Assessment policy, which receives yearly approval from OCTAE.

### **Level Gain**

At intake, a valid standardized assessment will determine the Educational Functioning Level. A level gain is a measurement of academic progress in a content or skill area. Only valid standardized assessments can determine a level gain.

### **Student Retention**

Programs must retain students long enough to see progress, obtain goals, have successes, and achieve outcomes. Strategies could include:

- 1) Offer classes at times that meet students' needs.
- 2) Research reasons why students exit your program.
- 3) Research possible curriculum weaknesses.
- 4) Vary teaching strategies and styles.
- 5) Accommodate student learning styles.
- 6) Utilize technology and media resources.
- 7) Follow-up on students who are absent within 2-3 weeks.



## **VI. The Adult Education Program in Wyoming**



Adult Education empowers individuals to become self-sufficient, with skills necessary for future employment and personal successes.

The intent of adult education within the state of Wyoming is to provide programs that are strong in intensity and rigor, allowing for individualized instruction of all students at their academic, social and emotional functioning level. Student success is a result of maintaining integrity in the quality of staff and programming and community involvement.

By applying for and accepting state and/or federal funding, programs agree that they will adhere to the signed program assurances and will uphold and follow the policy and directives of the Wyoming Community College Commission -Adult Education Program in fulfilling the above intent.

To ensure compliance with the state's expectations, programs will participate in a program site monitoring, at a minimum, every two years and a full program audit as determined necessary by the state Adult Education Program staff.

A program's basic plan should be reviewed annually and submitted at the time of application or reapplication to the state Adult Education Program office.

The following components are considered essential for an adult education basic program:



- Maintenance of a written program plan that defines realistic goals that are understandable, measurable and achievable and are aligned to the Unified State Plan and other Statewide Initiatives for education. The goals are to be reviewed and updated yearly.
- Protocols are to be implemented related to fiscal policy and management; personnel hiring and licensure; student recruitment, retention and assessment; professional development and delivery; and community connections, including the development and maintenance of memorandums of understanding with the business community, the Department of Workforce Services (DWS) and the community college.
- Implementation of the College and Career Readiness Standards, English Language Proficiency Standards, Wyoming Employability and Social Capital Skills Standards into curriculum development and instruction. Monitoring for technical assistance and training is expected.
- Procedures for completing the annual fiscal and compliance independent audit.
- Compliance with state and federal guidance and policy and procedures that apply directly to adult education programs, including submission of reports, day-to-day procedures and practices, etc.
- Protocols to develop and maintain an active enrollment of students through recruitment and community partnerships as determined by negotiated targets to serve.
- Required documentation in all student files validating student outcomes
- Written program procedures for assuring the security of tests and student records.
- Review, validate and update the LACES database for each student record on at least a monthly basis.
- Develop, implement and refine curricula in the areas of program grant awards utilizing contextualized curricula aligned to the aforementioned standards.
- Utilize curricula that is designed specifically for the adult learner. Evidenced-based and research-based curriculum is expected.
- Develop and implement a professional development plan at the local level for both instructors and para-educators that is specific to adult education.
- Conduct student surveys or program data match to validate program outcomes as required by OCTAE.
- Develop a written plan for active program participation at adult education regional and/or state meetings for directors, coordinators, and program staff.
- Provide referrals for wraparound services to enable participants to successfully overcome barriers to employment and/or for the successful completion of a program of study.
- Active participation in local Next Generation Sector Partnership meetings.
- Maintaining and delivering a Career Service Course to enrolled participants.
- Work towards developing a common intake system among WIOA core partners.
- Co-ordinate services between WIOA core partners, local employers, and other key stakeholders
- Active participation in Wyoming's Rapid Response program.

### Wyoming Initiatives

Adult Education programs in Wyoming are required to align programming to both the Unified State plan as well as to other statewide initiatives, as detailed below.



## ENDOW

In 2017, the Wyoming Legislature worked with Governor Matt Mead to pass legislation authorizing ENDOW (Economically Needed Diversity Options for Wyoming), a 20-year initiative to make lasting and meaningful gains in diversifying and growing Wyoming's economy.

Economically, Needed Diversity Options for Wyoming (ENDOW): aimed at driving Wyoming's economy forward and developing opportunities that will allow citizens to find good paying jobs and meaningful work both now and long into the future. Applicants should focus on developing programming aimed at one specific ENDOW objective:

By 2025: 67% of the Wyoming population between the ages of 25-64 will attain higher education (e.g. a degree, workforce certificate, industry certificate or other high-quality credential) by:

- (1) Developing career pathways systems with local community colleges and/or other training providers
- (2) Creating bridge programming and/or integrated education and training models
- (3) Integrating digital literacy, critical thinking, and other soft skills trainings into literacy course programming.

Complete objectives and economic targets for the ENDOW initiative are available at:

[https://3706579a-b62e-451c-b57631a8ca50ae57.filesusr.com/ugd/e4e133\\_2c1746a901754418be4d6fbd50b19f32.pdf](https://3706579a-b62e-451c-b57631a8ca50ae57.filesusr.com/ugd/e4e133_2c1746a901754418be4d6fbd50b19f32.pdf)

### *Educational Attainment Initiative*

Educational Attainment Initiative aims to increase the percentage of working population that possesses a valuable postsecondary credential to 67% by 2025. Applicants should focus on program development which addresses:

- (1) Increasing the number of High School Equivalency Certificate graduates
- (2) Increasing the number of participants enrolled in postsecondary education/training programs by 67% by the year 2025.
- (3) Developing collaboration and partnerships among all educational organizations and workforce as well as the state's business community.

Complete information regarding this initiative is available at:

<https://communitycolleges.wy.edu/initiatives/attainment/>.

### *Next Generation Sector Partnerships*

Next Generation Sector Partnerships (Next Gen): the Wyoming Workforce Development Council entered into a partnership to launch Next Generation Sector Partnership projects around the State in an effort to grow critical economic sectors, and to form an alignment amount many education, workforce training, economic development and government partners. Next Gen Committees in Wyoming have launched regional industry led initiatives as follows:

- (1) Teton County-Technology
- (2) Park, Big Horn, Hot Springs & Washakie Counties-Healthcare
- (3) Sheridan/Johnson Counties-Manufacturing
- (4) Campbell, Crook, & Weston Counties-Financial and Insurance
- (5) Fremont County-Healthcare
- (6) Natrona & Converse Counties-Construction Trades
- (7) Goshen, Platte, & Niobrara Counties-Healthcare
- (8) Sweetwater, Lincoln, Uinta, Sublette, & Carbon Counties-Manufacturing
- (9) Albany County-Manufacturing
- (10) Laramie County-Construction Trades & Hospitality/Tourism

Additional information regarding Next Generation Sector Partnerships for Wyoming can be found at: [wyowdc.wyo.gov](http://wyowdc.wyo.gov).

### ***Perkins V***

Perkins V represents an important opportunity to expand opportunities for every student to explore, choose, and follow career and technical education programs of study and career pathways to earn credentials of value. (Federal program). Applicants should suggest/propose strategies on how Adult Education students can concurrently enroll in CTE programs of study. Adult Education programming/activities should clearly demonstrate these strategies for concurrent enrollment. Complete information about the Perkins V program in Wyoming can be found at: <https://edu.wyoming.gov/in-the-classroom/career-tech-ed/perkins/>.

## **VII. College & Career Ready**

*What does it mean to be college and career ready?*

Readiness for postsecondary training and education is critical for students' future success and ability to access career opportunities. High school graduation rates have increased, yet evidence suggests that students are not ready for postsecondary education and training that is required to obtain a job with a living wage. Solutions to this challenge require support for secondary schools to build and implement evidence-based interventions and supports and to engage cross-sector stakeholders (e.g., education, workforce, industry) to create policy environments that support career and college readiness and opportunity for all students.

# What is College and Career Readiness?

All students should graduate from high school ready for college, careers, and life, prepared to pursue the future of their choosing. By 2020, 65 percent of all jobs, and 92 percent of traditional STEM jobs, will require postsecondary education and training. College- and career-ready (CCR) graduates should be able to enter and succeed in entry-level postsecondary courses without the need for remediation and specifically should have:

- **Mastery of rigorous knowledge and skills in core academic disciplines**, including English language arts (ELA)/literacy, mathematics, history, civics, science, art, and music. Content knowledge and skills in mathematics and in ELA/literacy are foundational to the study of all other disciplines, and high school graduates are often asked to demonstrate competency in these subjects before they can begin further study (at two- and four-year colleges), enter certain job training/apprenticeship programs, or pursue the military career of their choice.
- **The skills and dispositions necessary to be successful in charting their postsecondary path.** Many of the skills a CCR graduate has are obtained through academics. The skills most demanded by colleges and employers are, by design, inherent in rigorous K-12 expectations - the ability of students to communicate effectively (both verbally and in written communications), to solve problems, to

think critically and develop informed arguments, and to analyze information and data. Collaborating, communicating and presenting information, and using research to make informed judgments are among the critical skills that impact success.

- **Successfully participated in postsecondary opportunities** through advanced coursework (Advanced Placement, International Baccalaureate, dual enrollment) as well as career and technical education, work-based learning, and other opportunities for exploring interests, aptitudes, and goals so that graduates can successfully navigate pathways that connect education and employment after high school.

Achieve's work has primarily focused on ensuring the availability and quality of academic knowledge and skills, primarily in ELA/literacy, mathematics, and science, that all graduates will need for postsecondary success.



# Developing a College- and Career-Ready Workforce An Analysis of ESSA, Perkins V, IDEA, and WIOA

By Ellen Cushing, David English, Susan Therriault, EdD, and Rebecca Lavinson



March 2019

# Developing a College- and Career-Ready Workforce **An Analysis of ESSA, Perkins V, IDEA, and WIOA**

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# Introduction

Across the United States, state leaders are examining their current and future economic landscapes to ensure that today's workers are appropriately prepared for workforce demands.<sup>1</sup> The continued advancement of technology and increase in globalization suggest that the nature of work will continue to evolve. Today's workforce will not only need postsecondary training and education but will also need to be lifelong learners who can gain new knowledge throughout their careers. To establish an education-to-workforce pipeline, state leaders will need to align the education system with labor market needs to ensure a seamless system of **academic, technical, and employability skills** preparedness. The institutions that make up the education pipeline—including the general K–12 system, career and technical education (CTE) programs, 2-year and 4-year postsecondary institutions, technical training programs, and pre-apprenticeship and registered apprenticeship programs—are crucial partners in addressing labor market demands.

As states grapple with competing priorities and constrained resources, there is an increasing focus on efficiency and alignment of programs and resources across state agencies. The College and Career Readiness and Success (CCRS) Center recently analyzed and compared four federal laws that govern the education-to-workforce pipeline—the Every Student Succeeds Act (ESSA), the Strengthening Career and Technical Education for the 21st Century Act (Perkins V), the Individuals with Disabilities Education Act (IDEA), and the Workforce Innovation and Opportunity Act (WIOA). Although states have years of experience implementing these federal requirements and programs, they are administered across different state agencies or different offices within a state agency, and coordination across initiatives can be a challenge. This brief identifies opportunities to connect, align, and leverage state policies, programs, and funding across these four federal laws to establish an education-to-workforce pipeline.

## The Role ESSA, Perkins V, IDEA, and WIOA in Workforce Development

ESSA, Perkins V, IDEA, and WIOA<sup>2</sup> play important and complementary roles in educating and training individuals and shaping the current and future workforce. ESSA, which provides funding for public education from kindergarten to 12th grade, requires that all students be taught to challenging academic content standards that prepare them to succeed in college and careers. Perkins V funds states and other grantees to improve both secondary and postsecondary career and technical education (CTE) programs and programs of study that prepare students for the real world. IDEA ensures that all students with disabilities from birth up to 21 years of age<sup>3</sup> have access to a free appropriate public education that emphasizes special education and related services designed to meet their unique needs and prepare them for further education, employment, and independent living. WIOA Title I funds the public workforce development system, which matches labor market needs with education, training, and support services for youth and adults looking for meaningful employment, while WIOA Title II funds adult education and literacy activities for out-of-school youth and adults who lack a high school diploma or proficiency in English.

<sup>1</sup> English, D., Cushing, E., Therriault, S., & Rasmussen, J. (2017). *College and career readiness begins with a well-rounded education: Opportunities under the Every Student Succeeds Act*. Washington, DC: American Institutes for Research, College and Career Readiness and Success Center. Retrieved from <http://www.ccrscenter.org/products-resources/ask-the-ccrs-center/college-and-career-readiness-begins-well-rounded-education>

<sup>2</sup> All four laws are reauthorizations of earlier laws. The Every Student Succeeds Act, 2015, is the most recent reauthorization of the Elementary and Secondary Education Act, 1965; the Strengthening Career and Technical Education for the 21st Century Act, 2018, reauthorizes the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins); IDEA was reauthorized in 2004 and most recently amended through ESSA in 2015; and the Workforce Innovation and Opportunity Act, 2014, is the most recent reauthorization of the Workforce Investment Act of 1998.

<sup>3</sup> IDEA requires that eligible students receive services through school completion or up to 21. After age 18, states have discretion over the age at which they no longer provide services. Some states stop before age 21, while other states continue to age 26.



Together, ESSA, Perkins V, IDEA, and WIOA can facilitate an education-to-workforce pipeline that provides all individuals with the academic, technical, and employability skills they need to be successful in the workforce. Table 1 provides additional details for each of the four laws.

**Table 1. Overview of ESSA, Perkins V, and WIOA**

Every Student Succeeds Act (ESSA)	Strengthening Career and Technical Education for the 21st Century Act (Perkins V)	Individuals with Disabilities Education Act (IDEA)	Workforce Innovation and Opportunity Act (WIOA)
<b>TARGET POPULATION</b>			
Students in public K–12 schools	CTE participants in public schools and students in technical and community colleges	Individuals with disabilities who are in school until the age of 21	Adults and dislocated workers, job seekers, incumbent workers, and in- and out-of-school youth
<b>DESCRIPTION</b>			
<p>ESSA provides funds to K–12 schools and districts. It emphasizes equal access to education, high standards, and accountability.</p> <p>ESSA’s “well-rounded education” provision supports states’ college and career readiness efforts by aligning district- and school-level readiness initiatives with curricula, improved conditions for learning, and other educational experiences. States can leverage ESSA funding for a well-rounded education to drive college and career readiness strategies.</p>	<p>Perkins V provides significant federal funding for CTE programs in states. It focuses on academic and technical achievement of CTE participants, strengthening the connections between secondary and postsecondary education, and improving accountability. Perkins V requires states to have programs of study that seamlessly link academic and technical content (including employability skills) across secondary and postsecondary education.</p> <p>The Perkins V provisions that have direct relevance to college and career readiness include alignment and integration of academic content standards, CTE programs of study, and employability skills education; assessment of competencies and technical skills to determine work readiness; and strengthening reporting and accountability requirements.</p>	<p>IDEA authorizes formula and discretionary grants to support special education and related services, early intervention services, and personnel preparation and development.</p> <p>IDEA ensures a free appropriate public education to students with disabilities by providing special education and related services, including individualized education programs (IEPs), transition plans, and early and personalized interventions. IDEA is meant to ensure equality of opportunity, full participation, independent living, and economic self-sufficiency.</p>	<p>WIOA Title I supports workforce development in states by funding career services and job training programs. It aims to modernize the workforce development system and streamline existing employment-related education systems.</p> <p>WIOA authorizes four core programs:</p> <ul style="list-style-type: none"> <li>■ WIOA Title I (Adult, Dislocated Worker, and Youth formula programs), administered by the Department of Labor</li> <li>■ Adult Education and Family Literacy Act programs, administered by the Department of Education</li> <li>■ Wagner-Peyser Act employment services, administered by the Department of Labor</li> <li>■ Rehabilitation Act Title I vocational rehabilitation program, administered by the Department of Education</li> </ul> <p>WIOA also authorizes a “one-stop” career center service delivery system. It requires partner programs to provide services through several one-stops that focus on a wide range of agencies and activities (e.g., postsecondary programs, Community Services Block Grant employment and training activities, WIOA Native American programs, Department of Housing and Urban Development employment/training activities, the Senior Community Service Employment Program, and Temporary Assistance for Needy Families).</p>
<b>STATE GRANTEE AGENCY</b>			
State education agency (SEA)	State education agency, state postsecondary agency (9 states), Career, Technical, and Adult Education Agency (4 states), state Workforce Investment Board (1 state)	State education agency	State Workforce Development Board, state labor or workforce development agency (Title I); state education agency, state postsecondary agency, state labor or workforce development agency (Title II)



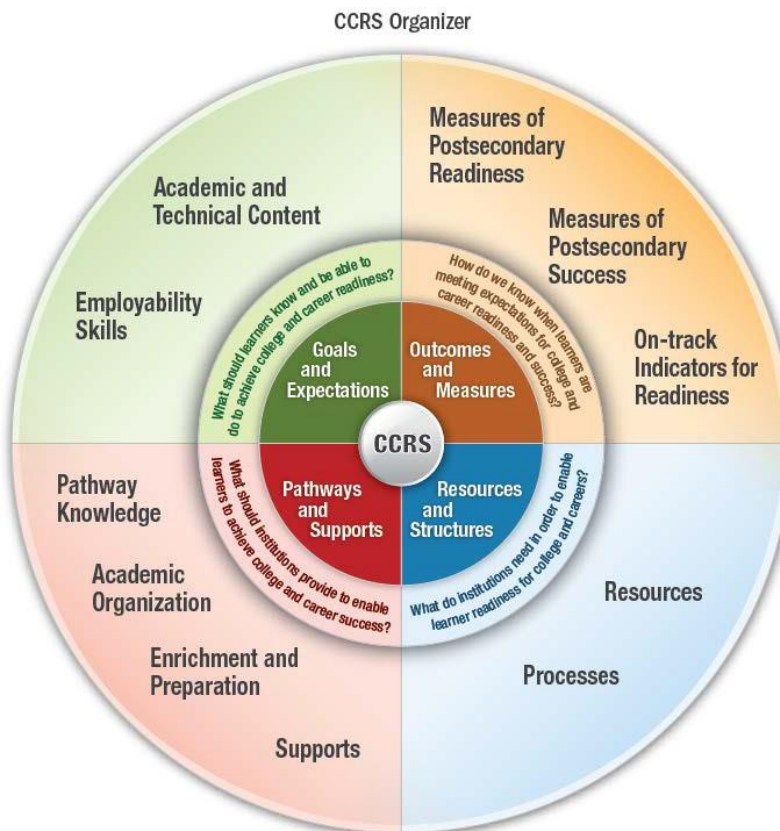


## Purpose of the Brief

This brief is designed to launch and stimulate conversations focused on developing a coherent education-to-career pipeline among key policymakers (including state agencies, state agency offices, and local education agencies responsible for planning and implementing each of the four laws). The brief provides a common framework for identifying opportunities to align college and career readiness efforts. The CCRS Center team used qualitative research methods to analyze the four laws, including legislation, regulatory guidance, and nonregulatory guidance. The laws were analyzed using the [College and Career Readiness and Success Organizer](#) (Figure 2) as the organizing framework. The Organizer defines the many elements that impact a student’s college and career readiness across four overarching domains:

- *Goals and Expectations*—defines the academic, technical, and employability skills students must know and demonstrate to be college and career ready.
- *Outcomes and Measures*—identifies the assessments and indicators that define when students meet the academic, technical, and employability skills defined in Goals and Expectations.
- *Resources and Structures*—defines the non-learner structure and resource needs, including fiscal, human capital, programmatic, and community needs.
- *Pathways and Supports*—defines the guidance and services needed to develop individual college and career readiness.

Figure 2. College and Career Readiness Organizer



The brief summarizes the qualitative analysis for each of the laws across each of the four CCRS Organizer domains. [State and Local Planning Workbook](#) offers a facilitated protocol state and local teams can use to identify existing or planned opportunities to strategically align college and career readiness efforts.



## Goals and Expectations

The Goals and Expectations quadrant analyzes specific college and career indicators across the four laws, that describe what learners **should know and be able to do** by the time they graduate. The indicators define the **academic, technical, and employability skills** competencies that are required for success in college and career. Across the four laws, there are opportunities for states to align their college and career readiness goals and expectations to promote a coherent vision for academic, technical, and employability skills preparedness.



**ESSA** | ESSA provides state education agencies (SEAs) and local education agencies (LEAs) autonomy in developing college and career readiness expectations that fit their specific context. ESSA requires all states to implement academic standards, and requires LEAs to integrate rigorous academic and employment-focused content for in-demand jobs, emphasizing a focus on science, technology, engineering, and mathematics (STEM), and ensuring remediation-free entry to 4-year colleges. The well-rounded education (WRE) provision is an opportunity for states to align their college and career readiness expectations along the K–12-to-postsecondary continuum, including opportunities for students to develop crucial employability skills that align to business and industry needs. Finally, ESSA requires LEAs to support programs that support academic and CTE learning for in-demand jobs.



**PERKINS V** | Because Perkins V focuses on both secondary and postsecondary institutions, the law requires the goals and expectations to prepare all students, including special populations, for careers in in-demand and emerging sectors. Perkins V, Title I requires integrating academic, technical, and employability skills within and across CTE programs and coursework. Embedded within the law's definition of "career and technical education" is the requirement that CTE contribute to higher-order reasoning and problem-solving skills, work attitudes, and employability skills. In addition to a focus on technical content, Perkins V promotes the inclusion of rigorous academic coursework in CTE programs and instruction.



**IDEA** | To ensure that students with disabilities have opportunities for productive and independent adult lives, they need (1) access to an education system with high academic achievement standards, (2) preparation in employability skills, and (3) clear student performance goals. IDEA assists SEAs and LEAs in providing specialized services for eligible students with disabilities, so they improve educational results and are prepared for independent living and economic self-sufficiency. IDEA protects eligible students and their families, and assists SEAs and LEAs in preparing students for further education and employment. The SEA is responsible for establishing long-term goals for student performance on key indicators (e.g., graduation, postsecondary outcomes) and identifying measures of interim progress that are consistent with goals and standards for general education students. Further, IDEA requires that each student have an IEP that outlines individual annual goals and expectations based on his or her needs. Beginning at age 16 (or 14 in some states), the IEP must also include a transition plan that outlines measurable postsecondary goals related to training, education, employment, and independent living skills.



**WIOA** | WIOA focuses on the economic needs of states and regions, including the knowledge, skills, and abilities important for specific industries and occupations. WIOA Title I's focus on preparing adults and youth for in-demand jobs requires the development of academic, technical, and employability skills necessary for employment. One-stop providers must assess participants across educational, training, and employability skills and refer them to aligned services. Title II funds for adult education may be used to develop curricula and provide instruction for the attainment of basic skills in English language arts (ELA), mathematics, and English language proficiency by out-of-school youth and adults.

Table 2 summarizes legislation and regulatory and nonregulatory guidance that addresses each of the Goals and Expectations indicators.

### GOALS AND EXPECTATIONS INDICATORS

#### Academic and Technical Content

- Academic standards
- Career and technical standards
- Alignment to postsecondary requirements

#### Employability Skills

- Effective relationships
- Workplace skills
- Applied knowledge

#### Credential Attainment

- Postsecondary degree
- Industry-recognized credentials



**Table 2. Summary of Findings on Alignment of Goals and Expectations**

ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE I: DEFINITION OF WELL-ROUNDED EDUCATION (WRE)</b></p> <p>ESSA defines a WRE as the courses, activities, and programming in subjects such as science, technology, engineering, mathematics, computer science, CTE, and any other subject, as determined by the state or local educational agency, with the purpose of providing all students access to an enriched curriculum and educational experience.</p> <p><b>TITLE I, PART A: BASIC PROGRAMS FOR DISADVANTAGED STUDENTS</b></p> <p><b>LEAs</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> develop and implement a well-rounded education that promotes mastery of academic content standards, and may include coursework and other educational experiences to promote technical and employability skills attainment.</li> <li>■ <b>Must</b> support programs that integrate academic/CTE learning for attainment of in- demand jobs.</li> </ul> <p><b>TITLE I, PART B: STATE ASSESSMENT GRANTS</b></p> <p>States <b>may</b> support the development of rigorous academic achievement standards that are aligned to CTE standards and require a level of achievement that ensures remediation-free entry to 4-year colleges.</p> <p><b>TITLE IV, PART B: 21ST CENTURY SCHOOLS</b></p> <ul style="list-style-type: none"> <li>■ LEAs <b>may</b> further support efforts to connect a WRE to in-demand skills by developing and implementing a WRE that includes integrated content for             <ul style="list-style-type: none"> <li>• STEM</li> <li>• CTE</li> <li>• Employability skills such as collaboration skills, relationship-building skills, and learning skills.</li> <li>• Programs that partner with in-demand fields of the local workforce; or build career competencies and career readiness and ensure that career readiness skills are aligned to Perkins V and WIOA.</li> </ul> </li> </ul>	<p><b>TITLE I, PART B: STATE PROVISIONS</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> ensure that students who participate in CTE programs are taught the same challenging academic proficiencies as taught to all other students.</li> </ul> <p><b>TITLE I: CTE ASSISTANCE TO STATES</b></p> <p><b>LEAs</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> support CTE students’ mastery of the same challenging academic standards that are required of all other students.</li> <li>■ <b>Must</b> initiate and strengthen programs that integrate learning in academic skills, CTE skills aligned with academic standards, and employability skills, in subjects that constitute a well-rounded education.</li> <li>■ <b>Must</b> contribute to attainment of higher-order reasoning and problem-solving skills, work attitudes, and employability skills.</li> <li>■ <b>Must</b> provide activities to prepare CTE participants (including special populations) for high-skill, high-wage, or in-demand sectors. States may support the integration of academic, technical training, and employability skills.</li> <li>■ <b>May</b> develop CTE standards that are aligned with challenging academic standards.</li> </ul>	<p><b>PART A: DEFINITION OF FREE APPROPRIATE PUBLIC EDUCATION</b></p> <p>IDEA ensures a free appropriate public education, or special education and related services, is provided to all students with disabilities to meet their unique needs and prepare them for further education, employment, and independent living. That education must:</p> <ul style="list-style-type: none"> <li>■ Be provided at public expense and without charge.</li> <li>■ Meet the standards of the SEA.</li> <li>■ Include preschool, elementary school, or secondary school education.</li> <li>■ Conform with the student’s individualized education program (IEP).</li> </ul> <p><b>PART B: ASSISTANCE FOR EDUCATION OF ALL STUDENTS WITH DISABILITIES</b></p> <ul style="list-style-type: none"> <li>■ The state <b>must</b> provide full educational opportunity to students with disabilities to ensure equality of opportunity, full participation, independent living, and economic self-sufficiency.</li> <li>■ An IEP <b>must</b> be created for each child with a disability. The IEP is a written statement that is developed, reviewed, and revised to include measurable postsecondary goals related to training, education, employment, and independent living skills.</li> <li>■ Students with disabilities <b>must</b> be educated in the least restrictive environment, meaning with students who are not disabled; removal of students with disabilities from the regular educational environment must occur only when the use of supplementary aids and services in the regular classes is not sufficient.</li> <li>■ The state has established goals for the performance of students with disabilities that:             <ul style="list-style-type: none"> <li>• Are consistent with goals and standards for students established by the state.</li> <li>• Are the same as the state’s long-term goals and measurements of interim progress for students with disabilities under ESSA.</li> </ul> </li> </ul>	<p><b>TITLE I: UNIFIED STATE PLANS</b></p> <p>WIOA state unified plans should include an analysis of the economic condition of the state— including the employment needs of employers, with descriptions of the knowledge, skills, and abilities needed in the relevant industries and occupations.</p> <p><b>TITLE I: ADULT ACTIVITIES<sup>4</sup></b></p> <p><b>Local Areas</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> provide integrated education and training programs that include adult education and literacy activities, workforce preparation activities, and workforce training for a specific occupation or occupational cluster.</li> </ul> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ <b>May</b> develop education and training programs that respond to real-time labor market analysis.</li> <li>■ <b>May</b> improve coordination of economic development activities with workforce investment activities.</li> <li>■ <b>May</b> implement strategies to meet needs of employers.</li> </ul> <p><b>TITLE I: YOUTH ACTIVITIES<sup>5</sup></b></p> <p><b>Local Areas</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> provide occupational skills training that gives priority to occupations aligned to local, in-demand occupations.</li> </ul> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ <b>May</b> research linkages between youth needs and workforce opportunities.</li> <li>■ <b>May</b> support re-entry to and completion of secondary school and/or advanced training.</li> </ul> <p><b>TITLE II: ADULT EDUCATION AND LITERACY ACTIVITIES</b></p> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ Provide grants directly to eligible education providers to deliver adult education in basic skills concurrent with training and workforce preparation activities.</li> </ul>

<sup>4</sup> Up to 80% of WIOA Title I funding may be allocated to Adult and Dislocated Worker Employment and Training Activities (i.e., “Adult Activities”). Local activities are provided through one-stop providers.

<sup>5</sup> At least 20% of WIOA Title I funds must be allocated to Youth Workforce Investment Activities (i.e., “Youth Activities”).



# Outcomes and Measures

The Outcomes and Measures quadrant analyzes the essential milestones and benchmarks that **monitor and assess individual academic, technical, and employability skills** competencies. College and career readiness measures should assess the Goals and Expectations and should be continuously validated against intended outcomes. This quadrant also describes data collection and reporting requirements to ensure data are usable and inform decision making.

Each of the four laws explicitly specifies requirements related to accountability measures and assessment design, as well as data reporting, storage, and access. States interested in aligning efforts can use common measures and coordinate data collection efforts to produce a more robust picture of the college and career readiness of individual students.



**ESSA** | Title I funds require SEAs to develop an accountability system that identifies low-performing schools based on graduation rate, English language arts/reading and mathematics proficiency, and another academic indicator such as student growth and progress in English learner proficiency. States also must include an additional indicator of student success or school quality of their choosing, which may include a college and career readiness measure. Results for all measures must be disaggregated by race and special population status (English learner, student with disability, economically disadvantaged). Title I, Part A provides funding for states to develop new college and career readiness assessments, including performance-based assessments, CTE assessments, and extended performance tasks.



**PERKINS V** | Perkins V defines accountability measures for participation and performance of CTE concentrators<sup>6</sup> attending secondary and postsecondary schools. Postsecondary institutions must measure participation in CTE programs in nontraditional fields; persistence in postsecondary education or advanced training, military service, service programs, or volunteer service; and attainment of recognized postsecondary credentials. Secondary schools must measure proficiency in ELA/reading, mathematics, and science; graduation rate; participation in CTE programs; and postsecondary placement. Additionally, secondary schools must measure any one of the following: participation in work-based learning, attainment of dual/concurrent coursework credits, or attainment of postsecondary credentials (i.e., industry-recognized certificate or certification, apprenticeship completion, license, or associates or bachelor's degree). Perkins V, Title I funding allows for the development of technical assessments for specified career pathways. Perkins V also requires data that are disaggregated by program or program of study (or career cluster if not available), race, gender, special population status, and other state-identified characteristics.



**IDEA** | Although students with disabilities participate in the state ESSA accountability system, they also participate in the IDEA accountability system, known as Results-Driven Accountability (RDA). IDEA requires each state to develop a state performance plan and annual performance report that evaluates the state's efforts to implement the requirements of IDEA. The plan and report include goals, baseline, and results of 17 indicators of child and family outcomes and compliance. Five indicators directly align with SEA monitoring and assessing of academic, technical, and employability skills of students with disabilities: Indicator 1 – Graduation, Indicator 2 – Dropout, Indicator 3 – Academic Achievement, Indicator 13 – Transition Planning, and Indicator 14 – Post-School

<sup>6</sup> Perkins defines a CTE concentrator as a secondary student who has completed two or more courses in a single CTE program or program of study, or a postsecondary student who has earned at least 12 credits in a single CTE program or otherwise completed the program (pp. 6–7).

## OUTCOMES AND MEASURES INDICATORS

### On-Track Indicators for Readiness

- Course completion
- Performance on summative assessment
- Credential attainment

### Measures of Postsecondary Readiness

- High school graduation
- Postsecondary enrollment
- Industry certification
- Persistence in postsecondary pathways

### Measures of Postsecondary Success

- Job placement in middle skills or career trajectory
- Credential attainment
- College diploma

### Assessment

- Assessment design
- Assessment administration

### Data Collection

- Statewide longitudinal data systems
- Data sharing



Outcomes. The SEA must publicly report these data annually. Under IDEA, students with disabilities must have an IEP that outlines individualized, annual goals; a description of how individual progress toward those goals will be measured; and when periodic reports of progress will be shared with parents. Grants are available for improving the alignment, compatibility, and development of valid and reliable assessments and alternate assessments of student academic achievement.



**WIOA |** Reporting requirements for WIOA outcomes and measures focus heavily on workforce outcomes. Core programs implement common performance accountability metrics, including credential attainment and skills gains, employment, earnings, and employer satisfaction. Further, WIOA assesses and awards credit for prior knowledge, skills, competencies, and experiences. Performance accountability measures are disaggregated by subpopulation based on race, ethnicity, gender, and age.

Table 3 summarizes legislation and regulatory and nonregulatory guidance that addresses each of the Outcomes and Measures indicators.



**Table 3. Summary of Findings on Alignment of Outcomes and Measures**

ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE I, PART A: ACCOUNTABILITY REQUIREMENTS</b></p> <p>States <b>must</b> include the following measures in their accountability systems: 4-year adjusted cohort graduation rate; student growth or another valid and reliable academic indicator; progress in achieving English language proficiency; proficiency in ELA/reading and math based on the long-term goals; and an indicator of school quality or student success, which may include one or more measures of:</p> <ul style="list-style-type: none"> <li>■ Student engagement</li> <li>■ Educator engagement</li> <li>■ Student access to and completion of advanced coursework</li> <li>■ Postsecondary readiness</li> <li>■ School climate and safety</li> <li>■ Other</li> </ul> <p><b>TITLE I, PART B: ASSESSMENT</b></p> <p>Each state plan <b>shall</b> demonstrate that it has implemented a set of high-quality student academic assessments in mathematics, reading or language arts, and science.</p> <p><b>TITLE I, PART A: BASIC PROGRAMS</b></p> <p>Five percent of states' Title I, Part A allocation <b>may</b> be used for:</p> <ul style="list-style-type: none"> <li>■ The identification and development of measures of student performance and school quality, and systems to collect those measures, including activities to align such systems to Perkins V and WIOA systems.</li> <li>■ The development of statewide assessments, which <b>may</b> be delivered partially in the form of portfolios, projects, or extended performance tasks.</li> </ul>	<p><b>TITLE I, PART A: SECONDARY REPORTING</b></p> <p>States <b>must</b> develop secondary and postsecondary measures of CTE concentrator performance aligned with measures used under other federal laws (e.g., ESSA and WIOA) to the greatest extent possible.</p> <p>Secondary program accountability systems <b>must</b> measure:</p> <ul style="list-style-type: none"> <li>■ Proficiency in reading/ELA, mathematics, and science, as measured by ESEA Title I assessments.</li> <li>■ 4-year adjusted cohort graduation rate and, optionally, extended-year rate.</li> <li>■ Participation rate in CTE programs that lead to nontraditional fields.</li> <li>■ Placement rate of graduates in postsecondary education or advanced training, military service, service program, volunteer service, or employment.</li> <li>■ For graduates, one of the following: <ul style="list-style-type: none"> <li>• Attainment rate of recognized postsecondary credentials.</li> <li>• Attainment rate of dual/concurrent coursework credits.</li> <li>• Participation rate in work-based learning.</li> </ul> </li> </ul> <p><b>POSTSECONDARY REPORTING</b></p> <p>Postsecondary program accountability systems <b>must</b> measure:</p> <ul style="list-style-type: none"> <li>■ Persistence in postsecondary education or advanced training, military service, service program, or volunteer service employment (as of 2nd quarter after program completion).</li> <li>■ Attainment of industry-recognized postsecondary credential.</li> <li>■ Participation in CTE programs that lead to non-traditional fields.</li> </ul>	<p><b>PART B: ACCOUNTABILITY MEASURES</b></p> <p>As part of the state performance plan and annual performance report, the state <b>must</b> establish goals for, monitor, and report progress on 17 indicators. Five indicators directly align with SEA monitoring and assessment of academic, technical, and employability skills of students with disabilities:</p> <ul style="list-style-type: none"> <li>■ Graduation (Indicator 1) – Percent of youth with IEPs graduating from high school with a regular high school diploma.</li> <li>■ Dropout (Indicator 2) – Percent of youth with IEPs dropping out of high school.</li> <li>■ Participation and Performance on Statewide Assessment (Indicator 3A–3C) – Participation and performance of children with IEPs on statewide assessments.</li> <li>■ Secondary Transition (Indicator 13) – Percent of youth with IEPs aged 16 and above with an IEP that includes the requirements of 20 U.S.C. 1416(a)(3)(B).</li> <li>■ Post-School Outcomes (Indicator 14A–14C)</li> </ul> <p><b>PART B: TRANSITION IEP (20 U.S.C. 1416(A)(3)(B))</b></p> <p>In addition to IEP component requirements, a student's transition plan <b>must</b> include:</p> <ul style="list-style-type: none"> <li>■ Appropriate, measurable postsecondary goals in the areas of training, education, employment, and, where appropriate, independent living skills that are annually updated.</li> <li>■ Age-appropriate transition assessment(s).</li> <li>■ Annual goals that enable the child to make progress in the general education curriculum and toward postsecondary goals.</li> <li>■ Transition services, including courses of study, that will reasonably enable the student to meet those postsecondary goals.</li> <li>■ Annual IEP goals related to the student's transition service needs.</li> </ul>	<p><b>TITLE I, CHAPTER 4: PERFORMANCE ACCOUNTABILITY</b></p> <p>Performance accountability measures for youth and adults <b>shall</b> include indicators of having obtained or being in the process of obtaining:</p> <ul style="list-style-type: none"> <li>■ Postsecondary credential, secondary school diploma, or equivalent during participation or within 1 year after program exit.</li> <li>■ Enrollment in education that leads to a recognized postsecondary credential or employment and achievement of measurable skill gains toward those goals.</li> <li>■ Unsubsidized employment (and/or, in the case of youth, participation in education and training) during the second and fourth quarters after exit from the program.</li> <li>■ Median earnings during the second quarter after exit from the program.</li> <li>■ Effectiveness in serving employers.</li> </ul> <p><b>TITLE I: ADULT AND YOUTH ACTIVITIES</b></p> <p><b>Local Areas</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> provide an initial assessment of academic and technical skills, as well as employability, interests, aptitudes and development needs, and, if appropriate, comprehensive and specialized assessments of skills.</li> <li>■ <b>Must</b> assess basic skills (including literacy, numeracy, and English language proficiency), aptitudes, abilities, and supportive service needs.</li> <li>■ <b>Must</b> provide performance information on eligible training providers, providers of youth workforce development activities, adult education, postsecondary CTE and CTE programs for dropouts under the Carl D. Perkins Career and Technical Education Act , and vocational rehabilitation services.</li> <li>■ <b>Must</b> provide usable data to participants regarding local area performance on accountability measures.</li> </ul>



ESSA	Perkins V	IDEA	WIOA
<p>States <b>may</b> fund the development of:</p> <ul style="list-style-type: none"> <li>Assessments in any academic subject.</li> <li>Balanced assessment systems that include summative, interim, and formative assessments.</li> <li>Tests that emphasize mastery of standards and aligned competencies, including technology-based, performance-based, and computer-adaptive tests, and tests that embed projects or extended performance tasks.</li> <li>State report cards that can be cross-tabulated by major racial and ethnic group, gender, English language proficiency status, and disability status, and that may include: <ul style="list-style-type: none"> <li>The number and percentage of students enrolled in Advanced Placement/International Baccalaureate coursework.</li> <li>College-going rate of students within 1 year of graduation, where available.</li> <li>Any other information, including CTE proficiency attainment.</li> </ul> </li> </ul> <p><b>TITLE I, PART B: GRANTS FOR STATE ASSESSMENTS AND RELATED ACTIVITIES AND INNOVATIVE ASSESSMENT AND ACCOUNTABILITY DEMONSTRATION AUTHORITY</b></p> <p>States <b>may</b> fund efforts to replace statewide mathematics, ELA/reading, or science assessments with next-generation assessments, which may be competency based or performance based.</p>	<p><b>SUBGROUP REPORTING</b></p> <p>Performance results <b>must</b> be disaggregated by:</p> <ul style="list-style-type: none"> <li>CTE program or program of study (or if not available, by career cluster area).</li> <li>Subgroup membership, including major racial/ethnic group, gender, English learner status, disability status, status as an individual from an economically disadvantaged family, status as a participant in a program that prepares individuals for nontraditional fields, migrant status, out-of-workforce status, status as single parent or single pregnant woman, homelessness status, foster care status, and status as a member of a military family.</li> </ul> <p><b>TITLE I: CTE ASSISTANCE TO STATES</b></p> <ul style="list-style-type: none"> <li><b>May</b> develop and enhance data systems to collect and analyze data on secondary and postsecondary academic and employment outcomes.</li> <li><b>May</b> develop valid and reliable assessment of competencies and technical skills.</li> </ul>	<p>There also must be evidence that the student was invited to the IEP Team meeting where transition services are discussed, and that, if appropriate, a representative of any participating agency was invited to that meeting (with the prior consent of the parent, or of student if no longer a minor).</p> <p><b>PART B: ALTERNATE ASSESSMENTS</b></p> <p>The state <b>must</b> meet the following conditions for assistance:</p> <ul style="list-style-type: none"> <li>Develop and implement guidelines for the participation in alternate assessments of those students with disabilities who cannot participate in regular assessments.</li> <li>Align alternate assessments with the challenging state academic content standards under ESSA and alternate academic achievement standards, and measure the achievement of students with disabilities against the alternate academic achievement standards.</li> </ul>	<p><b>States</b></p> <ul style="list-style-type: none"> <li><b>Must</b> provide assistance to state entities and agencies, local areas, and one-stop partners in coordination and alignment of data systems.</li> <li><b>Must</b> fund various evaluation, monitoring, and oversight activities of local adult and youth programs that integrate the required performance indicators.</li> </ul> <p><b>TITLE II: ADULT EDUCATION AND FAMILY LITERACY</b></p> <p>Measures for adult education participants are the same as those established for the WIOA Title I youth, adult, and dislocated worker programs.</p> <p><b>TITLE I, CHAPTER 4: PERFORMANCE REPORTS</b></p> <p>The performance report for a state <b>shall</b> include:</p> <ul style="list-style-type: none"> <li>Information specifying the level of performance achieved for each program’s primary indicator of performance with respect to individuals with barriers to employment,<sup>7</sup> disaggregated by each subpopulation of such individuals and by race, ethnicity, gender, and age.</li> <li>The number of individuals with barriers to employment served by each of the programs, disaggregated by each subpopulation of such individuals.</li> </ul>

<sup>7</sup> Individuals with barriers to employment include: displaced homemakers; low-income individuals; Indians, Alaska Natives, and Native Hawaiians; individuals with disabilities; older individuals; ex-offenders; homeless individuals; youth who are in or who have aged out of the foster care system; English learners, individuals who have low levels of literacy, and individuals “facing substantial cultural barriers”; single parents, including single pregnant women; individuals within 2 years of exhausting lifetime eligibility for Temporary Assistance for Needy Families (TANF); migrant and seasonal farmworkers; long-term unemployed individuals; and any other groups identified by the governor.



# Resources and Structures

Resources and Structures analyzes the **institutional assets necessary to prepare college- and career-ready students**, including the necessary funding, processes, people, and resources. Each of the four laws identify organizational, curriculum, and instructional alignment opportunities to support the development of academic, technical, and employability skills for all students.



## ESSA | ESSA provides funding dedicated to the professional development of

teachers and other educators and staff through Title II, Part A. Funding under Titles I and IV may be used to support collaborative professional development for CTE, higher education, and general education stakeholders focused on dual/concurrent enrollment, Advanced Placement/International Baccalaureate, and early college coursework and STEM instruction. ESSA also allows funds to be used to support educator training on state and regional workforce needs, particularly for college and career counselors. Finally, ESSA allows professional development that supports (a) the integration of academic, technical, and employability skills, and (b) the capacity to provide work-based learning experiences and pathways that culminate in in-demand work placement. For schools implementing schoolwide Title I programs, support efforts must be aligned with needs assessments.



## PERKINS V | Perkins V funding must support professional development at the local level for teachers, administrators,

paraprofessionals, specialized instructional support personnel, postsecondary faculty, or guidance counselors. The content of training is flexible, with permissible uses of funds including supporting instructional strategies for integrating academic and technical content, supporting educators in understanding current industry needs, and providing effective instruction for disadvantaged CTE students

Perkins V also provides the opportunity to train career guidance and academic counselors and other educators in helping parents and students understand career and education pathways and opportunities. States must support the recruitment, retention and/or preparation of CTE personnel. States and LEAs may also improve institutional capacity through partnerships with intermediaries, including for support with systems development; and may coordinate CTE programs across agencies or local workforce boards. All such support should be based on local needs, which are required to be assessed every 2 years.



## IDEA | IDEA Part B provides formula grants to support special education and related services for students with disabilities.

These services may include supplementary aids and services to support the student within the regular classroom, including supports for participation in work-based learning opportunities. IDEA provides funding for personnel preparation and professional development in early intervention, educational, and transition services to reform and improve their systems. Professional development funds can be used for teacher mentoring, team teaching, reduced class schedules and caseloads, intensive professional development, use of standards or assessments for guiding beginning teachers, and the provision of training in how to facilitate the successful transition to postsecondary opportunities. Personnel development funds can be used for the preparation of beginning special educators, for interdisciplinary training, and for leadership preparation. Funds may also be used for assisting local educational agencies in meeting personnel shortages and supporting capacity-building activities.



## WIOA | WIOA Title I does not identify explicit opportunities for integrating academic, technical, and employability skills into

professional development. However, the law offers more flexibility in who can receive professional development, including staff and educators of local boards, offices of chief elected officials, one-stop operators, one-stop partners, and eligible service providers in local areas. Under WIOA Title I, capacity-building responsibilities fall largely to the State Workforce Development Board. Further, state WIOA Title II funds may be used to integrate literacy and English language instruction with occupational skills training.

Table 4 summarizes legislation and regulatory and nonregulatory guidance that addresses each of the Resources and Structures indicators.

### RESOURCES AND STRUCTURES INDICATORS

#### Resources

- Human capital
- Fiscal
- Learning resources

#### Processes

- Professional development
- Community engagement
- Alignment of policies and programs
- Alignment across institutions





**Table 4. Summary of Findings on the Alignment of Resources and Structures**

ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE I: SCHOOLWIDE PROGRAMS</b></p> <p>The LEA <b>may</b> use funds to:</p> <ul style="list-style-type: none"> <li>■ Provide joint in-service training for teachers—in collaboration with CTE educators and educators from institutions of higher education—on integrating rigorous content into a dual/concurrent curriculum.</li> <li>■ Develop integrated, rigorous content to support dual/concurrent coursework and CTE educators.</li> <li>■ Deliver instruction to support academic, technical, and employability skills.</li> <li>■ Integrate academic and technical course content.</li> <li>■ Address the needs of all students, particularly those at risk, through activities that may include specialized instructional support services.</li> </ul> <p><b>TITLE II: STATE PLANS</b></p> <p>The SEA <b>may</b> use funds to:</p> <ul style="list-style-type: none"> <li>■ Improve instructional strategies of teachers, principals, and other school leaders to integrate CTE content into academic instructional practices, which may include training on best practices to understand state and regional workforce needs and transitions to postsecondary education and the workforce.</li> <li>■ Support opportunities for collaborative discussion of the transition to elementary school, including school-readiness issues.</li> <li>■ Provide instruction in STEM subjects and computer science.</li> <li>■ Integrate CTE into academic content.</li> <li>■ Improve students' peer interaction skills.</li> <li>■ Help students develop skills necessary for learning readiness and academic success.</li> </ul>	<p><b>TITLE I: CTE ASSISTANCE TO STATES</b></p> <p>The state <b>must</b> broadly support recruiting, preparation, and/or retention of CTE educators and staff, while LEAs <b>must</b> fund targeted professional development. States and LEAs <b>may</b> broadly use funds for other resources and structures.</p> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> support recruiting, preparing, or retaining of CTE teachers, postsecondary faculty, administrators, paraprofessionals, or career guidance and academic counselors.</li> <li>■ <b>May</b> support professional development that is coordinated with ESSA Title II activities, that is evidence based (to the extent practicable), and that: <ul style="list-style-type: none"> <li>• Promotes integration of academic and CTE content.</li> <li>• Improves educators' ability to stay current with industry standards and earn industry credentials.</li> <li>• Increases educators' ability to provide universal design for learning and other accommodations to disadvantaged students.</li> </ul> </li> <li>■ <b>May</b> partner with intermediaries to improve training, develop public-private partnerships, systems development, capacity-building, and scalability to deliver high-quality CTE.</li> <li>■ <b>May</b> support elimination of barriers to equitable access for all students to CTE educators and staff.</li> </ul> <p><b>LEAs</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> provide professional development to teachers, faculty, administrators, counselors, specialized instructional support personnel, and paraprofessionals, which may include capacity building for: <ul style="list-style-type: none"> <li>• Integrating CTE and academic standards and curricula.</li> <li>• Using evidence-based pedagogical practices.</li> <li>• Staying current on industry developments and labor market data.</li> <li>• Effectively teaching and providing accommodations for disadvantaged students.</li> </ul> </li> </ul>	<p><b>PART B: STATE-LEVEL USE OF FUNDS</b></p> <p>Funds <b>may</b> be used:</p> <ul style="list-style-type: none"> <li>■ For support and direct services, including technical assistance, personnel preparation, and professional development and training.</li> <li>■ To assist LEAs in meeting personnel shortages.</li> <li>■ To support capacity-building activities.</li> <li>■ To provide technical assistance to schools and LEAs, and provide direct services.</li> </ul> <p><b>PART D: PERSONNEL PREPARATION AND PROFESSIONAL DEVELOPMENT</b></p> <p>SEAs <b>shall</b> use funding to provide professional development activities and personnel preparation:</p> <ul style="list-style-type: none"> <li>■ SEAs shall use professional development funds to: <ul style="list-style-type: none"> <li>• Provide support for special and regular education teachers of students with disabilities and principals through: <ul style="list-style-type: none"> <li>– Teacher mentoring, team teaching, reduced class schedules and caseloads, and intensive professional development.</li> <li>– Guiding beginning teachers using standards or assessments.</li> <li>– Encouraging collaborative and consultative models of providing early intervention, special education, and related services.</li> </ul> </li> <li>• Provide professional development activities that improve the knowledge of special and regular education teachers concerning: <ul style="list-style-type: none"> <li>– The academic and developmental or functional needs of students with disabilities or effective instructional strategies.</li> <li>– Effective instructional practices that provide training on teaching students with different learning styles, involve collaborative groups, and provide training methods in the following: behavioral interventions and supports, scientifically based literacy instruction, early interventions, the successful transitioning to postsecondary opportunities, and parent involvement.</li> </ul> </li> </ul> </li> </ul>	<p><b>TITLE I: YOUTH ACTIVITIES</b></p> <p>The state has broad flexibility to fund efforts to train staff and educators of local boards, offices of chief elected officials, one-stop operators, one-stop partners, and eligible service providers in local areas based on their needs.</p> <p><b>TITLE I: ADULT ACTIVITIES</b></p> <p>The state is <b>required</b> to fund the development and training of staff of these entities, which may include training of staff to provide opportunities for individuals with barriers to employment to enter in-demand industry sectors or occupations and nontraditional occupations.</p> <p><b>TITLE II: ADULT EDUCATION AND FAMILY LITERACY</b></p> <p>States are required to establish or operate high-quality professional development programs to improve:</p> <ul style="list-style-type: none"> <li>■ Instruction in essential components of reading instruction.</li> <li>■ Other instruction related to specific needs of adults.</li> <li>■ Instruction provided by volunteers or state personnel.</li> <li>■ Dissemination of information about models and promising practices related to such programs.</li> </ul>



ESSA	Perkins V	IDEA	WIOA
<ul style="list-style-type: none"> <li>■ Build capacity, including through evidence-based practices, to deliver instruction for dual/ concurrent coursework, Advanced Placement/International Baccalaureate coursework, or early college coursework that leads to college credit.</li> <li>■ Integrate work-based learning experiences into academic and CTE coursework.</li> </ul> <p><b>TITLE IV: 21ST CENTURY SCHOOLS</b></p> <p>The SEA and LEA <b>may</b> use funds to:</p> <ul style="list-style-type: none"> <li>■ Provide effective STEM instruction, including integrating STEM with other academic subjects.</li> <li>■ Help students develop relationship-building skills, such as effective communication.</li> <li>■ Support college and career guidance and counseling programs, including training counselors to effectively use labor market data.</li> </ul> <p><b>COMPREHENSIVE NEEDS ASSESSMENT</b></p> <p>Title I schools implementing schoolwide programs must conduct comprehensive needs assessments that take into account achievement against state academic standards.</p>	<ul style="list-style-type: none"> <li>■ <b>May</b> recruit and retain CTE educators and staff.</li> <li>■ <b>May</b> purchase equipment, technology, and instructional materials aligned with business and industry needs.</li> <li>■ <b>May</b> fund activities to coordinate CTE programs with workforce programs established under WIOA, including within-sector partnerships.</li> </ul> <p><b>COMPREHENSIVE NEEDS ASSESSMENT</b></p> <p>LEAs <b>must</b> develop and conduct a comprehensive needs assessment, in consultation with the state or local workforce boards, that describes:</p> <ul style="list-style-type: none"> <li>■ Progress against targets for all secondary school accountability indicators, including achievement against state academic standards.</li> <li>■ How CTE programs are sufficient in size, scope, and quality to meet the needs of all students, including progress toward equal access to CTE coursework and programs of study.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and implement initiatives to promote recruitment and training of special education teachers, including mentoring, induction, and support for beginning teachers, and incentives to retain teachers.</li> <li>■ The Secretary <b>shall</b> award grants to SEAs, LEAs, charter schools, and other eligible entities to: <ul style="list-style-type: none"> <li>• Ensure personnel have the necessary skills and knowledge to be successful in serving students with disabilities.</li> <li>• Encourage increased focus on academics and core content areas.</li> <li>• Ensure regular education teachers have the necessary skills and knowledge to be successful in serving students with disabilities in regular education classrooms.</li> <li>• Ensure that special education teachers meet the qualifications.</li> <li>• Ensure that personnel preparation programs include training in early intervention, educational, and transition services; in involving parents; and in positive behavioral supports.</li> <li>• Provide professional development for principals, superintendents, and other administrators.</li> <li>• Provide support for beginning special educators.</li> </ul> </li> </ul>	



# Pathways and Supports

The Pathways and Supports quadrant analyzes the coordinated system of supports and services that support individual student development. In this sense, Pathways and Supports set the context wherein students determine career goals, master content, determine postsecondary options for accomplishing their goals, and overcome barriers to postsecondary success. The four laws reference supportive services related to receiving academic content, career awareness, work-based learning, and knowledge of postsecondary pathways. In addition to the education focus, the laws identify nonacademic support services necessary for student success, including health services, counseling, transportation, and housing.



**ESSA** | Title I, Part A allows LEAs to integrate work-based learning experiences into the WRE provision to support academic and CTE skill attainment. ESSA does not require career awareness activities; however, funds may be used for advanced coursework and other educational experiences that support transitions from high school to postsecondary education, training, or work. ESSA funding for career counseling can help students identify viable career pathways and establish partnerships among LEAs, businesses, and other stakeholders. Finally, Title I, Part A and Title IV, Part A provide funding for improving conditions for learning for disadvantaged students, including academic and nonacademic pipeline services that address readiness to learn. Certain sources of funding must be used to support evidence-based practices grounded in rigorous research.



**PERKINS V** | Under Perkins V, CTE must support student pathways knowledge by contributing to all students' knowledge of an industry. Local areas must provide at least one program of study that links integrated academic, technical, and employability skills instruction and training across secondary and higher education, training, and/or work opportunities. States must articulate program strategies specifically for special populations. Furthermore, embedded in the Perkins V definition of CTE is the requirement that sequenced coursework and training leads to industry-recognized postsecondary credentials. Finally, local funding may be used to support work-based learning experiences for CTE students, dual/concurrent coursework and early college opportunities, or nonacademic support services for disadvantaged and/or special populations (such as child care or transportation). In addition to these explicit uses, Perkins V includes "catchall" provisions that gives states and LEAs flexibility to fund activities that improve CTE and are aligned with needs assessments.



**IDEA** | Each student's IEP must include the provision of special education and related services and supplementary aids and services. Funds may be used for the development and implementation of programs that improve the transition from school to post-school activities, including the coordination of services with agencies involved in supporting the transition of students with disabilities to postsecondary activities, such as post-secondary education, vocational education, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation. Transition services are based on the individual child's needs, and take into account the child's strengths, preferences, and interests; and include instruction, related services, community experiences, the development of employment and other post-secondary adult living objectives, and the acquisition of daily living skills and functional vocational evaluation.

Other supports that are eligible to receive funding include the provision of behavioral interventions and supports and appropriate mental health services, and the promotion and coordination of health and mental health services by the educational system. Grants to states to provide special education and related services, such as transportation, developmental, corrective, and other supportive services (including counseling services) are also available.

## PATHWAYS AND SUPPORTS INDICATORS

### Academic Organization

- Curriculum, instruction, and assessment
- Pathways to postsecondary opportunities
- Work- and context-based learning
- Well-rounded education

### Pathways Knowledge

- Awareness of pathway options
- Knowledge of personal interests and skills
- Personal goals and aspirations
- Postsecondary transitions
- Career pathways participation
- Guidance/career counseling

### Supports

- Individualized pathways/learning plans
- Pipeline services
- Credit recovery
- Accommodations





**WIOA |** WIOA Title I requires one-stop providers to assess the supportive service needs of adults and youth, defined as services such as transportation, child care, housing, and counseling. One-stop providers must offer career services that connect the career aptitudes and interests of adults to in-demand career opportunities and must help adults and youth navigate these pathways. Work-based learning experiences are required components of these services. WIOA Title I also requires that local workforce development boards lead the development of career pathways by aligning employment, training, education, and supportive services for adults and youth—particularly individuals with barriers to employment. State and local workforce development boards may use funds to drive sector partnerships with businesses that help develop and participate in these pathways. In competitively awarding WIOA Title II funds to adult education providers, states must consider whether the provider will offer flexible schedules and coordinate with federal, state, and local sources of support services, such as child care and transportation.

Table 5 summarizes legislation and regulatory and nonregulatory guidance that addresses each of the Pathways and Supports indicators.



**Table 5. Summary of Pathways and Supports Alignment Findings**

ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE I, PART A: BASIC PROGRAMS</b></p> <p><b>LEAs</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> implement strategies to improve conditions for learning that may include a broad spectrum of support services.</li> <li>■ <b>Must</b>, if appropriate, support academic and CTE content through experiential learning opportunities that promote skills attainment important to in-demand occupations.</li> <li>■ <b>Must</b>, if appropriate, support programs that integrate work-based learning opportunities that provide in-depth interaction with industry professionals and, if appropriate, academic credit.</li> <li>■ <b>Must</b> support transitions from high school to postsecondary education, including, where applicable: <ul style="list-style-type: none"> <li>• Coordination with institutions of higher education and employers.</li> <li>• Increased access to <b>career counseling</b> to identify student interests and skills.</li> </ul> </li> </ul> <p><b>Schoolwide Programs</b></p> <ul style="list-style-type: none"> <li>■ <b>May</b> support counseling, mental health programs, specialized instructional support, mentoring, or other strategies to improve students' skills outside the academic subject areas.</li> <li>■ <b>Must</b> address the needs of all students, but particularly those at risk. Doing so may include: <ul style="list-style-type: none"> <li>• Awareness of opportunities for postsecondary education and the workforce.</li> <li>• CTE programs.</li> <li>• Broadening students' access to advanced coursework.</li> </ul> </li> </ul> <p><b>Targeted Assistance Programs</b></p> <ul style="list-style-type: none"> <li>■ <b>May</b> strengthen academic programs through expanded learning programs.</li> </ul>	<p><b>TITLE I: CTE ASSISTANCE TO STATES</b></p> <p>State plans must describe how they will coordinate with the State workforce development board (and with ESSA administrators, if applicable) to develop local career pathways that provide academic and nonacademic supports, as appropriate, for all students, including strategies for eliminating postsecondary readiness gaps with special populations.</p> <p><b>LEAs</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> provide and support equal access to at least one sequenced program of study integrating core academic and technical training, including employability skills, across secondary and postsecondary education that leads to an industry-recognized credential and meets local or state industry needs.</li> <li>■ <b>Must</b> strengthen and integrate the academic and technical components of CTE programs.</li> <li>■ <b>Must</b> provide career exploration and development activities, in collaboration with local workforce development boards, agencies, or one-stop delivery systems, including in middle grades (Grade 5 and above). These activities may include courses, programs, individual career plans, guidance, and counseling that provide information on occupational supply and demand and all other aspects of an industry.</li> <li>■ <b>May</b> support local relationships among education, business, and one-stop centers, including sector partnerships, to align programs of study with industry demand.</li> <li>■ <b>May</b> directly support out-of-pocket costs for special populations, including fees, dependent care, and transportation.</li> <li>■ <b>May</b> support integration of employability skills into CTE programs and programs of study.</li> <li>■ <b>May</b> expand opportunities to participate in dual/concurrent coursework, early college, Advanced Placement/International Baccalaureate coursework, and CTE pathways and certification exams established through articulation agreements with postsecondary institutions.</li> </ul>	<p><b>PART B: RELATED SERVICES DEFINITION</b></p> <p>Related services are guaranteed to students with disabilities through access to a free appropriate public education. They include:</p> <ul style="list-style-type: none"> <li>■ Transportation</li> <li>■ Developmental, corrective, and other supportive services, including counseling services and medical services</li> <li>■ Early identification and assessment</li> </ul> <p>The Secretary <b>shall</b> make grants to support the provision of special education and related services to students with disabilities.</p> <p><b>PART B: TRANSITION SERVICES</b></p> <ul style="list-style-type: none"> <li>■ Transition services are a coordinated set of activities to facilitate the child's movement from school to post-school activities, including postsecondary education, vocational education, integrated employment, continuing and adult education, adult services, independent living, or community participation. These services include instruction, related services, community experiences, the development of employment and post-school living objectives, acquisition of daily living skills, and functional vocational evaluation.</li> <li>■ Part B requires that SEAs and LEAs develop and implement transition programs.</li> </ul>	<p><b>TITLE I: ADULT ACTIVITIES</b></p> <p><b>Local Areas</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> assess needs for supportive services.</li> <li>■ <b>Must</b> provide information regarding the availability of supportive services and referral to these services.</li> <li>■ <b>Must</b> provide career services, which may include career planning, internships, and work experiences that are linked to careers.</li> <li>■ <b>Must</b> provide, if appropriate for obtaining employment, services to develop an individual employment plan, including employment goals, achievement objectives, providers of training services, and a career pathway.</li> <li>■ <b>May</b> provide customer support to help individuals overcome barriers to employment.</li> <li>■ <b>May</b> coordinate local services with programs for individuals with disabilities.</li> </ul> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> assist local areas in developing, convening, and implementing industry or sector partnerships.</li> <li>■ <b>May</b> use funds to articulate and implement pathways.</li> </ul>



ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE I, PART A: WELL-ROUNDED EDUCATION (WRE)</b></p> <p>LEAs and Title I schools <b>may</b> include, in a WRE, Advanced Placement/International Baccalaureate, dual/concurrent, or early college coursework; career exploration activities; work-based learning; or other programming that supports transitions to postsecondary education, training, or work. Additional areas within ESSA where WRE is referenced include:</p> <ul style="list-style-type: none"> <li>▪ Title II, Part A: Supporting Effective Instruction</li> <li>▪ Title IV, Part A: Student Support and Academic Enrichment Grants (SSAEG)</li> <li>▪ Title IV, Part B: 21st Century Schools</li> </ul> <p><b>TITLE I: SCHOOL IMPROVEMENT</b></p> <p>LEAs with schools receiving comprehensive or targeted supports and improvement must fund evidence-based improvement practices.</p> <p><b>TITLE IV, PART B: LOCAL FUNDING FOR SSAEG AND 21ST CENTURY SCHOOLS</b></p> <p>Promoting a WRE that <b>may</b> include:</p> <ul style="list-style-type: none"> <li>▪ Work-based learning and field-based experiences.</li> <li>▪ Service learning.</li> <li>▪ College and career guidance and counseling.</li> <li>▪ Evidence-based supports (to the extent possible) for mental health, drug, and violence prevention programs, trauma support, and reduction of exclusionary discipline practices.</li> </ul> <p><b>TITLE IV: PROMISE NEIGHBORHOODS AND FULL-SERVICE COMMUNITY LEARNING SCHOOLS</b></p> <p>Grantees <b>must</b> provide <b>pipeline services</b> to schools with high concentrations of low-income students.</p> <p><b>TITLE I: DIRECT STUDENT SERVICES FUNDS</b></p> <p>States <b>may</b> fund Advanced Placement/International Baccalaureate, dual/concurrent, or early college coursework and CTE that leads to credentials.</p>	<ul style="list-style-type: none"> <li>▪ <b>May</b> provide CTE to adults and out-of-school youth to allow them to complete secondary school or upgrade technical skills.</li> <li>▪ <b>May</b> support a continuum of work-based learning activities.</li> <li>▪ <b>May</b> support access to and success in STEM-related fields for underrepresented student groups, including integration of arts.</li> <li>▪ <b>May</b> support integration of arts and design skills.</li> <li>▪ <b>May</b> support other activities to improve CTE that are aligned with the local needs assessment.</li> </ul> <p><b>States</b></p> <ul style="list-style-type: none"> <li>▪ <b>Must</b> support, develop, or improve CTE programs, and promote equitable access to such programs for all students.</li> <li>▪ <b>May</b> develop statewide programs of study, support those established by state/local workforce boards, or approve locally developed programs of study. The programs may include standards; curriculum and course development; and career exploration, guidance and advisement activities and resources.</li> <li>▪ <b>May</b> establish statewide articulation agreements between secondary and postsecondary programs or between associate and baccalaureate programs.</li> <li>▪ <b>May</b> support CTE programs and programs of study identified by state and local workforce development boards under WIOA.</li> <li>▪ <b>May</b> establish sector partnerships among LEAs, institutions of higher education, adult education providers, and other entities—such as employers, labor organizations, intermediaries, parents, and local partnerships—to develop and support student completion of a program of study, work-based learning, dual/current coursework, or early college.</li> <li>▪ <b>May</b> support equitable access to high-quality programs of study, including through awarding incentive grants to encourage progress of special populations toward closing college and career readiness gaps.</li> <li>▪ <b>May</b> support and improve career guidance and academic counseling, including counseling regarding financial aid and direct support services for special populations.</li> </ul>	<p><b>PART B: BEHAVIORAL SUPPORTS AND HEALTH SERVICES</b></p> <p>The Secretary <b>may</b> support activities to:</p> <ul style="list-style-type: none"> <li>▪ Establish, expand, or increase the scope of behavioral supports and systemic interventions, by providing for effective, research-based practices, including stronger linkages between school-based services and community-based resources (such as community mental health).</li> <li>▪ Improve interim alternative educational settings by promoting interagency coordination and coordinated service delivery, including with community mental health providers.</li> </ul> <p><b>PART B: STATE-LEVEL ACTIVITIES USE OF FUNDS</b></p> <p>Funds <b>may</b> be used in the following state-level activities:</p> <ul style="list-style-type: none"> <li>▪ Assisting LEAs in providing behavioral interventions and supports and mental health services.</li> <li>▪ Development and implementation of transition programs, including coordination of services.</li> <li>▪ Alternative programming for students who have been expelled, are in correctional facilities, or are in charter schools.</li> <li>▪ Supporting the development and provision of appropriate accommodations, or alternate assessments that are valid and reliable.</li> </ul>	<p><b>TITLE I: YOUTH ACTIVITIES</b></p> <p><b>Local Areas</b></p> <ul style="list-style-type: none"> <li>▪ <b>Must</b> assess the need for and provide supportive services.</li> <li>▪ <b>Must</b> provide adult mentoring for at least 12 months.</li> <li>▪ <b>Must</b> provide guidance and counseling.</li> <li>▪ <b>Must</b> identify service strategies for each individual that identify career pathways that include education and employment goals.</li> <li>▪ <b>Must</b> provide activities leading to attainment of a secondary diploma or its equivalent, or a recognized postsecondary credential.</li> <li>▪ <b>Must</b> provide unpaid and paid work experiences that integrate occupational and academic education.</li> <li>▪ <b>Must</b> provide services, such as career awareness and career exploration services, that provide labor market and employment information about in-demand industry sectors or occupations in the local area.</li> </ul> <p><b>States</b></p> <ul style="list-style-type: none"> <li>▪ <b>May</b> support the delivery of career services in the one-stop delivery system.</li> <li>▪ <b>May</b> develop evidence-based programs for youth to re-enter secondary school and for individuals to graduate, enroll in postsecondary and training, and enter pathways to employment.</li> </ul>



ESSA	Perkins V	IDEA	WIOA
<p><b>TITLE IV, PART A: STUDENT SUPPORT AND ACADEMIC ENRICHMENT GRANTS</b></p> <p>LEAs <b>may</b> provide mentoring and counseling services for all students, including those who are at risk of academic failure.</p> <p><b>TITLE IV, PART F (PROMISE NEIGHBORHOODS AND 21ST CENTURY COMMUNITY LEARNING CENTERS): PIPELINE SERVICES</b></p> <p>The term “pipeline services” means a continuum of coordinated supports, services, and opportunities for children from birth through entry into and success in both postsecondary education and career attainment. Such services include, at a minimum, strategies to address through services or programs (including integrated student supports) the following:</p> <ul style="list-style-type: none"> <li>■ High-quality early childhood education programs.</li> <li>■ High-quality school and out-of-school-time programs.</li> <li>■ Activities that support postsecondary and workforce readiness, which may include job training, internship opportunities, and career counseling.</li> <li>■ Social, health, nutrition, and mental health services and supports.</li> <li>■ Juvenile crime prevention and rehabilitation programs.</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>May</b> support increased access to and success in STEM fields, including integration of arts and design skills, particularly for underrepresented student groups.</li> <li>■ <b>May</b> support career academies.</li> <li>■ <b>May</b> create, evaluate, and support competency-based curricula.</li> <li>■ <b>May</b> support other activities that improve CTE, such as advanced coursework, work-based learning and STEM coursework, or other activities aligned with local needs.</li> </ul> <p><b>TITLE I: INNOVATION AND MODERNIZATION GRANTS</b></p> <p>States and LEAs must develop or implement evidence-based, field-initiated innovations in CTE, and rigorously evaluate them, with priority given to programs for students from low-income families.</p> <ul style="list-style-type: none"> <li>■ <b>May</b> support dual/concurrent coursework, early college and Advanced Placement/International Baccalaureate coursework and examinations.</li> <li>■ <b>May</b> establish work-based learning opportunities and support their integration into programs of study.</li> </ul>		<p><b>TITLE II: ADULT EDUCATION AND LITERACY ACTIVITIES</b></p> <p>Uses the same definition of “individuals with barriers to employment” as WIOA Title I youth, adult, and dislocated worker programs.</p> <p><b>States</b></p> <ul style="list-style-type: none"> <li>■ <b>Must</b> align activities for individuals with pathways that provide employment and training services.</li> <li>■ <b>May</b> develop content and models for integrated education and training and career pathways.</li> <li>■ <b>May</b> develop and implement a system to assist in the transition from adult education to postsecondary education.</li> <li>■ <b>May</b> develop and implement programs and services to meet the needs of adult learners with learning disabilities or English learners.</li> </ul>



## Conclusion

ESSA, Perkins V, IDEA, and WIOA play important and complementary roles in educating the country's workforce and providing the academic, technical, and employability skills needed to be successful. Creating this coherent education-to-workforce pipeline requires aligning implementation efforts across the four laws and their key stakeholders. To support this alignment, the most recent versions of these laws align various policies and key definitions, and provide requirements and opportunities to coordinate cross-agency work. This brief analyzes how each of the laws reflect key indicators of college and career readiness. Using the College and Career Readiness and Success Center Organizer as the framework for analysis, this brief and accompanying supplemental resources can be used by SEA and LEA teams to review their implementation efforts—including the general K-12 system, education for students with disabilities, CTE programs, 2-year and 4-year postsecondary institutions, technical training programs, adult education, and apprenticeship programs—to strategically coordinate education-to-career pipelines and ensure that more students are ready for the rigor and requirements of college and career. Finally, considering the intersections between these four laws provides stakeholders an opportunity to increase efficiency and coherence, and ensure that there is a seamless system of **academic, technical, and employability skills** preparedness.





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# ADULT EDUCATION AND FAMILY LITERACY ACT (AEFLA) RESOURCE GUIDE



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## Introduction

**THE ADULT EDUCATION AND FAMILY LITERACY ACT (AEFLA)**, Title II of the Workforce Innovation and Opportunity Act (WIOA), is the principal source of federal funding for states for adult education programs. The Office of Career, Technical, and Adult Education's (OCTAE) Division of Adult Education and Literacy (DAEL) administers AEFLA. The purpose of AEFLA's basic state grant program is to—

- (1) assist adults to become literate and obtain the knowledge and skills necessary for employment and economic self-sufficiency;
- (2) assist adults who are parents or family members to obtain the education and skills that—
  - (A) are necessary to becoming full partners in the educational development of their children; and
  - (B) lead to sustainable improvements in the economic opportunities for their family;
- (3) assist adults in attaining a secondary school diploma and in the transition to postsecondary education and training, including through career pathways; and
- (4) assist immigrants and other individuals who are English language learners in—
  - (A) improving their—
    - (i) reading, writing, speaking, and comprehension skills in English; and
    - (ii) mathematics skills; and
  - (B) acquiring an understanding of the American system of Government, individual freedom, and the responsibilities of citizenship.

The statute requires states to allocate no less than 82.5 percent of their allotments to local agencies, through a competitive grant or contract process. The following resource guide provides additional support to the following technical assistance modules, including:

- [Performance Accountability](#)
- [One-Stop Partner Roles and Responsibilities](#)
- [Competitions and Making Awards under Subpart C of 34 CFR Part 463](#)
- [AEFLA Activities: Integrated Education and Training\(IET\)](#)
- [AEFLA Activities: Basic Grant Services for English Language Learners](#)
- [AEFLA Activities: Workforce Preparation](#)
- [Section 243 Integrated English Literacy and Civics Education Program](#)

## I. Performance Accountability

### *Statute*

To locate this section within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the key words in the box that pops up within the document. The search will take you to that section in the document.

- [WIOA title I, Chapter 4, Performance Accountability \(Section 116\).](#)

### *Regulations—Subpart I—Performance Accountability under Title I of the WIOA*

- [§ 463.150](#) What definitions apply to WIOA performance accountability provisions?
- [§ 463.155](#) What are the primary indicators of performance under WIOA?

- [§ 463.160](#) What information is required for State performance reports?
- [§ 463.165](#) May a State establish additional indicators of performance?
- [§ 463.170](#) How are State levels of performance for primary indicators established?
- [§ 463.175](#) What responsibility do States have to use quarterly wage record information for performance accountability?
- [§ 463.180](#) When is a State subject to a financial sanction under the Workforce Innovation and Opportunity Act?
- [§ 463.185](#) When are sanctions applied for a State's failure to submit an annual performance report?
- [§ 463.240](#) What are the requirements for data validation of State annual performance reports?

### ***OCTAE Program Memorandum***

This policy guidance, issued jointly by the U.S. Department of Education, Office of Special Education and Rehabilitative Services, Rehabilitation Services Administration and the U.S. Department of Labor (DOL), Employment and Training Administration, provides sub-regulatory guidance on the requirements set forth in WIOA related to the implementation and operation of the performance accountability system under section 116 of WIOA and the implementing joint regulations.

- [WIOA Performance Accountability Guidance 17-2](#) (December 19, 2016; Revised August 23, 2017)

### ***ED-DOL Joint Guidance***

The U.S. Departments of Education and Labor have collaboratively issued joint guidance to assist state agencies, educational agencies and institutions, and service providers in meeting the performance reporting and evaluation requirements of WIOA. The guidance provides States with information about applicable requirements for, and procedures and options for, matching confidential unemployment compensation information from wage records with personal information from vocational rehabilitation records and personally identifiable information from education records, and for protecting the confidentiality of information contained in such records.

- [Data Matching to Facilitate WIOA Performance Reporting and Evaluation](#) (Performance Reporting and Evaluation information can be found in the Executive Summary on pages 3-5 and section "Options for Matching Student Data with UC Wage Records to Report Performance Outcomes" on pages 29-51.)

### ***ED-DOL Joint Performance Information and NRS Training Presentations***

- [A Snapshot of first Year WIOA Performance Data](#) (2018 National Meeting of Adult Education State Directors PowerPoint presentation)
- [LEAP Again: Updates and Training on WIOA Accountability](#) (2017 National Meeting of Adult Education State Directors PowerPoint presentation) Includes clarification on key accountability topics, updated guidance on performance reporting requirements, and how to discuss the changes in the NRS table changes with local and state stakeholders.
- [Evaluating Program Effectiveness](#) (2018 NRS Regional Training) Presentation, planning guide, and handouts for states to use in developing a systematic approach to evaluating local program effectiveness using NRS data, including WIOA performance indicators.
- [National Reporting System for Adult Education 2017 Online Course Catalog](#) These free, online courses are designed for adult education local program administrators and staff and state adult education staff to learn about the NRS requirements and how to improve the quality of NRS data collection and usage.
- [WIOA Performance Accountability](#): Review of the Performance Accountability Guidance for WIOA (Webinar presented by the U.S. Departments of Education and Labor on January 11, 2017)

## II. One-Stop Partners' Roles and Responsibilities

### *Statute*

To locate these sections within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- [WIOA Title I, Chapter 2, Local Provisions \(Section 107 Local Workforce Development Boards\)](#)
- [WIOA Title I, Chapter 2, Local Provisions \(Section 108 Local Plans\)](#)

### *Regulations—Subpart J—Description of the One-Stop Delivery System under Title I of the Workforce Innovation and Opportunity Act*

- [§ 463.300](#) What is the one-stop delivery system?
- [§ 463.305](#) What is a comprehensive one-stop center and what must be provided there?
- [§ 463.310](#) What is an affiliated site and what must be provided there?
- [§ 463.400](#) Who are the required one-stop partners?
- [§ 463.410](#) What other entities may serve as one-stop partners?
- [§ 463.415](#) What entity serves as the one-stop partner for a particular program in the local area?
- [§ 463.420](#) What are the roles and responsibilities of the required one-stop partners?
- [§ 463.425](#) What are the applicable career services that must be provided through the one-stop delivery system by required one-stop partners?
- [§ 463.430](#) What are career services?
- [§ 463.500](#) What is the Memorandum of Understanding for the one-stop delivery system and what must be included in the Memorandum of Understanding?
- [§ 463.505](#) Is there a single Memorandum of Understanding for the local area, or must there be different Memoranda of Understanding between the Local Workforce Development Board and each partner?
- [§ 463.510](#) How must the Memorandum of Understanding be negotiated?
- [§ 463.600](#) Who may operate one-stop centers?
- [§ 463.620](#) What is the one-stop operator's role?
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- [§ 463.700](#) What are the one-stop infrastructure costs?
- [§ 463.705](#) What guidance must the Governor issue regarding one-stop infrastructure funding?
- [§ 463.710](#) How are infrastructure costs funded?
- [§ 463.715](#) How are one-stop infrastructure costs funded in the local funding mechanism?
- [§ 463.720](#) What funds are used to pay for infrastructure costs in the local one-stop infrastructure funding mechanism?
- [§ 463.725](#) What happens if consensus on infrastructure funding is not reached at the local level between the Local Workforce Development Board, chief elected officials, and one-stop partners?
- [§ 463.730](#) What is the State one-stop infrastructure funding mechanism?
- [§ 463.731](#) What are the steps to determine the amount to be paid under the State one-stop infrastructure funding mechanism?

- § [463.735](#) How are infrastructure cost budgets for the one-stop centers in a local area determined in the State one-stop infrastructure funding mechanism?
- § [463.736](#) How does the Governor establish a cost allocation methodology used to determine the one-stop partner programs' proportionate shares of infrastructure costs under the State one-stop infrastructure funding mechanism?
- § [463.737](#) How are one-stop partner programs' proportionate shares of infrastructure costs determined under the State one-stop infrastructure funding mechanism?
- § [463.738](#) How are statewide caps on the contributions for one-stop infrastructure funding determined in the State one-stop infrastructure funding mechanism?
- § [463.740](#) What funds are used to pay for infrastructure costs in the State one-stop infrastructure funding mechanism?
- § [463.745](#) What factors does the State Workforce Development Board use to develop the formula described in the Workforce Innovation and Opportunity Act, which is used by the Governor to determine the appropriate one-stop infrastructure budget for each local area operating under the State infrastructure funding mechanism, if no reasonably implementable locally negotiated budget exists?
- § [463.750](#) When and how can a one-stop partner appeal a one-stop infrastructure amount designated by the State under the State infrastructure funding mechanism?
- § [463.755](#) What are the required elements regarding infrastructure funding that must be included in the one-stop Memorandum of Understanding?
- § [463.760](#) How do one-stop partners jointly fund other shared costs under the Memorandum of Understanding?
- § [463.800](#) How are one-stop centers and one-stop delivery systems certified for effectiveness, physical and programmatic accessibility, and continuous improvement?
- § [463.900](#) What is the common identifier to be used by each one-stop delivery system?

### ***OCTAE Program Memoranda***

- [OCTAE Program Memorandum 17-4: One-Stop Operations Guidance for the American Job Center Network](#) (January 18, 2017)
- [OCTAE Program Memorandum 17-3: Infrastructure Funding of the One-Stop Delivery System](#) (January 18, 2017)
- [OCTAE Program Memorandum 15-3: Vision for the One-Stop Delivery System under the Workforce Innovation and Opportunity Act](#) (August 13, 2015)

### ***Presentation***

- [Infrastructure Agreement: Comparing the Local and State Funding Mechanisms](#) (2017 National Meeting of Adult Education State Directors PowerPoint presentation)
- [One-Stop Partnerships: Developing the Memorandum of Understanding for Operation of the One-Stop Delivery System](#) (2017 National Meeting of Adult Education State Directors PowerPoint presentation)
- [Performance Matters: Improving Intake and Partner Collaboration](#) (2018 National Meeting of Adult Education State Directors PowerPoint presentation)
- [Unpacking Title I Regulations: State and Local Board Representation—Required Partners and Their Roles in the One-Stop](#) (2016 National Meeting of Adult Education State Directors PowerPoint presentation)

## Resources and Tools

- [One-Stop Infrastructure Costs FAQs](#) The U.S. Department of Education, Office of Special Education and Rehabilitative Services (OSERS), Rehabilitation Services Administration (RSA) provide answers to 13 commonly asked questions about WIOA partners and the costs for one-stop infrastructure.
- [Sample MOU Infrastructure Costs Toolkit](#) A joint publication from the U.S. Departments of Education, Health and Human Services, and Labor with a sample memorandum of understanding (MOU) and accompanying cost allocation analyses that may be used as a guide or toll when addressing the requirements of section 121 of WIOA and the implementing regulations 20 CFR part 678 and 34 CFR parts 361 and 463.

## III. Competitions and Making Awards under Subpart C of 34 CFR Part 463

### Statute

To locate this section within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- [WIOA Title II, Adult Education and Literacy \(Subtitle B—State Provisions and Subtitle C Local Provisions\)](#)

### Regulations—Subpart C—How Does a State Make an Award to Eligible Providers?

- [§ 463.20](#) What is the process that the eligible agency must follow in awarding grants or contracts to eligible providers?
- [§ 463.21](#) What processes must be in place to determine the extent to which a local application for grants or contracts to provide adult education and literacy services is aligned with a local plan under section 108 of WIOA?
- [§ 463.22](#) What must be included in the eligible provider’s application for a grant or contract?
- [§ 463.23](#) Who is eligible to apply for a grant or contract for adult education and literacy activities?
- [§ 463.24](#) How must an eligible provider establish that it has demonstrated effectiveness?
- [§ 463.25](#) What are the requirements related to local administrative cost limits?
- [§ 463.26](#) What activities are considered local administrative costs?

### OCTAE Program Memoranda

- [OCTAE Program Memorandum 17-1: Clarifications Regarding Competition and Award of AEFLA Funds to Eligible Providers under the Workforce Innovation and Opportunity Act](#) (October 18, 2016)
- [OCTAE Program Memorandum 15-6: Competition and Award of Adult Education and Family Literacy Act Funds under the Workforce Innovation and Opportunity Act—Frequently Asked Questions](#) (December 8, 2015)

### Presentations

- [Running Local Competitions](#) (2017 National Meeting for Adult Education State Directors PowerPoint Presentation)
- [Unpacking the Regulations: How Does a State Make an Award to Eligible Providers?](#) (2016 National Meeting for Adult Education State Directors PowerPoint Presentation)



- [Unpacking the Regulations: Programs for Corrections Education and the Education of Other Institutionalized Individuals](#) (2016 National Meeting for Adult Education State Directors PowerPoint Presentation)

### *Resources and Tools*

- [Determining Applicant Eligibility When Conducting a State Competition for AEFLA Funds: Technical Assistance Guide](#) The U.S. Department of Education, Office of Career, Technical, and Adult Education published this technical assistance guide to clarify what it means for a State agency to evaluate an AEFLA funding application for an eligible provider’s demonstrated effectiveness (an eligibility requirement). This guide contains tools a State may use to: evaluate whether its application for AEFLA funds meets federal requirements to determine the eligibility of AEFLA applicants, support the development of the funding application and supporting materials, and guide the State’s process for reviewing the eligibility of applicants received and their application materials.

## IV. AEFLA Activities: Integrated Education and Training

### *Statute*

To locate this section within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- [WIOA Title II, Adult Education and Literacy \(Section 203 Definitions\)](#)

### *Regulations—Subpart D—What Are Adult Education and Literacy Activities?*

- [§ 463.30](#) What are adult education and literacy programs, activities, and services?
- [§ 463.35](#) What is integrated education and training?
- [§ 463.36](#) What are the required components of an integrated education and training program funded under title II?
- [§ 463.37](#) How does a program providing integrated education and training under title II meet the requirement that the three required components be “integrated”?
- [§ 463.38](#) How does a program providing integrated education and training under title II meet the requirement that the integrated education and training program be “for the purpose of educational and career advancement”?

### *Presentations*

- [Tips and Tools for Integrated Education & Training](#) (2018 National Meeting of Adult Education State Directors PowerPoint presentation)
- [Unpacking the Regulations: Adult Education and Literacy Activities Part 1](#) (2016 National Meeting of Adult Education State Directors PowerPoint presentation)
- [Unpacking the Regulations: Adult Education and Literacy Activities Part 2](#) (2016 National Meeting of Adult Education State Directors PowerPoint presentation)

## *Resources and Tools*

- [Integrated Education and Training \(IET\) Guide](#) The U.S. Department of Education, Office of Career, Technical, and Adult Education published this guide as a program self-assessment tool when developing or reviewing an IET program.
- [Career Pathways Checklist \(IELCE\)](#) From the U.S. Department of Education, OCTAE, the checklist is designed as a work aid to assess the extent to which a career pathways program meets the requirement in Section (3)(7) of WIOA.

## **V. AEFLA Activities: Basic Grant Services for English Language Learners**

### *Statute*

To locate these sections within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- WIOA [Title II—Adult Education and Literacy, Section 203 Definitions](#)
- WIOA [Title II—Adult Education and Literacy, Subtitle C—Local Provisions \(Section 231\)](#)

### *Regulations—Subpart D—What Are Adult Education and Literacy Activities?*

- [§ 463.31](#) What is the English language acquisition program?
- [§ 463.32](#) How does a program that is intended to be an English language acquisition program meet the requirement that the program leads to attainment of a secondary school diploma or its recognized equivalent and transition to postsecondary education and training or leads to employment?
- [§ 463.33](#) What are the integrated English literacy and civics education services?

### *OCTAE Program Memorandum*

- [OCTAE Program Memorandum 15-7: Integrated English Literacy and Civics Education under the Workforce Innovation and Opportunity Act—Frequently Asked Questions](#) (January 11, 2016)

### *Presentation*

- [Unpacking the Regulations: Adult Education and Literacy Activities](#) Part 1 2016 National Meeting of Adult Education State Directors PowerPoint presentation)

## **VI. AEFLA Activities: Workforce Preparation**

### *Statute*

To locate this section within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- [WIOA title II, Adult Education and Literacy \(Section 203 Definitions\)](#)

## ***Regulations—Subpart D—What Are Adult Education and Literacy Activities?***

- [§ 463.34](#) What are workforce preparation activities?

### ***Resources and Tools:***

- [Employability Skills Framework](#) A one-stop resource for information and tools to inform the instruction and assessment of employability skills.

## **VII. Section 243 Integrated English Literacy and Civics Education (IELCE) Program**

### ***Statute***

To locate this section within the legislation, using your keyboard hold down the Control and F keys simultaneously and enter the keywords in the box that pops up in the document. The search will take you to that section in the document.

- [WIOA title II—Adult Education and Literacy, Subtitle D—General Provisions \(Section 243\)](#)

## ***Regulations—Subpart G—What Is the Integrated English Literacy and Civics Education Program?***

- [§ 463.70](#) What is the Integrated English Literacy and Civics Education program?
- [§ 463.71](#) How does the Secretary make an award under the Integrated English Literacy and Civics Education program?
- [§ 463.72](#) How does the eligible agency award funds to eligible providers for the Integrated English Literacy and Civics Education program?
- [§ 463.73](#) What are the requirements for eligible providers that receive funding through the Integrated English Literacy and Civics Education program?
- [§ 463.74](#) How does an eligible provider that receives funds through the Integrated English Literacy and Civics Education program meet the requirement to use funds for Integrated English Literacy and Civics Education in combination with integrated education and training activities?
- [§ 463.75](#) Who is eligible to receive education services through the Integrated English Literacy and Civics Education program?

### ***OCTAE Program Memorandum***

- [OCTAE Program Memorandum 17-5: Use of Funds Reserved for Activities under Section 243 of the Adult Education and Family Literacy Act \(AEFLA\), Title II of the Workforce Innovation and Opportunity Act \(March 23, 2017\)](#)

### ***Presentation***

- [Unpacking the Regulations: Subpart G—Integrated English Literacy and Civics Education Program \(2016 National Meeting of Adult Education State Directors PowerPoint Presentation\)](#)

### ***Resources and Tools:***

- [Integrating English Literacy and Civics Education \(IELCE\) Program Guide](#) The U.S. Department of Education, Office of Career, Technical, and Adult Education published this guide as a program self-assessment tool when developing or reviewing an IELCE program.

# Transforming Wyoming

20-Year Economic  
Diversification Strategy

August 2018



**Dear Governor Matt Mead and Members of the Joint Minerals, Business and Economic Development Interim Committee,**

Eighteen months ago, you established the Economically Needed Diversity Options for Wyoming (ENDOW) Executive Council to drive Wyoming's economy forward and develop opportunities that will allow our citizens to find good-paying jobs and meaningful work here in Wyoming both now and long into the future. Thank you for your vision.

**We must be a state of innovators and swiftly create the necessary ecosystem for new technologies to thrive.**

As you know, we must move beyond the boom-and-bust cycles that have driven our collective fate for too long and preserve our unique Wyoming character. We cannot afford to be passive or reactive. We must be a state of innovators and swiftly create the necessary ecosystem for new technologies to thrive. This

requires a prepared workforce, improved community amenities and infrastructure, access to capital and the commitment of state agencies to collaborate in new ways. Together, we can jump-start and support the development, attraction and retention of entrepreneurs and enterprises.

ENDOW focuses on industries that have the greatest potential to drive substantial impact and diversification of Wyoming's economy by 2038. Fundamental to this strategy is support of Wyoming's natural resource, tourism/recreation and agriculture industries and a belief that they have more to offer Wyoming's current and future generations. We also believe there is room to grow additional sectors of our economy alongside, not in lieu of, them, including advanced manufacturing and the knowledge and creative sector, which encompasses healthcare, financial and professional services, digital technology, and arts and culture.

Detailed in the report that follows is an action plan reflective of the bold charge given to the ENDOW Executive Council. ENDOW engaged with thousands of Wyoming citizens, hundreds of Wyoming businesses, multiple education and research institutions and countless industry and community leaders to establish a collaborative vision driven from the ground up.



We start from the premise that it is businesses and their actions in the marketplace that will define success, spur economic growth and create jobs. The government's role is not to interfere with that process, but rather to foster, and where possible, accelerate it, including education and workforce training, infrastructure, and research and development. We want to remove the perception that government will be responsible for achieving the plans' objectives.

Like the frontier men and women before us, it is time to blaze a trail and seize the opportunity to set Wyoming on a bold path of prosperity. If not now, when? If not us, who? The time is now.

This action plan was developed with tremendous boldness coupled with Wyoming cowboy pragmatism. This is a 20-year vision — a marathon, not a sprint. However, to successfully take root and grow wings, the Executive Council is encouraging three immediate actions noted in the report to align state resources for long-term success of ENDOW. These include:

- Appointment of a Chief Economic Diversification Officer and a Commission for Economic Diversification;
- Immediate implementation of the actions listed in the building blocks section of the report; and
- Developing action plans for business development and innovation zones, including staffing, resources, funding and statutory changes.

This report is not the end of the road. It does not contain every answer, nor does it go deeply into the collaboration and analysis that will ensure ENDOW's successes for the next 20 years. It is a living and breathing document. ENDOW must continue to evolve with an eye on the horizon, and we must work together, improve each other's work, and build a future that heralds our traditions and also welcomes the next generation of Wyomingites to the table.

We have better clarity about the near-term and less about the distant future. What is more, not every recommendation will succeed or be the right solution for Wyoming. However, we feel strongly that each and every proposal is well researched, thoughtfully considered and an important piece of the puzzle in diversifying Wyoming's economy for future generations.

Lastly, we offer sincere thanks to our volunteer Executive Council, Rural Council, Advisory Council and the thousands of Wyoming citizens who offered their time, talent and expertise to create this vision. From the beginning, ENDOW has been focused on Wyoming people, and driven from the ground up. It is local voices, community participation, and industry drivers that have positioned us for success. Now, it is time for action.

Sincerely,

**Greg Hill**  
ENDOW Chairman

**Bill Schilling**  
ENDOW Vice Chairman



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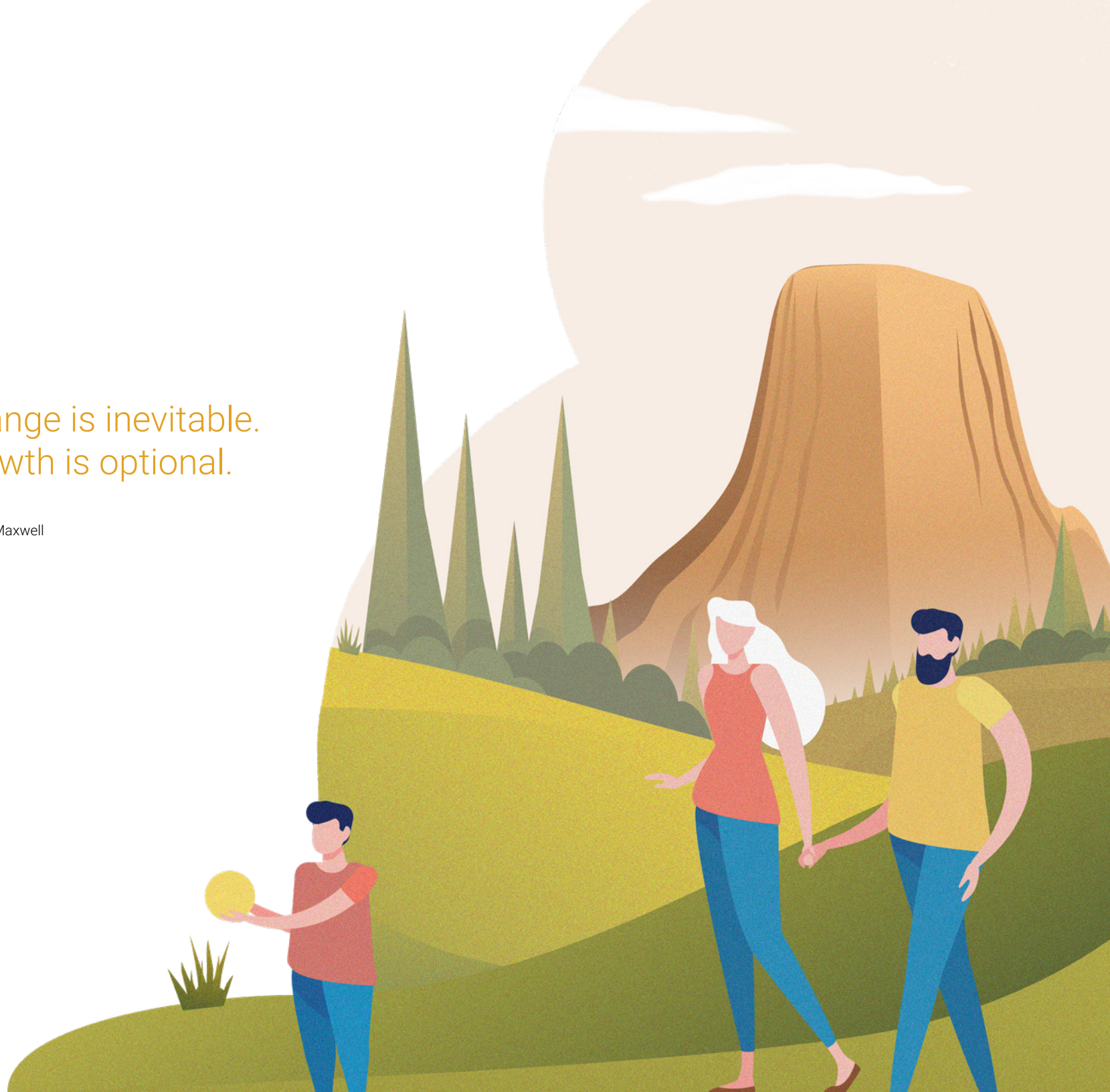
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Why

Change is inevitable.  
Growth is optional.

John C. Maxwell





# We must facilitate diverse, broad, and lasting growth so that the state can prosper no matter the economic climate or status of commodity prices.

## A shared vision, a clear path

We all share a common vision of the future of Wyoming. This vision is focused on Wyoming's greatest strength and asset – its people. In this vision, we see every family and every citizen thriving. We see Wyomingites living their best lives.

This shared vision of the future will not become a reality if we do not act today.

We must evolve beyond the boom-bust cycle of our economy, wherein 70% of state revenue comes from

the energy and mineral industry<sup>1</sup>. We must facilitate diverse, broad, and lasting growth so that the state can prosper no matter the economic climate or the status of commodity prices.

For decades Wyoming has sought to achieve this goal. But previous plans were too narrow in scope, focused on short-term strategies and individual opportunities. All suffered from a lack of carry through and resolve to implement. We have collaborated to build a vision for Wyoming – Economically Needed Diversity Options for Wyoming (ENDOW). This 20-Year Economic Diversification Strategy represent a comprehensive,

long-term approach built on clear objectives and concrete actions. This approach combines tremendous boldness with cowboy pragmatism and will serve as a guide for all of Wyoming, from elected officials and policy makers to industry leaders and citizens. Working together with focus and commitment, we can ensure our shared vision of Wyoming's future will be realized.



## The next generation of Wyomingites

The true purpose of this 20-Year Economic Diversification Strategy is to ensure future generations will find everything they need to thrive right here at home.

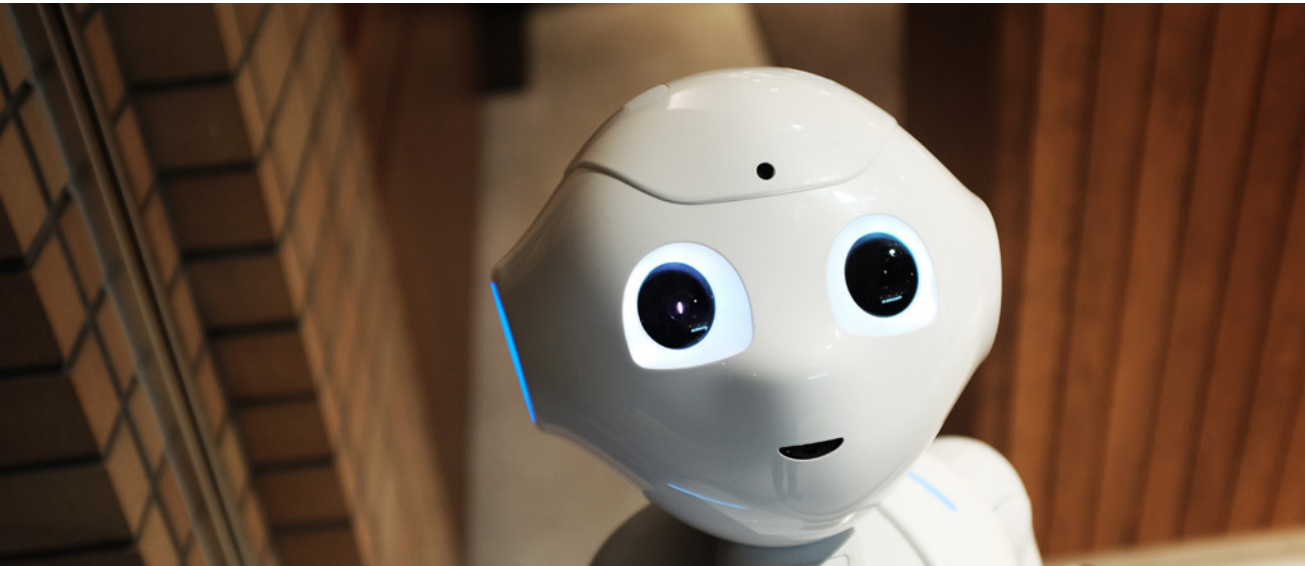
Wyoming does an incredible job educating its citizens and preparing them for success. 100% of our classrooms are connected to broadband via a 100-gigabit, redundant network. Wyoming ranks in the top ten nationally in annual K-12 spending per student. And more than 92% of Wyomingites 25 and older have earned at least a high school diploma, the highest percentage in the country<sup>2</sup>.

Wyoming lost 5,595 residents between July 2016 and July 2017, the largest decline since 1989.

But we struggle to keep Wyomingites in Wyoming. Of all workers 18 years old, only 40% are still working in Wyoming ten years later. And Wyoming lost 5,595 residents between July 2016 and July 2017, the largest decline since 1989<sup>2</sup>. Why? A lack of opportunity.

It is clear that we must diversify and evolve our economy to create an environment that will keep future generations of Wyomingites in Wyoming, and that will attract new Wyomingites from around the country and the world.





## Our future will see disruption

In 2004, Blockbuster Video had 9,000 stores<sup>3</sup>, and Netflix had 2.6 million subscribers<sup>4</sup>. Today, Blockbuster has one store<sup>5</sup>, and Netflix has 130 million subscribers<sup>6</sup>.

As a state, Wyoming has a choice: Do we want to be Blockbuster or Netflix? Do we want to resist change or embrace it as a means to a new economic future unrivaled by any other?

Embracing change means quickly identifying and capitalizing on disruptive services and technologies, which are transforming the global marketplace.

Disruptive technologies include innovations like artificial intelligence, cloud solutions, blockchain, autonomous vehicles, advanced robotics, 5G mobile internet, internet of things (IoT), voice driven software, virtual and augmented reality (VAR), advanced materials, and additive and digital manufacturing, (including and beyond 3D printing).

In 2015, the additive manufacturing industry grew to almost \$5.2 billion, with over a quarter million 3D printers under \$5,000 sold globally<sup>7</sup>.

“By 2021, 75% of new commercial and military aircraft will fly with 3D-printed components<sup>8</sup>.”

Disruptive technologies are – by definition – not new industries, but disruptions to existing ones. It is easy to forget that Netflix and Blockbuster both offer – at their core – the same service. But while Blockbuster resisted change, Netflix embraced it. Wyoming has the opportunity to bolster and amplify our current successes while embracing disruptive services and technologies as a way to future-proof and expand Wyoming’s economy.



The Netflix example is revealing also in the way it demonstrates how disrupting one industry accelerates the evolution of other industries. During its rise, Netflix forced video rental services to rethink their business models. Today – in a world of streaming video and original content – Netflix is doing the same to broadcast television, cable, and the movie industry. This is in addition to the significant role Netflix played in the rise of the subscription service model which has since been adopted by industries and products ranging from toothbrushes and razors to music and gourmet meals.

**We must be a state of innovators and swiftly develop the necessary ecosystem for new technologies to thrive.**

Wyoming's choice to embrace change is about creating growth and opportunities across all our industries, for all of us.

Wyoming's challenge will be to develop flexible systems to identify and capitalize on these disruptions. To do so, we must be a state of innovators and swiftly develop the necessary ecosystem for new technologies to thrive. This requires a prepared workforce, improved community amenities and infrastructure, capital access, and committed state capabilities to accelerate and support the development, attraction, and retention of entrepreneurs and enterprises.

### **A clear, actionable strategy**

This 20-Year Economic Diversity Strategy is designed to be easy to read and to follow. In it, we will establish our primary objectives, describe the history and structure of the ENDOW initiative, and clearly convey the specific aspirations and actions we will take together to ensure our shared vision for the future of Wyoming becomes a reality. This strategy is a directional pointer that will be used to drive development of specific plans and actions.

This report fulfills the Executive Council's responsibility to prepare and submit to the Governor for his approval a 20-Year Economic Diversification Strategy (see W.S. 9-12-1402(a)(iv)). But the work does not end here. After receiving guidance from the Governor, ENDOW will develop 4-year action plans (see W.S. 9-12-1402(a)(v)), complete with policy recommendations and budget requests to implement the ENDOW vision.



What

The primary, long-term (2038)  
objectives of our plan



## Our objectives and economic targets

The ENDOW initiative represents a comprehensive approach to modernizing the traditional economy of Wyoming and supplementing it with forward-thinking strategies designed to take full advantage of disruptive and transformative economic forces worldwide. We expect this proactive approach to yield overwhelmingly positive results and growth over the next 20 years.

Through targeted economic cluster and sector activity, ENDOW aspires to add 100,000 new jobs (at least 35% in rural communities) in Wyoming by 2038. The Economic Analysis Division of the State of Wyoming, Department of Administration and Information, modeled changes in employment, personal income, gross domestic product and population that are expected to result from this growth.

Aspirations are not predictions. They are meant to inspire Wyomingites, industry and public leaders to drive diversification and growth in Wyoming.

## 104K new jobs

In the ENDOW-influenced economy (Table 1) we see employment grow by nearly 104,000 jobs by 2038 as compared to the forecast without ENDOW initiatives.

Compared to 2016 actual numbers, we see the economy pick up nearly 115,000 new jobs. Growth in higher paying jobs – in manufacturing, and in the knowledge and creative sectors – will add to the state’s employment diversity by 2038, demonstrated by the growth in personal income shown in Table 2.

Table 1  
Employment Comparison of Base Case and ENDOW Case  
Division of Economic Analysis, State of Wyoming, using REMI model and BEA data

2016 Actual	2038 Base	2038 ENDOW
396,589	407,700	511,500
Gains over 2016		Gains over 2038 Base
114,911 (29%)		103,800 (25%)

## 79% income growth

By 2038, we expect ENDOW to create jobs in manufacturing, in the knowledge and creative fields (healthcare, financial services, digital, arts and cultural), and also in the more traditional areas of our economy (agriculture, natural resources, tourism and recreation).

Personal income is expected to rise by 79% compared to 2016—and by 20% compared to the year 2038 base case. This growth is shown in Table 2 and Figure 2—in 2016 constant dollars, not influenced by inflation.

Additionally, we aspire to achieve gender wage equality by 2038. In 2016, Wyoming ranked 13th from the bottom nationally, with women earning only 77 cents for every dollar earned by men.

Table 2  
Personal Income Comparison in Millions of 2016 Constant Dollars  
Division of Economic Analysis, State of Wyoming, using REMI model and BEA data

2016 Actual	2038 Base	2038 ENDOW
\$29,965	\$44,500	\$53,600
Gains over 2016		Gains over 2038 Base
\$23,635 (79%)		\$9,100 (20%)



## \$30B GDP growth

Gross Domestic Product (GDP) shines brightly in the ENDOW initiative forecast. In Table 3, we see Wyoming’s GDP growing by \$30 billion, or 82 percent, between 2016 and 2038—this is also an increase of 22% over the 2038 base case (without ENDOW initiatives).

These forecasts are calculated in 2016 constant dollars (millions) and are not influenced by inflation. Additionally, we expect ENDOW to increase exports by five percent annually.

Table 3  
GDP Comparison in Millions of 2016 Constant Dollars  
Division of Economic Analysis, State of Wyoming, using REMI model and BEA data

2016 Actual	2038 Base	2038 ENDOW
\$41,528	\$61,900	\$75,600
Gains over 2016		Gains over 2038 Base
\$34,072 (82%)		\$13,700 (22%)

## 108K population growth

The ENDOW initiative forecasts population growth due to population retention and net positive migration—an outstanding turnaround from recent trends and forecasts. In Table 4, we see the population rising by 135,000 between 2016 and 2038, for an average annual growth rate of 0.9 percent. We expect 108,000 of that increase to result from the actions of ENDOW.

We also anticipate having two communities of greater than 100,000 people by 2038. This is significant, as it is a number at which we believe a community is self-sustaining—when residents are no longer forced to leave their community to find basic services like healthcare. In 2017, Cheyenne estimated 63,624 residents and Laramie County had 98,327 residents.

Table 4  
Population Comparison of Base Case and ENDOW Case  
Division of Economic Analysis, State of Wyoming, using REMI model and BEA data

2016 Actual	2038 Base	2038 ENDOW
585,501	611,800	720,000
Gains over 2016		Gains over 2038 Base
134,499 (23%)		108,200 (18%)



# We're focused on creating opportunities for current and future generations.

## Economic growth requires tax change

It is important to note that our sole charge was to propose a strategy to diversify and expand Wyoming's economy. Economic diversification is about eliminating over-reliance on one industry segment (mineral), ensuring opportunities for workers in diverse industries, and generating the resources necessary to provide public services.

Inaction on any of the ENDOW fronts will ensure (and exacerbate) the ongoing tax revenue problems at the state and local levels, enable continued reliance on public services in excess of revenues, and result in even fewer jobs and less talent – which will hamper our ability to retain youth and attract investment. While the most severe of these impacts may be a few years off, it is now time to act – while the state is still in a position of relative strength.

By design, we focused on creating opportunities for current and future generations to obtain meaningful work and build exciting careers and businesses. We know economic growth will contribute to tax collections, but we also understand the importance of sound, sustainable and equitable tax policy to support our public services.

While ENDOW is absolutely necessary, it will not be sufficient to solve the ultimate revenue problem: a likely declining minerals revenue contribution coupled with a non-sustainable fiscal model where a typical family of three pays \$3,050 in taxes, yet receives \$28,750 in public services. This is clearly unsustainable. For a citizenry that prides itself on the independent cowboy spirit, citizens and non-mineral businesses are not paying their fair share (i.e., the mineral industry is effectively subsidizing everyone else in the state).

The fiscal stability of the state and local governments requires an improvement in our state tax policies because of their dependence on the legislature to set tax policy.

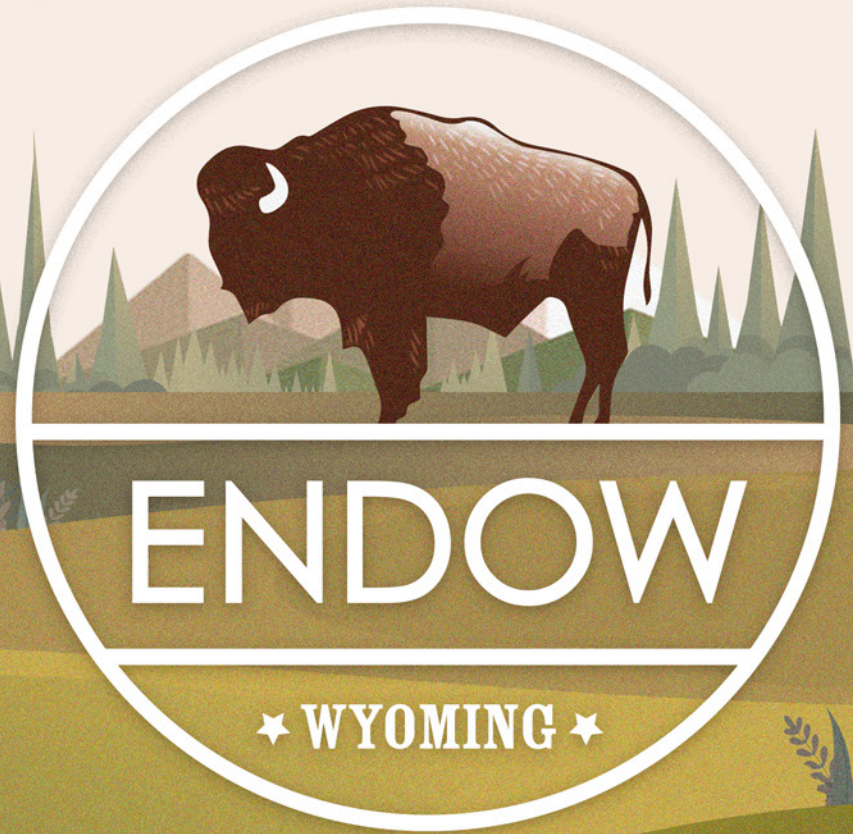
We understand that tax policy is complicated, and change will be difficult and unpopular. But it is imperative that our elected officials revise Wyoming's tax code. We believe it is possible to establish a stable and more diversified tax structure that creates stability while at the same time maintains Wyoming's business-friendly competitive edge.





Who

ENDOW structure and  
timeline of activities



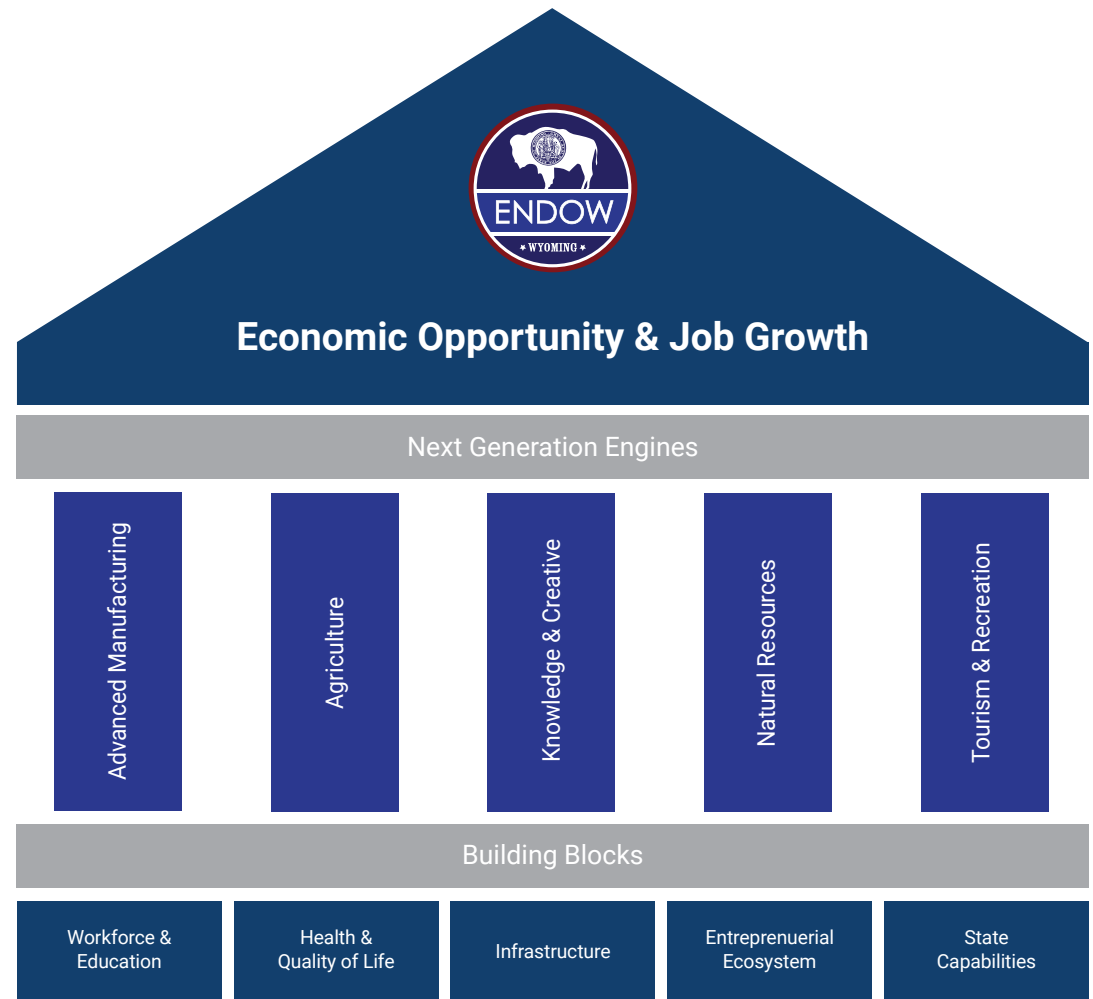
## House of ENDOW

ENDOW aims to promote broad, lasting economic growth at the state and local levels. ENDOW is an opportunity to take the reins and realize a future where our state can prosper no matter what the economic climate or trend in commodity prices.

We have envisioned the structure of ENDOW as a house. This visual representation is intended to help communicate our plans and guide our work. The aspirations and actions of our 20-Year Economic Diversification Strategy – detailed in the next section of this document – are organized around this structure.

Five Building Blocks serve as the foundation of ENDOW: Workforce and Education, Health and Quality of Life, Infrastructure, Entrepreneurial Ecosystem, and State Capabilities. These Building Blocks support and fuel the pillars of ENDOW: Advanced Manufacturing, Agriculture (Sustainable Harvest), Knowledge and Creative (Healthcare, Financial Services, Digital, Arts and Cultural), Natural Resources, and Tourism and Recreation.

It is these Engines that will create economic opportunity and job growth and shelter Wyoming from future economic volatility over time. The Building Blocks are absolutely essential for the next-generation engines to thrive and prosper. If we do not invest in them, Wyoming’s economic engines, existing or prospective, will struggle, sputter or fail.



## ENDOW timeline

In November 2016, Governor Mead announced ENDOW as a means of coordinating and expanding ongoing effort across the state, citing the need for a comprehensive approach to diversify the Wyoming economy. ENDOW was enacted into law in 2017, and shortly thereafter, Governor Mead appointed the ENDOW Executive Council to serve as the managing body of the initiative.

However, the ideas here are not the ideas of a small Executive Council; rather, they represent the ideas of the people of Wyoming.

Over the last 18 months, the Executive Council has volunteered over 8,300 hours to engage thousands of people across Wyoming through social media (including 142,594 Wyoming people reached via Facebook), public surveys (1,243 responses), a live call-in with citizens (5,426 attendees), individual meetings with business leaders, public meetings in various communities across the state (53,485 Facebook Live views of Executive Council meetings), and a youth summit in Laramie (over 200 attendees).

<b>2017</b>	<b>The year of listening deeply to businesses and citizens to understand the current state</b>
<b>Feb / March</b>	Public survey elicits over 400 responses
<b>March</b>	ENDOW initiative is signed into law (Senate File # 0132)
<b>April</b>	Governor Mead appoints Executive Council and announces formation of Rural Council (see Appendix A for membership of ENDOW and affiliated groups)
<b>August</b>	Socioeconomic Assessment of Wyoming report released
<b>December</b>	Preliminary Findings and Recommendations report released
	Meetings were held in Casper, Cheyenne, Cody, Jackson, Laramie, Pinedale, and Sheridan. With the assistance of the Wyoming Business Council, ENDOW was the first state organization to stream all meetings on Facebook Live.

<b>2018</b>	<b>The year of action and charting a new course</b>
<b>January</b>	Governor Mead signs two executive orders (educational attainment, state tech contracts)
<b>March</b>	Six ENDOW bills pass and are signed into law (\$40+ million in appropriations)
<b>May</b>	Public survey gathers over 800 responses
<b>June</b>	ENGAGE (Empowering the Next Generations to Advance and Grow the Economy) Summit
<b>August 24</b>	20-Year Economic Diversification Strategy is submitted to Governor Mead and released to the public
<b>August 27</b>	Joint Minerals Business and Economic Development Interim Committee meets
	Meetings were held in Cheyenne, Jackson, Laramie, Riverton and Rock Springs.





## A look ahead

From the outset, ENDOW was intended to be a long-term strategy for economic diversification. Key to its success is consistent, meaningful check-in and review.

With significant changes in state leadership on the horizon, the Executive Council plans to implement an aggressive time table moving forward, including:

### August - December 2018

Development of 4-year action plans (see W.S. 9-12-1402(a)(v)), complete with policy recommendations and budget requests, if necessary, to implement the ENDOW vision

### December 2018

Leadership transition initial meeting (legislative and gubernatorial)

### April 2019

Post-legislative session strategy session and report review



## ENGAGE

In June 2018, 200 young professionals convened at Governor Mead's invitation. This group, ENGAGE (Empowering the Next Generations to Advance and Grow the Economy), expressed its aspirations and solutions for Wyoming's future.

The ENDOW: ENGAGE Recommendations report, found in Appendix C, provides information on the key themes of connection, inclusion, and investment. A sampling of the report is on the right.

ENGAGE presented their report to the ENDOW Executive Council on June 28, 2018, and a member of ENGAGE demographic was appointed to the Executive Council on July 13, 2018.

ENGAGE has been tasked with long-term activities, including the creation of a four-year strategic plan for the Executive Council, due on November 1, 2018 – plus a gubernatorial transition plan for the incoming administration, due on November 15, 2018.

### Connection

Whether it is connecting entities, individuals, or resources, Wyoming should ensure that it is building bridges among those who can help foster the state environment that they want. This will help future generations learn from past generations—and one another—to diversify and grow Wyoming's economy.

### Inclusion

Wyoming is the Cowboy State and the Equality State—but it is also much more. The next generations want to appreciate a multitude of perspectives and voices to promote personal, community, and state-wide growth. This means continuing to cherish our heritage, but also including those who live outside of the cowboy paradigm.

### Investment

Wyoming has plentiful resources in many sectors, but the state could do more to invest in its people – by providing more infrastructure, more services, and more opportunities in employment and education. Going into the future, Wyoming must increase its investment in innovative and up-and-coming areas to continually develop and diversify the state's economy.



How

The aspirations and actions that will help us meet our objectives



These actions will help us reach our objectives and ensure our shared vision for 2038 will be realized.

### A comprehensive, concrete approach

The following strategy includes aspirations and actions across several key focus areas.

Together, these actions will help us reach our objectives and ensure our shared vision for 2038 will be realized.

#### Contents

New opportunities and positive change

Bolstering our building blocks

Fueling next generation engines

Business Development and Innovation Zones





Robotics  
Autonomous vehicles  
Machine Learning / Artificial Intelligence  
Virtual and Augmented Reality  
Blockchain  
Internet of Things  
Advanced materials  
Additive and digital manufacturing  
Connected worker

## New opportunities and positive change

In the business world, advances in technology create opportunities. Wyoming's challenge will be to develop flexible systems to identify and capitalize on these disruptions. It is in this space that we see the greatest opportunity to distinguish Wyoming from other states, rather than replicate their actions.

To do this, it will be necessary to remain vigilant – with an eye on the future to ensure businesses and the state adapt and take advantage of these disruptions.





### Actions

- The state should appoint or engage a Chief Innovation Officer to develop strategies for the identification, adoption and deployment of disruptive technologies.
- The state should consider seating a Council on Competitiveness—a business-led leadership council to advance research on opportunities and threats—in partnership with private, public, academic and non-profit entities.
- The state should develop a platform (statutory, if necessary) that provides private-sector innovators the ability to test and evolve at state scale. BeefChain, a blockchain for Wyoming certified beef producers, provides an example of this.

**Profile:** Wyoming Health Fairs and SPIRAL Physical Therapy, Inc. are developing a project to provide postural scanning services to the people of Wyoming.

**To do this, the state should encourage and welcome** receipt of unsolicited proposals from the private sector, non-governmental organizations, and academic institutions—creating an open door for ideas and innovations that have the potential to improve public service and advance this economic diversification strategy.

- The state should explore opportunities to deploy or create the space for deployment of disruptive technologies and creative solutions.





## Bolstering our building blocks

For Next Generation Engines to perform at their highest level, Wyoming must strengthen the Building Blocks of our economy by implementing the actions listed in this section.

### Section contents

- Workforce and Education
- Health and Quality of Life
- Infrastructure
- Entrepreneurial Ecosystem
- State Capabilities



## Workforce and Education

A majority of occupations require some form of post-secondary education (e.g., a degree, workforce certificate, industry certificate or other high-quality credential). This need, combined with soft skills (e.g., communications, critical thinking, creativity, leadership, team work, work ethic) will only grow. As companies consider whether to stay in or relocate to a community, having a ready and educated workforce makes a difference. In fact, one of the biggest barriers highlighted by businesses in Wyoming was a lack of skilled workers. This is the classic chicken and egg dilemma – only 40% of all workers 18 years or older are still working in Wyoming after 10 years because of either real or perceived lack of opportunity.

To create the workforce of the future, Wyoming needs a strategy to develop, attract, and retain a skilled, flexible, and technically and scientifically competent workforce. We must be prepared to attract and develop new talent and ensure that current employees are not left behind. This will require an evolution in the primary, secondary and tertiary education system—and an investment in technical, scientific and specialized talent development and training. By 2025, 60 percent of America's workforce will need education beyond high school (a degree, workforce certificate, industry certificate or other high-quality credential). Wyoming's current rate of 45.8 percent matches the national average.

### Aspirations

- By 2025: for 67% of the Wyoming's working population between the ages of 25-64 to attain higher education (e.g., a degree, workforce certificate, industry certificate or other high-quality credential). Our goal is 82% by 2040.
- By 2038: for Wyoming children to enjoy greater access to quality early childhood education.
- By 2028: to decrease youth (18-24 years old) outmigration from 60% to 42%. Further, decrease it to 30% by 2038.



### Actions already underway

- Provide Equitable Opportunities for Students to Learn Computer Science

**SF 29** will add computer science to the state educational program – making Wyoming the first state in the country to require its schools to offer computer science education.

- Improve Higher Education Attainment and Retention of Graduates

**Executive Order 2018-01** Educational Attainment

- Allocate Resources for Workforce Training

**SF 119 (\$5 million)** will establish a dedicated fund for workforce training in priority economic sectors, to ensure Wyoming citizens have the skills they need to meet the needs of existing and emerging industries. This will ensure a sustainable source of workforce training funds to achieve long-term economic diversification goals.

### Additional actions required

- Determine whether Wyoming’s education (primary through post-secondary) and workforce training delivery systems are capable and flexible enough to support Wyoming’s economic diversification objectives. Develop training and re-skilling plans.
- Ensure Wyoming children have greater access to quality early childhood education to provide a foundation for lifelong learning success. To achieve our ambitions, Wyoming must leverage its full education system from pre-kindergarten through post-secondary.
- Promote and incentivize (with tax exemptions if necessary, workers compensation coverage, etc.) the creation of modern apprenticeship, internship and training programs for both new and seasoned workers. **ENGAGE**

**Profile:** Utah Aerospace Pathways – a program that prepares graduating high school students with the skills and knowledge for a rewarding and sustainable career in aerospace manufacturing. It was created and endorsed by industry, government and education leaders and is targeted at high school students in Davis and Granite School Districts. Students entering the program are paid and expect to graduate with an aerospace manufacturing certificate, guaranteeing them an interview with partner companies. After one year of successful work, employees are eligible for employer-paid tuition reimbursement for additional training and education. ([uapathways.com/](http://uapathways.com/))

**Profile:** Apprenticeship Carolina, a division of the South Carolina Technical College System, creates demand-driven registered apprenticeship programs. Eligible businesses can receive tax credit of \$1,000 per apprentice per year for up to four years. High school students receive career and on-the-job technology training at a local business, earning a paycheck and a national credential.

- Research and design a need-based financial aid program for adults, to encourage college attendance and address achievement gaps.

### ENGAGE

**Profile:** Rediscover LCCC is a scholarship program that will pay tuition and fees for up to two years in specific, high-demand degree and certificate programs. The program is designed for students to come back to college to complete a degree to enter a career. The program launched in the fall of 2018 and more than 160 individuals applied for 100 seats.



### Additional actions required (continued)

- Develop portable and stackable credential programs for local school districts, community colleges and the University of Wyoming that are recognized by employers, giving workers access to more advanced jobs and higher wages. **ENGAGE**
- Identify gaps in certificate and degree programs offered at Wyoming's seven community colleges and the University of Wyoming. This analysis should consider the effectiveness (how to do this most efficiently), quality and expertise (who can actually do the work), and capacity/readiness to respond (who is best positioned to deliver). Appendix D contains a proposed alignment and gap analysis of higher education.
- Significantly expand the University of Wyoming's footprint beyond Laramie, including the establishment of branch campuses, research facilities and distance learning centers in partnership with community colleges and local economic development, to ensure Wyoming residents have physical and digital access to a wide range of bachelor and graduate degree programs and to ensure communities across the state have access to workforce and innovation development programs for next-generation jobs. Today, less than 30% of Wyomingites have this sort of access, and most communities are forced to depend entirely on talent recruitment at the upper end of the education spectrum. In addition to providing a steady pipeline of talent, higher education institutions can also provide cultural and infrastructure amenities for the broader community. From theater and recreational facilities, to neighborhood redevelopment, higher education can play a multifaceted role in regional success.
- Expand the "Wyoming Grown" program to include an "intern or apprentice in Wyoming" program—to connect workers to businesses across the state. **ENGAGE**



## Healthcare and Quality of Life

Amenities and access to healthcare are critical to the development of existing and future industries.

We must invest in local amenities and infrastructure (e.g., transportation, water and waste, telecommunications, civic and cultural amenities, recreation facilities and spaces). And more must be done to reduce the cost and improve the availability of medical services.

### Aspirations

- For Wyoming communities to be able to offer the services, facilities and amenities that business finds attractive.
- To build and maintain the working climates and community life climates that a modern workforce requires.
- For Wyoming residents to have access to affordable healthcare—including general and specialized—within 75 miles of home. Affordable is defined as having rates in the lowest 25% in the inter-mountain region. The Executive Council believes this can be accomplished, in part, with the use of advanced telehealth delivery tools such as virtual and augmented reality.



### Actions

- Substantially increase investment in community amenities and infrastructure (parks and cultural spaces, downtown beautification, community entry points, roads, sewer and water, etc.), and implement projects and events that provide welcoming spaces for Wyoming citizens and visitors. **ENGAGE**
- Develop metrics to measure the livability of communities (urban and rural) in order to improve decision-making for future investments. We believe the following indicators should be evaluated: high-wage, high-skill jobs; education (primary to post-secondary); healthcare; housing; public amenities; crime; recreation; cost of living; and aesthetics.
- Continue to recognize the value of wildlife, open space, recreation, and tourism, and make selective investments to grow new industries (e.g., conservation banking) and accelerate programs.
- Invest in arts education and Wyoming's arts and cultural industry. **ENGAGE**
- Reduce the cost and improve the availability of medical services. **ENGAGE**



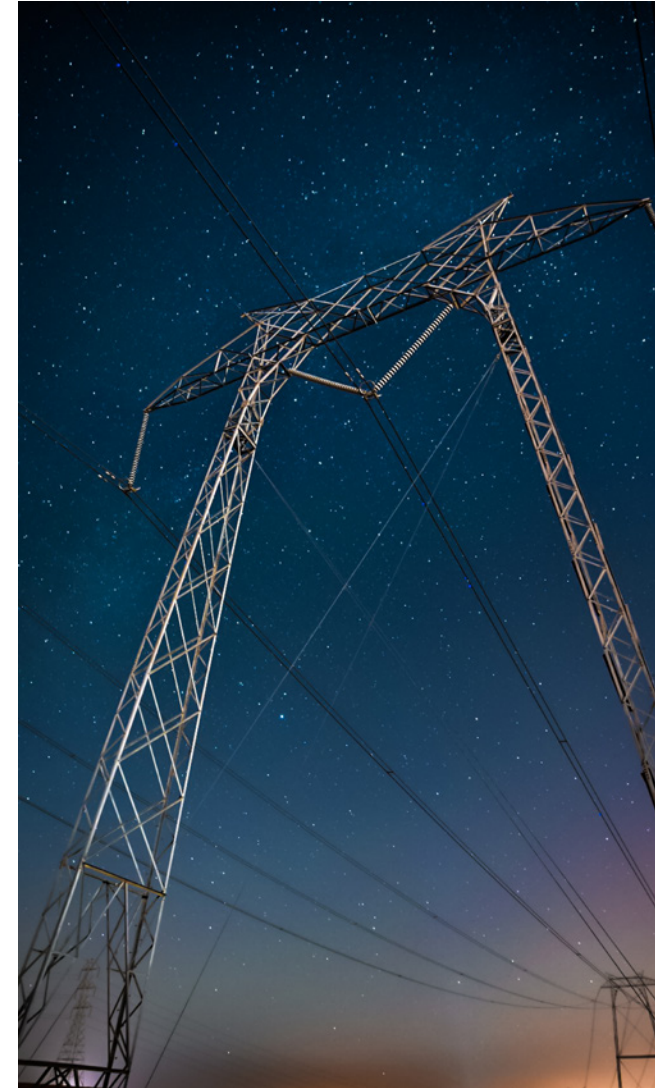
## Infrastructure

Infrastructure is the backbone of a healthy economy. It enables business to innovate, produce goods and trade those goods—which in turn creates opportunities for workers. The quality and reliability of transportation and digital infrastructure is a significant consideration in investment decisions, as are available land and energy.

With the assistance and leadership of the private sector, it's important that these assets are developed, ready, and remain affordable.

## Aspirations

- For residents to have access to reliable broadband and cell phone service where they recreate, travel, and work—with rates, speeds, and reliability comparable to urban areas in the inter-mountain west.
- For Wyoming to be connected to advanced air and ground transportation systems (e.g. Hyperloop, Uber, Elevate).





### Actions already underway

- Improve and Expand Wyoming's Commercial Air Service

**SF 40 (\$16 million)** will support the Wyoming Department of Transportation's (WYDOT) 10-year Commercial Air Service Plan (CASP) to create reliable and affordable air service in Wyoming. CASP would enable the WYDOT Aeronautics Division to contract with one airline to provide commercial air service to a major hub airport, such as Denver or Salt Lake City.

**Starting November 4th**, American Airlines will return service to Cheyenne via Dallas/Fort Worth. American regional affiliate SkyWest will operate one daily round-trip flight on 50-seat Bombardier CRJ-200 regional jets.

- Improve Access to Broadband and Technology

**SF 100 (\$10.35 million)** will establish a broadband coordinator position, a broadband advisory council and a Wyoming broadband grant fund to help ensure every community in Wyoming has reliable high-speed internet.

### Additional actions required

- Improve access to reliable and affordable cell phone service, working with the private sector and through public-private partnerships. **ENGAGE**
- Evaluate the development of additional transportation systems, including preparing for and facilitating the development of bold, transformative transportation systems (drones, autonomous cars, etc.) and high-speed transportation (e.g., Hyperloop).
- Maintain Wyoming's cost-competitive utility rates, streamline pathways for corporate procurement of renewable energy (including increasing the supply of Wyoming-based renewable energy), and drive toward achieving the lowest cost industrial energy in the mountain west, and potentially the nation.
- Work with power companies to create a new rate to attract and expand development.

**Profile:** Nevada - Economic Development Rate Rider Nevada is one of many states to offer

discounted power via an economic development rate rider as part of its economic development strategy. In 2015, Tesla took advantage of this incentive when siting its battery factory in the state and is projected to save nearly \$8 million or one-third of its electricity costs over the first two years of operation.

- Utilize Wyoming's available water resources as an incentive to develop priority economic sectors, particularly in business development and innovation zones.

**Profile:** Ten in Ten Project an initiative of the Wyoming Water Strategy (2015) – The goal of the initiative is the completion of a minimum of ten small (2,000 to 20,000 acre-feet) reservoirs in the next 10 years. These projects are sponsored by local entities, support beneficial uses, and provide flexibility for future uses of stored water.



## Entrepreneurial Ecosystem

In today's Wyoming, insufficient access to risk capital often stymies startups. Innovation and commercialization require a flow of patient, risk-tolerant capital.

To bring new products to market, industries must be able to develop technologies or have easy access to new sources of research and innovation.

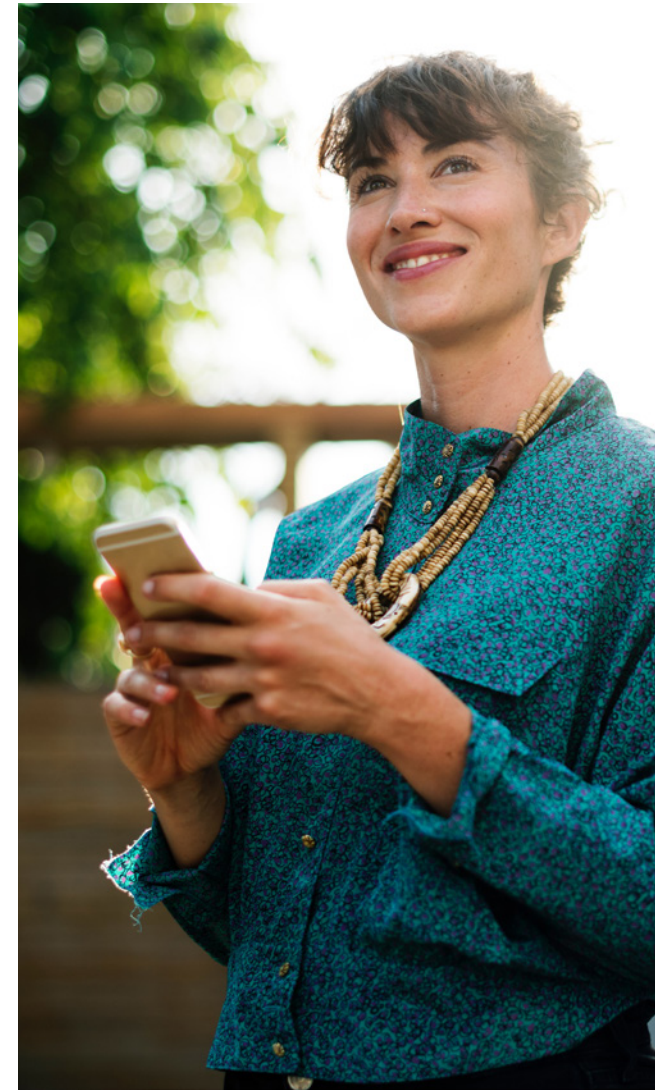
Our vision for Wyoming includes a functioning and vibrant entrepreneurial ecosystem—where one startup creates jobs and leads to another startup.

The facts behind supporting entrepreneurs are clear and the effects are far-reaching. Entrepreneurs create more employment than non-entrepreneurs, employ more than 50% of the private workforce, and generate more than half of the nation's GDP<sup>9</sup>.

See Appendix E for more details on targeted investing.

## Aspirations

- For \$1 billion in follow-on private venture funding to be invested in Wyoming-based startups.
- For 5,000 new jobs created by Wyoming-based startups.
- For more than 1,000 businesses originating in Wyoming accelerators, incubators, co-working spaces or maker spaces—with a 75% in-state retention rate.
- To close venture capital deals at a rate of 15 or more per year.



### Actions already underway

- Startup:Wyoming – Building Wyoming’s Entrepreneurial Ecosystem

**SF 118 Kickstart:Wyoming (\$5 million)** will build out Wyoming’s entrepreneurial network through the Startup:Wyoming program. This will foster connectivity between entrepreneurs, investors, mentors and talent; provide resources for mentoring, marketing, legal, and other business coaching services; help develop incubators, accelerators, coworking spaces and maker spaces; and manage grants.

- Establish a Wyoming Research and Innovation Fund

**SF 118 Kickstart:Wyoming (\$6 million)**

### Additional actions required

- Further develop and connect public and private learning and doing spaces—incubators, accelerators, co-working spaces and maker spaces. **ENGAGE**

**Profile:** Area 59 is Wyoming’s largest maker space, serving Gillette College science, technology, engineering and math students and the community at large. With a wood shop, a machine shop, and a metal working area, students and entrepreneurs test innovations without the financial burden of purchasing their own equipment.

- Develop an ecosystem that incentivizes entrepreneurship:

**Provide matching grants** for an “entrepreneurial leave” or “intrapreneurship” program for the public (e.g., UW, community colleges) and private sectors.

**Incentivize faculty innovation** and entrepreneurship at UW and community colleges.

- Develop a strategy to better leverage the capabilities of our public and private laboratories (U.S. National Laboratories, UW, Wyoming Integrated Test Center) for the benefit of manufacturers.
- Enable shared infrastructure—including Federal and university laboratories—to facilitate productivity gains and enable companies to market new products at speed.
- Develop industry-friendly university-to-business technology licensing agreements.
- Establish high-impact entrepreneurship programs at high schools, community colleges and the University of Wyoming.

**Profile:** University of Utah Lassonde Studios is a home for students to live, create and launch. Students use the 20,000 sq. ft. innovation space to connect, test ideas, build prototypes, launch companies and learn by doing.  
[www.lassonde.utah.edu/studios](http://www.lassonde.utah.edu/studios)



**Additional actions required (continued)**

- Increase funding for research and development, product development and patent output at the University of Wyoming, and timely transfer of technology to the private sector.
- Provide government aid to projects that have significant potential, but due to their unique technical and risk characteristics have more difficulty attracting private sector investment.

**Profile:** In 2006, the Utah Legislature, with the support of the governor and business community, passed Senate Bill 75, which allocated \$179 million to the Utah Science Technology and Research (USTAR) Economic Development Initiative. USTAR provides technology entrepreneur services, competitive grant funding, mentoring, and incubator services. In Fiscal Year 2017 along, USTAR funded more than 70 grant projects across Utah, providing funding in critical stages in technology development to help researchers, entrepreneurs and scientists move projects toward commercialization. In 2016, the University of Utah was named the #1 college for entrepreneurs by LendEDU and the Milken Institute ranked the University of Utah (#1) and Brigham Young University (#4) to its list of best U.S. universities for technology transfer. (ustar.org)

**Profile:** Wyoming Integrated Test Center (ITC) – In 2014, with the support and encouragement of Governor Matthew H. Mead, the Wyoming State Legislature allocated \$15 million in funding for the design, construction and operation of an integrated test center to study the capture, sequestration and management of carbon emissions from a Wyoming coal fired power plant. Tri-State Generation and Transmission Association has committed \$5 million and the National Rural Electric Cooperatives Association pledged an additional \$1 million in support. The ITC is a public-private partnership that brings together government, industry and cooperatives with the shared goal of developing commercially viable uses for carbon dioxide emissions from power plants. The ITC will host the coal tract of the NRG COSIA Carbon XPRIZE, a \$20 million competition, and Kawasaki Heavy Industries and the Japan Coal Energy Center, with approximately \$9 million from the Japan Ministry of the Environment.

- Maximize investments in Kickstart:Wyoming, Startup:Wyoming—and also in larger, industry-targeted capital programs. **ENGAGE**
- Invest 2% of Wyoming’s investment portfolio in home-grown companies.



## State Capabilities

Economic diversification is a collaborative process—involving government, education and research institutions, and most importantly, the private sector. The state's role is to provide proper regulatory regimes, offer incentives (e.g., taxes) and programs, and develop infrastructure. Sometimes, a state has to set the standard—to be the 'first mover'—and fund the research that advances ideas from research labs into the marketplace.

Recent examples of this include Governor Mead's rules reduction effort, recruitment and expansions of the National Center for Atmospheric Research supercomputer and Microsoft's data center, construction of the Wyoming Integrated Test Center, and U.S. School of Engineering pursuit of Tier 1 status.

Our research has shown that states who have been successful at economic diversification and growth have spent a concerted effort to align the state agencies to a common strategy and set of objectives.

Finally, successful states have done an exceptional job of marketing themselves as a great state in which to do business and branding their products. Wyoming has a lot to offer, especially for younger generations who crave extraordinary outdoor resources and amenities.

## Aspirations

- To align state agencies and others in order to execute ENDOW's vision for economic diversification.
- For Wyoming to attract \$500 million annually in federal science and engineering funding by the year 2028. We further aspire to attract \$1 billion annually by the year 2038.
- To significantly improve the brand image of the state and increase market awareness and penetration.



### Actions already underway

- Establish In-State Contractor Preference for State Technology Contracts

**Executive Order 2018-02** State Technology Contract Opportunities for Wyoming Technology Businesses

- Authorize Virtual Currency Businesses to Operate in Wyoming

**HB70** Open Blockchain Tokens Exemptions

**HB101** Electronic Corporate Records

**HB126** Limited Liability Companies-Series

**HB19** Wyoming Money Transmitter Act-Virtual Currency Exemptions

**SF111** Property Taxation-Digital Currencies

### Additional actions required

- The Governor should appoint a Chief Economic Diversification Officer, to be responsible for the development and execution of the action plans necessary to carry out ENDOW's 20-year economic diversification strategy. Best practice indicates that this person should come from the private sector. This action requires no appropriation or position allocation. The Wyoming Legislature should codify the position in statute, subject to the following:

The position should be housed in the Governor's Office;

The appointment should extend six years, to ensure continuity of effort; and

The appointment should be subject to the advice and consent of the Wyoming Senate

- The Wyoming Legislature should codify in statute a Governor's Cabinet or Commission for Economic Diversification, to be chaired by the Chief Economic Development Officer with representation from the public at large, local school districts, Department of Education, local economic development, Wyoming Business Council, Department of Workforce Services, University of Wyoming, Wyoming Community College Commission, and Wyoming's seven community colleges. Others should be considered: representatives for the Public Service Commission, Office of Tourism and Departments of Agriculture, Revenue, Environmental Quality, and State Parks and Cultural Resources.
- Achieve greater alignment between the University of Wyoming's priorities and the State's economic diversification and expansion priorities through specific line-item targeting of UW budget funds versus general block granting.



## Additional actions required (continued)

**Profile:** UW Tier-1 Engineering Initiative – The initiative was created to elevate the College of Engineering to new heights of excellence in education, research and service. The initiative focused on the following strategic goals:

- Excellence in undergraduate education
- World-class research and graduate education
- Productive economic development, and K-14 science, technology, engineering and math education.

**Profile:** South Carolina Coordinating Council for Economic Development, made up of heads or board chairs of eleven state agencies, is responsible for coordinating economic development effort through strategic planning and coordinated activities.

- Advance next-generation partnerships by bringing together representatives from the private sector and the workforce and economic development system to solve common challenges. **ENGAGE**
- Establish industry cluster champions and map each industry to help improve coordination and collaboration. Wyoming’s champions should collaborate with external consultants, business leaders, and stakeholders to promote growth, address challenges, and maximize job creation.

- Establish a “loaned executive” program. This is an opportunity for executive-level private sector talent to share expertise and innovative solutions with government leaders in solving problems and improving processes.

**Profile:** U.S. Department of Homeland Security Loaned Executive Program

- Brand and market Wyoming to raise awareness of the many strengths that Wyoming offers.
- Ensure Wyoming has a presence in each major financial center in the U.S. to enable attraction of significant capital and strengthen the market for Wyoming-made products by appointing global ambassadors, establishing trade offices, soliciting direct foreign investment, disseminating market information, assisting businesses with exports, and supporting trade missions.
- Offer high-return, targeted state and local tax credits and incentive programs for training/retraining, investment in research and development, and capital investment—especially where priority economic clusters and sectors can grow.

- Expand research and development capacity, emphasize collaboration among companies and between industry and research institutions, and reward commercialization of innovation. In 2012, Wyoming ranked in the last quartile of research and development as a percentage of GDP (National Science Foundation) .

**Profile:** Iowa offers a refundable credit for research and development investments made by companies.

- Increase Wyoming’s competitive edge by decreasing the variability of local, state and federal regulations that deter investment and create high compliance cost and legal risks. Develop a more user-friendly code and permitting process for small business—including a specialized small business development review team. See Appendix F for more information and recommendations.
- Provide more funding for Wyoming’s state-managed revolving loan funds, which provide low-cost financing for the retooling of facilities and the adoption of innovative tech.
- Create business development and innovation zones where industry has access to research and development facilities, special permitting, and tax incentives.





## State alignment

There exists a network of inter-related agencies responsible for enhancing economic prosperity in Wyoming. The Business Council, Department of Workforce Services, Department of Education, local economic developers and school districts, the University of Wyoming, and our community colleges have all achieved positive results.

However, to advance ENDOW and its various initiatives, it is necessary to enhance alignment of functions, strategies, and resources.





Governance theme	Current conditions	Conditions we need
Mission, Vision and Goals	Separate agency missions, sometimes driven by federal mandates	Shared vision and goals across key agencies
Planning and Programming	Individual agencies develop agency-specific plans and programming	Coordinated inter-agency plans and programming
Budget	Biennial uncertainty—financial resources often do not include human resources	Long-term commitment to sufficient funding (including human resources) for plan implementation
Economic and Workforce Development Grants	Often awarded on a first-come, first-served, one-size-fits-all basis	Investments should be coordinated and focused
Risk-taking	Aversion to risk, evaluated project-by-project	Willingness to take risks, while monitoring the performance of a portfolio of projects
Permitting	Multiple agencies at all levels of government involved	A single, coordinated website for new business ventures to become permitted, licensed, and provided with start-up tools and resources
Services	Often driven by programs	Government agendas shaped by industry
Rural and Urban Focus	Often smallest towns and largest cities are treated the same and smaller communities are expected to have same level of capacity as larger cities	Rural-focused programs and investments should separate from those of larger towns; make it easier for smaller towns with fewer resources to tap into government services
Local, Regional, State Focus	Focus often driven by locally-defined priorities or local control	Balance local priorities with regional and state priorities
Public Accessibility	Often multiple points of entry for government services or permitting; “alphabet soup” of programs and services	Consolidated points of entry (websites) and customer-focused navigation
Data	Often agencies collect their own data, or data is not consistently collected to evaluate performance	Integrated data, systems, and analysis
Monitoring Measures of Success	Vary from agency to agency	Shared short-term and long-term outcome measures, benchmark indicators, and economic dashboard
Reports	Many programmatic plans required over the course of the year	Consolidated multi-agency annual reports on status and progress of shared goals





## Fueling next generation engines

In the House of ENDOW, Next Generation Engines represent areas of opportunity based on Wyoming's strengths, business trends, and expertise. These areas have the potential to drive growth and economic diversification for our state.

### Section contents

- Natural Resources
- Tourism and Recreation
- Sustainable Harvest
- Advanced Manufacturing
- Knowledge and Creative



## Natural Resources

Wyoming is a global leader in energy and natural resources. Our state enjoys a bounty of traditional and renewable resources, boasting some of the highest quality and abundance in the nation and the world. This is a unique advantage—both now and looking into the future.

But to create a diverse economy, Wyoming must maintain and grow the energy and natural resource sector and leverage our advantage to grow other industries. We must maintain demand for Wyoming's carbon resources in a changing global energy market, capture economic benefits from untapped resources (wind, solar, rare earth elements, water, etc.) and leverage our assets to supply industry components and a skilled workforce to other targeted industries

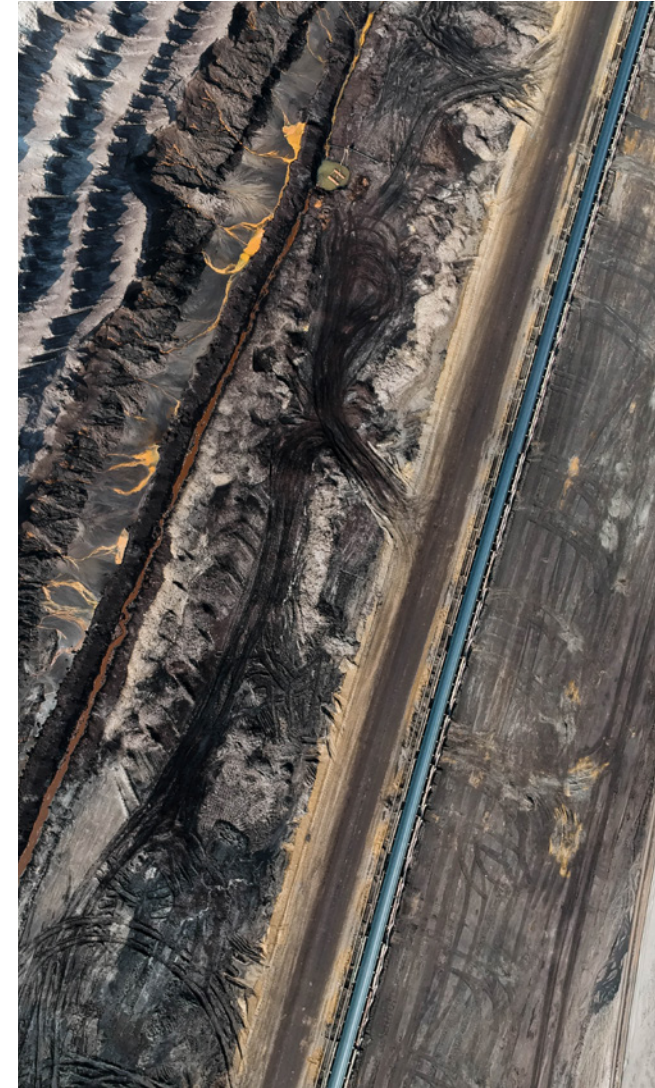
For more details about our aspirations and actions for the Natural Resources sector, see Appendix B.1.

### Targeted sectors

- **Stronghold Resources:** Coal, oil, gas, CO<sub>2</sub>, trona, bentonite, and uranium
- **Untapped Resources:** Wind, solar, rare earth elements, metals, gems, other minerals, and water
- **Natural Resources as a tool to grow other sectors:** Advanced Manufacturing, Knowledge and Creative Economies, and others

### Aspirations (by 2038)

- Maintain or increase production levels of coal, oil, gas, trona, bentonite, and uranium.
- Realize 10 additional natural resource value added manufacturing facilities
- Establish UW as a globally preeminent energy research university
- Increase wind energy generation by 10-fold to a production level of 15GW
- Increase solar generation to be 11th in the nation, matching the state's ranked potential.
- Realize 2-3 additional vibrant mineral industries in the state
- At least 2 wind or solar energy component manufacturers are in Wyoming
- At least 70% of energy workers have post-secondary credentials



### Actions

#### Retain Production of Stronghold Resources

- Leverage UW facilities and innovation to drive production
- Develop off-take infrastructure – pre-permit corridors for pipelines and transmission
- Continue work to develop ports and importer relationships
- Make and develop products that add value to natural resources

#### Capture and Benefit from Untapped Resources

- Create friendlier tax environment for wind energy
- Develop siting and environmental plans for renewables
- Encourage investment in Wyoming resources
- Work with federal delegation to pursue a domestic (USA) sourced priority on rare earth elements
- Create a world-class innovation environment to encourage technology development

#### Leverage Natural Resources to Diversify

- Develop policies and strategies to achieve the lowest cost power in the nation
- Develop policies and strategies to attract energy knowledge sector workers and retain energy graduates
- Develop manufacturing along supply chains
- Grow manufacturing workforce
- Develop underdeveloped resources



## Tourism and Recreation

The travel and hospitality industry is the second largest industry in Wyoming. Visitors stimulate the local economy and benefit hotels, meeting facilities, attractions, restaurants, cultural institutions, tour companies, transportation providers, local farmers, and countless other businesses. In 2017, domestic and international visitors spent \$3.5 billion and Wyoming welcomes 8.7 million overnight visitors. Visitor spending directly affected Wyoming's economy by generating \$188 million in local and state tax revenues and supported 32,120 full and part-time jobs.

Outdoor recreation is integral to Wyoming's historical, cultural and economic identity. According to a 2017 Outdoor Industry Association (OIA) report, outdoor recreation in Wyoming generates approximately \$5.6 billion in annual consumer spending, \$1.6 billion in wages and salaries, \$514 million in state and local tax revenue, and accounts for 50,000 jobs. With its majestic mountains, pristine lakes, vast landscapes, and abundant wildlife, Wyoming has many authentic, diverse recreation opportunities. Yet, according to the OIA, Wyoming trails neighboring states in terms of an outdoor recreation economy. Growing tourism and recreation amenities and services has proven to retain and attract young, skilled workers – an important aspect of economic growth. The tourism and recreation sectors of our economy are ripe for advancement and regional diversification across the state.

For more details about our aspirations and actions for the Tourism and Recreation sector, see Appendix B.2.

### Targeted sectors

- **Retail** : shops/rental, recreation gear/sporting goods, firearms/knives, specialty clothing, boats/RVs/other vehicles
- **Service** : accommodation restaurant, transportation, entertainment, outfitters, guides, concessions
- **Manufacturing** : firearms and ammunition, knives, optics, recreation gear/sporting goods, clothing, boats/RVs/other vehicles

### Aspirations

- Grow the tourism and outdoor recreation sectors' contributions to Wyoming's economy by \$4 billion by 2028 and \$8 billion by 2038 (in fixed 2016 dollars).
- Grow the tourism subsectors' contribution to Wyoming employment by an additional 10,000 workers by 2038.
- For Wyoming to be a recognized leader in developing and building the outdoor recreation industry cluster, including retail, service and manufacturing.
- Increase average length of stay by one-full day, generating a 30% increase in local and statewide sales tax.
- Increase all segments of travel - leisure, group, corporate, meetings/conventions, event, etc. Statewide accommodations occupancy (12 months running) increases to 65% by 2028 and 73% 2038.
- Grow and recruit business
  - 200+ manufacturing/service companies
  - 1,000 businesses with 10+ employees



### Actions

- Invest in infrastructure and capital to attract and retain tourism and outdoor recreation businesses.
  - Provide technical expertise and develop tools that aid with the acquisition of funding for business development, improvement, expansion and stabilization.
  - Commit to a long-term process of finding solutions, including the development of the information, tools, planning and infrastructure.
  - Enhance access through landscape level planning, collaboration, and creation of connections that secure access to recreation opportunities.
  - Incorporate the concepts of conservation, sustainability and stewardship into all tourism and outdoor recreation planning, development and implementation.
  - Maintain and expand funding mechanisms that support access, infrastructure and conservation.
- Use governance tools (e.g., legislation, funding and cooperation) to enhance tourism and outdoor recreation, including special permits.
  - Dedicate resources and funding at state level to provide continuity and accountability.
  - Create a collaboration fund to financially and technically support local outdoor recreation collaboratives to allow for information sharing and locally-based decision-making.
  - Improve, expand and maintain digital and physical infrastructure that connects communities and local businesses.
  - Promote, increase, enhance, and support inclusive tourism and outdoor recreation programs and train a qualified and diverse workforce.



## Sustainable Harvest

Wyoming has a long and vital legacy in agriculture—predating statehood—and has a brilliant future which ENDOW terms “Sustainable Harvest.” Sustainable Harvest is defined as growth in the agriculture sector that can be maintained for future generations—both economically and with respect to our natural environment.

ENDOW sees an opportunity to diversify and grow in proposed new areas of agriculture production and commerce, while enhancing existing products and industries. After all, food and fiber are the lifeblood of our country and our world.

We believe that Wyoming’s agricultural future requires: modernizing communications, expanding effort to brand our harvest, developing new value-added processing operations, leveraging research and workforce training, and maximizing water and soil resources.

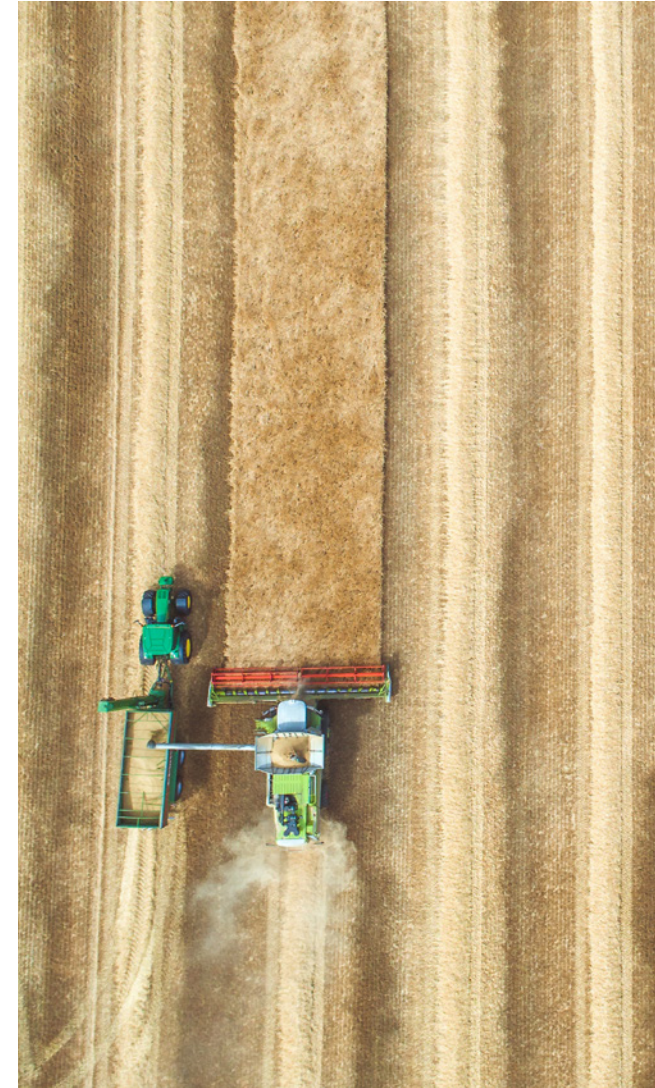
For more details about our aspirations and actions or the Sustainable Harvest sector, see Appendix B.3.

### Targeted sectors

- Crop and Livestock Production
- Value-Added Agricultural Products

### Aspirations

- Connectivity of 100% of Wyoming’s rural population
- Wyoming to be a premier center for agricultural innovation
- Elevate Wyoming’s brand to a trademark of excellence



**Actions already underway**

- Agriculture Marketing Program and International Trade

**SF108**, (\$2.4 million) Economic Diversification and Development will expand the state's agriculture marketing program and provide for an international trade representative to promote and sell Wyoming products. The Wyoming Business Council, with partners, is securing the state's first international trade representative in Taiwan; developing an initial small, sustainable market for Wyoming beef in Taipei; developing a strategy for creating and assisting small-to-medium-sized USDA-inspected regional meat processing plants; and creating a state-branded website to enhance market development and supplier-buyer opportunities for Wyoming products.

**Additional actions required**

- Rural Connectivity: access to reliable and affordable high-speed broadband/internet and cellphone service in remote areas is imperative to everyone in today's digital economy.
- Maximize Wyoming resources by establishing a premier agriculture innovation and research/training center at the University of Wyoming.

**Research** includes but is not limited to precision agriculture, genetics, reuse or recycling of produced water, livestock and crop high altitude performance and testing, efficiencies for irrigation, and ethics around cloning, GMO and artificial intelligence.

**Heighten and enable the curriculum** and research at the University of Wyoming's College of Agriculture to elevate the school to Tier 1 status.

- Enhance and sustain Wyoming's open landscape, water, soil, plants and wildlife.
- Maximize and capture value-added premium through processing facilities, Blockchain technology, and creation of producer owned cooperative business enterprises.





## Advanced Manufacturing

Advanced manufacturing—the combining of technology and materials through robust research and development—is altering the landscape of the global economy with high-wage and high-skill opportunities for workers. This field represents an exciting opportunity for urban and rural Wyoming communities.

The average size of an advanced manufacturing enterprise is 18 workers. These companies stay nimble and flexible to produce small- and large-volume arrays of products. This is exactly the type of company Wyoming can focus on growing, to capitalize on technological advancements and take advantage of disruptive innovation and with a strong pool of skilled workers.

We also strongly encourage Wyoming to brand and relentlessly market its advanced manufacturing economy and raise awareness of its many strengths, including: pro-business and accessible elected officials, a productive workforce, a friendly tax climate, cost-competitive utility rates, available land, high-tech infrastructure, our interstate and rail transportation systems, and a favorable regulatory environment.

For more details about our aspirations and actions for the Advanced Manufacturing sector, see Appendix B.4.

### Targeted sectors

- **Industrial Equipment**
- **Energy and Energy Storage**  
(e.g. battery storage)
- **Recreational Goods**  
(firearms, ammunition, outdoor products)
- **Advanced Composites and Textiles**
- **Aerospace**
- **Medical Devices**
- **Pharmaceutical**

### Aspirations

- We aspire to grow the monetary value of manufacturing goods and services produced (GDP) in Wyoming to \$5.0 billion by 2028 and \$8.5 billion by 2038 (in fixed 2016 dollars).
- We aspire to grow the manufacturing sectors' contribution to Wyoming employment by, at a minimum, 20,000 workers by 2038. Of this, we aspire for 7,000 to be in rural communities.
- We aspire to create over 1,000 apprenticeships in advanced manufacturing occupations by 2023 and over 7,000 by 2038.
- We aspire, at a minimum, for one maker space, co-work space, incubator and/or accelerator to be established in every Wyoming county by 2023.



Actions

- Establish a state advanced manufacturing cluster champion
- Brand and relentlessly market Wyoming's advanced manufacturing economy
- Promote and incentivize advanced manufacturing industry to create modern apprenticeship and training programs
- Maintain Wyoming's cost-competitive utility rates and aim to be the lowest cost industrial energy in the nation.
- Leverage the unique capabilities of federal government national labs, the University of Wyoming and public/private labs (e.g., Wyoming Integrated Test Center) for the benefit of advance manufacturers.
- Establish high impact entrepreneurship programs in high schools, community colleges and the University of Wyoming.



## Knowledge and Creative

This sector of the economy includes: healthcare, financial and professional, digital and technology, and arts and culture-related businesses. It is a significant and growing section of the national economy, but it is underrepresented in our great state.

Currently, Wyoming is missing out on the opportunities afforded by this high-growth area—an effect that is compounded by the resulting difficulty in attracting and retaining the creative, educated, and entrepreneurial populations that typically support these businesses.

We believe that Wyoming's existing workforce, economic and political factors, access to technology and capital, and interest from industry, can help Wyoming gain tremendous ground in this area.

Of course, many of these sub industries cannot thrive overnight, and several of them are interdependent and overlapping in some way. But following the recommendations of ENDOW will pave the way for future success.

For more details about our aspirations and actions for the Knowledge and Creative sector, see Appendix B.5.

### Targeted sectors

- **Financial and Professional**
- **Healthcare**
- **Digital and Technology**
- **Arts and Culture**

### Aspirations

- Knowledge and Creative in Wyoming to match the national GDP percentage (by sub-sector).
- Over 5,000 new jobs are created in the Wyoming startup ecosystem.
- Over \$25 Million of follow-on venture funding is invested in Wyoming-based startups.
- More than 100 companies are started and establish roots in Wyoming.
- That Wyoming as a State begins investing an increasing amount of its investment portfolio in local started and growing companies.



### Actions

#### Build a next generation knowledge and creative workforce by:

- Significantly expand the University of Wyoming's footprint beyond Laramie, including the establishment of branch campuses, research facilities and distance learning centers in partnership with community colleges and local economic development, to ensure Wyoming residents have physical and digital access to a wide range of bachelor and graduate degree programs to ensure communities across the state have access to workforce and innovation development programs for next-generation jobs.
- Evaluate development of healthcare and telemedicine medical education facilities to train physicians, physician's assistants, nurses, nurse aides, etc.), with a focus on developing providers with expertise in rural healthcare, primary care, elder care, and telemedicine/telehealth. And, further leverage and expand the WWAMI Medical Education Program with the University of Washington, School of Medicine, to provide more medical professionals to serve the State of Wyoming.

- Fund UW to become a Top 20 University in technology transfer and intellectual property
- Establish world class education programs at UW:
  - Emerging Technologies (AI, Unmanned Transportation, Data Sciences)
  - Certified Trust and Financial Analyst (CTFA)
  - LLM Degrees at Law School in Trusts, Estates, and Taxation
  - Entrepreneurship (Undergraduate and LLM)
  - Contemporary, Traditional, Creative Media Arts and Arts Administration

#### Develop Wyoming into the #1 state for business entities, trusts, and estates

- Proactively develop new regulations to invite new industries and create regulatory certainty for new technologies
- Create a separate general court of jurisdiction for business entities, trusts, probate and fiduciary matters.
- Create and improve Wyoming business development offices in key financial centers to access global business opportunities.



**Actions (continued)****Develop a thriving entrepreneurial ecosystem**

- Invest 2% of Wyoming investment portfolio in Wyoming based companies
- Create a dedicated organization to own the entrepreneurial ecosystem
- Create collaborative work spaces and accelerators – Wyoming Innovation Centers
- Create incentive packages for startups and advertise globally
- Develop advanced telemedicine, telehealth and remote healthcare policies and platforms
- Establish a “Wyoming small business healthcare task force”
- Modernize Wyoming Liquor laws
- Ensure that Wyoming residents and visitors are treated with equality, in a welcoming, non-discriminatory manner.

**Become a top tier state for investment in arts and cultural infrastructure**

- Reposition and invest in the Wyoming Cultural Trust Fund to substantively fund and grow the Wyoming arts and cultural ecosystem.
- Create a Creative-Ready Community Program that builds and funds local arts and culture spaces in Wyoming communities (e.g., Teton County’s Center for the Arts).
- Increase capacity of the creative sector’s infrastructure.
- Steeply increase the support and marketing for cultural tourism as a significant economic driver.
- Create a simple structure to allow communities the ability to implement creative and cultural tax districts.
- Provide both creative and business professional development and career advancement opportunities for those working in the creative sector.





Innovation Centers (ICs)  
Industrial Focus Zones (IFZs)  
Regional Opportunity Areas (ROAs)

## Business Development and Innovation Zones

As defined in Senate Enrolled Act Number 64—passed by the Wyoming Legislature in the 2017 General Session—Business Development and Innovation Zones are:

Defined geographic areas within the state in which local, state and federal permitting and other regulatory requirements will be met for all or significant segments of industry located in the zone or in which industries or businesses would be benefited substantially as a result of being located in proximity to each other.



## Three-zone model

A three-zone-type model meets the requirements above and creates fit-for-purpose tools that help implement the vision and aspirations of ENDOW.

The Executive Council appreciates that much has been done by other organizations—including individual communities, UW, the Wyoming Workforce Council, and others—to create places that promote economic development. The model presented here strives to add to those efforts and to move the needle toward economic diversification.

For more details about Business Development and Innovation Zones, see Appendix G.

### Innovation Centers (ICs)

ICs focus on accelerating development of an entrepreneurial ecosystem.

### Industrial Focus Zones (IFZs)

IFZs purpose are to encourage value-added and other industrial development by creating places where infrastructure and other policies that encourage that activity are implemented.

### Regional Opportunity Areas (ROAs)

In ROAs, partnerships driven by industry serve business in the state and create a pathway for communities to support an IC, IFZ or both.

Informed by the experiences of other states and countries, the three-zone-type model is custom-built for Wyoming. Each of the zone types are designed to attract zone residents—whether those are entrepreneurs, Wyoming companies, or potential recruits from outside the state.



## Driving innovation across the state

ENDOW supports building entrepreneurial and industrial ecosystems and partnerships throughout the state. To that end, pathways to zonehood have been outlined for each zone. Grounded in industry-led partnerships in Regional Opportunity Areas, these pathways provide tools to help communities fulfill the criteria required to host a zone, and to show that their community will benefit from and support an IC or IFZ. The tools provided on pathways may be adequate—independent of an IC or IFZ—for achieving the goals of an industry or community.

Criteria for each of the zone types ensure that locations and assets in Wyoming are being leveraged to achieve the purpose for each type.

Criteria for each of the zone types ensure that locations and assets in Wyoming are being leveraged to achieve the purpose for each type. Innovation Centers and Industrial Focus Zones will be designated only in communities which show that they meet critical criteria, and that a zone in their community would have a greater benefit to Wyoming than a zone in another location.

The ENDOW Executive Council recommends that state agencies develop an action plan for each zone type, which should include the staffing, resources, funding and statutory changes needed to implement the zones, along with an application process to determine locations. This will be a coordinated effort, led by the Wyoming Business Council, in partnership with other state agencies and organizations including: the Department of Environmental Quality, the Department of Workforce Services, Department of Administration and Information and others.

Applications and the application process will be reviewed and approved by the ENDOW Executive Council. Data collected as part of the Regional Assessment will be used in the application process.





Where

A glimpse of our  
potential future



## New opportunities, timeless principles

If our strategy is successful, in 2038 our shared vision for the future of Wyoming will be a reality. Because the true purpose of our strategy is to make the lives of families and citizens in Wyoming better, the best way to visualize this future is to look at a Wyoming family in 2038 and examine the myriad ways in which the actions we take today will change their lives tomorrow.

James (54) and Olivia (52) Harding were both born and raised in Gillette, where they live today. They have been

married for 30 years and have two children, Emma (28) and Mason (22), and one grandchild, Harper (4).

James's brother David (49) also lives in Gillette, and his son Peter (24) lives nearby in Pine Haven.

The Harding family has lived in Wyoming for seven generations, and none could imagine living anywhere other than Wyoming. The way the state has evolved over the past 20 years has only amplified the love they have for their home state.

### James

For generations, James's (54) family worked in the energy and mineral industry, and he is no different

But in 2038 that means something very different for James, who works for a local company that develops nanomaterials. Not only has this company (and others like it) accelerated population growth and salaries in Gillette, it has also ensured the continued success and stability of the energy and mineral industry.

### Olivia

After decades working as a business consultant, Olivia (52) wondered how she might pair her innovative, strategic business sense with her passion for mountain biking across the beautiful landscapes of Wyoming. Seeing her state invest so heavily in disruptive technologies, in entrepreneurs and startups, and in pathways to private capital finally gave her the courage to do so.

Just before her 50th birthday, Olivia created *Bespoke Bikes*, a bicycle shop that uses carbon fiber manufactured in Gillette to create stronger, lighter frames for her future-forward bikes. Bespoke received funding from Startup:Wyoming and currently uses space in a local incubator located within a designated Innovation Zone.



### Emma

Emma Harding (28) grew up during the evolution of Wyoming and has always embraced change and new ideas. The focus on computer science throughout her K-12 education only further fueled her passion.

She thought for years this meant she would need to leave the state to earn a degree in an emerging field, but the University of Wyoming's investments in AI and Machine Learning programs proved to be exactly what she was looking for. After working a few years for local companies in Laramie, Emma returned to the University as a professor of Artificial Intelligence to help continue growing the program.

### Harper

Emma's daughter Harper (4) is already following in her mother's footsteps, and in her early education program that is preparing her for kindergarten she is notorious for taking things apart and figuring out how they work.

Emma's family lives outside Laramie and frequently uses telehealth services to speak with their doctor remotely for Harper's checkups or when a member of the family is sick.

### Mason

Mason Harding (22) has always been interested in the arts. In high school, he received a Wyoming Arts Council Grant, and now is pursuing a bachelors' program in Casper. In addition to a focus on disruptive technologies, the University has a nationally ranked digital design program, which Mason has nearly

completed. In the past, Mason may have had to leave Wyoming for Denver, Chicago, or beyond to find a job in a creative industry like advertising or marketing, but thanks to investments in technology and the arts around the state, there are many local companies he is interested in.

Both Emma's family and Mason use the improved transportation systems – high speed trains and vertical take-off and landing vehicles – in Wyoming to visit their parents in Gillette often.

### David

David Harding (49) has worked in the oil fields all his life, and is a Class-A CDL driver. A couple decades ago, he worried his job and the industry might not be able to sustain he and his family, and that he might have to leave Wyoming. But thanks to the new life breathed into the next generation economic engines through ENDOW's work, he has not only *sustained* a living and a family, he has *thrived*.

### Peter

Peter Harding (24) has always been a tinkerer, a skill he uses as electrical engineer at a coal mining company outside Pine Haven. The equipment and the processes have evolved immensely over the last two decades thanks to advances in the industry, and Peter uses the innovative, integrated skills he learned throughout his education to support the complex electrical, mechanical, and technological problems he faces every day on the job.



New opportunities within the energy and mineral industry and disruptive technologies have helped the city of Gillette grow and thrive, meaning the entire Harding family never has to go far to check out a new restaurant, take a tour of a local brewery, or see a show. Though their lives may look different than the lives of generations that came before, their identities as Wyomingites have never wavered, and they are proud to call Wyoming home and excited to play a part in its future.

After seven generations of Hardings have called Wyoming home, there's no doubt from anyone in the family that the next seven generations will follow in their footsteps.



## The time is now

If not now, when? If not us, who? The time is now.

There really is no choice. It is consistent with our culture to put our heads down and boldly shape our future, just as our ancestors did before us – the farmers and ranchers, the miners and roughnecks – the pioneers who recognized the beauty of Wyoming and built a world-renowned mineral, tourism and agriculture economy.

It is time to seize the opportunity before us to set Wyoming on a bold path of continued prosperity.

Our strategy is designed to realize a brighter, better future for all of Wyoming. But it will require hard work, collaboration, and dedication from all of us.

## Long-Term

ENDOW provides the scope and timeline to make enduring and meaningful gains in economic diversification. This 20-year strategy aims to set Wyoming on a path for future success that will outlive all of us.

## Collaborative

Through a sustained commitment to strong, vibrant communities, consistent engagement with leaders from across the state and respect for local perspectives and insights, ENDOW offers a results-driven approach to address Wyoming's most pressing challenges.

## You

ENDOW is collaborative, decentralized, and focused on *you*. The more local voices, the more community participation in the process, the greater ENDOW's potential to meet Wyoming's economic goals.



For information about ENDOW, ENGAGE, and this 20-Year Economic Diversification Strategy, visit:

[www.endow.biz](http://www.endow.biz)



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# Appendices



## Appendices. Introduction

The ENDOW Executive Council has endeavored to be inclusive in its work. Throughout the process the Executive Council has engaged citizens of Wyoming from a diverse set of industries, geographies, interests and ages. In addition, the Executive Council has engaged local, national and global leaders (Appendix A) to assess business conditions and trends, in order to evaluate their significance to Wyoming. Each view was incorporated into the recommendations of the Executive Council and our work to improve Wyoming’s economy for future generations.

Recommendations were created for five Next Generation Engines. These sectors have been identified as areas of opportunity and potential areas of investment. Specific and detailed recommendations from each of the subcommittees can be found in Appendix B. The Next Generation Engines are: Natural Resources, Tourism and Recreation, Sustainable Harvest (Agriculture) Advanced Manufacturing, and Knowledge and Creative (Healthcare, Financial and Professional Services, Digital Technology, Arts and Cultural).

The ENDOW:ENGAGE Council provided leadership in bringing forth the views of the younger generations of Wyoming. Their detailed report and recommendations can be found in Appendix C and illustrates the deep passion that this generation has for the state.

Knowing that economic growth takes more than investing in a specific industry, the Executive Council, in partnership with the Wyoming Business Council, has provided analyses on several other topics. These include a proposal on Career and Technical Education Programs – Gap Analysis Proposal (Appendix D), a proposal on Startup:Wyoming Investment Proposal (Appendix E), Wyoming Business Council Permits Report (Appendix F) and further information on Business Development and Innovation Zones (Appendix G).

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## Appendix A. Membership of ENDOW and Affiliated Groups

### ENDOW Executive Council

**Greg Hill of Wilson**, President and Chief Operating Officer of Hess Corporation, Governor's Designee and Chairman, ENDOW

**Bill Schilling of Casper**, Founder and Chief Operating Officer of WY Mentor, Vice Chairman, ENDOW

**Jesus Rios of Sheridan**, Chief Executive Officer of Ptolemy Data Systems

**Rosie Berger of Big Horn**, Former Legislator

**Karen Hostetler of Buffalo**, Founder and President of Mountain Meadow Wool

**Mark Christensen of Gillette**, President of The MC Family of Companies

**Jerad Stack of Casper**, Entrepreneur and Founding Member of Breakthrough 307

**Amber Pollock of Casper**, Owner of Backwards Distilling Company

**Wally Wolski of Yoder**, Goshen County Economic Development Corporation

**Matt Kaufman of Cheyenne**, Co-founder of Array School of Technology and Design

**Ray Fleming Dinneen of Cheyenne**, Founder of CLIMB Wyoming

**Mary Ellbogen Garland of Laramie**, President of John P. Ellbogen Foundation

**John Temte of Laramie**, Founder of Temte Capital

**Steven Moldt of Riverton**, President of Inberg-Miller Engineers

**Cy Lee of Fort Washakie**, Executive Director of the Wind River Development Fund

**Ike Eastman of Powell**, President of Eastmans' Publishing

**Bob Viola of Jackson**, Founder of Square One Systems Design

**Barbara Hoeft of Jackson**, Founder of Willow Street Group

**Barbara Sessions of Afton**, Vice President and CFO for Silver Star Communications

**Bret Pizzato of Rock Springs**, Plant Manager for J.R. Simplot

**Steve Russel of Evanston**, Former CEO of Carbon Fiber Technology

**Senator Eli Bebout of Riverton**, President of the Senate

**Representative Steve Harshman of Casper**, Speaker of the House of Representatives

**Senator Michael Von Flatern of Gillette**, Vice President of the Senate and Chairman of the Senate Minerals, Business and Economic Development Committee

**Representative Mike Greear of Worland**, Chairman of the House Minerals, Business and Economic Development Committee





## ENDOW Advisory Board

**Co-Chair: Governor Matthew H. Mead**

**Co-Chair: Greg Hill**, President and Chief Operating Officer, Hess Corporation

**Richard Agee**, Founder, Owner and Chairman, Wapiti Energy

**Anthony Aquila**, Founder, Chairman and CEO, Solera Holdings

**Gideon Ariel**, Founder and Chairman, Ariel Dynamics

**Cindy Crane**, President and CEO, Rocky Mountain Power

**Steven Denning**, Chairman, General Atlantic

**Fred Eshelman**, Founder, Eshelman Ventures

**Lawrence Finch**, Managing Director, Sigma + Partners

**Ankur Gopal**, CEO, Interapt

**Robert Grady**, Partner, Gryphon Investors

**John Healy**, Venture Partner, GrandBanks Capital

**Stefani Hicswa**, President, Northwest College

**Wes Lucas**, CEO, Sirva

**Ian MacGregor**, Chairman and CEO, North West Refining Inc.

**John Malone**, Chairman, Liberty Media Corporation and Liberty Global

**Joseph McGinley**, Founder and CEO, McGinley Innovations

**Bill Miller**, President and CEO, Power Company of Wyoming

**John Morris**, Founder and CEO, Bass Pro Shops

**Arthur Nicholas**, Partner and Co-Founder, Nicholas Investment Partners

**Laurie Nichols**, President, University of Wyoming

**Sandra Postel**, Vice President of Manufacturing, Quality and Strategy (retired), Boeing

**Theo Ratliff**, CEO, Future Phenom

**Bill Schilling**, Founder and Chief Operating Officer of WY Mentor, Vice Chairman, ENDOW

**Thomas Seitz**, Senior Partner, McKinsey and Company

**David Sokol**, Founder, Teton Capital

**Punit Soni**, Founder, Learning Motors

**Dr. Patrick Soon-Shiong**, CEO, NantWorks

**Lee Stein**, Founder and Chairman, XPRIZE

**Zena Tata**, Executive Director, Global Development and International Expansion, XPRIZE

**Carol Tomé**, CFO and Executive Vice President, Home Depot



**Bhavook Tripathi**, Managing Director, Sanshu Industries

**David True**, Managing Partner, True Ranches

**Solomon Trujillo**, Chairman, Trujillo Group Investments

**Mike Wandler**, President, L&H Industrial

**Bruce White**, Chairman and CEO, White Lodging

**Dave Freudenthal**, Former Governor

**“Topper” Gurdon Flagg Quinn**, Challenge Capital Partners

**Eli Bebout**, President, Wyoming Senate

**Steve Harshman**, Speaker, Wyoming House of Representatives

#### ENDOW Rural Council

**Wally Wolski** of Yoder, Co-Chair

**Jim Espy of Savery**, Co-Chair

**Cindy DeLancey**, President of the Wyoming Business Alliance

**Tony Micheli**, Representing the Wyoming Farm Bureau Federation

**Scott Smith**, Secretary of Garland Light & Power Co.

**Jamie Tarver**, Supervisor of the Campbell County Conservation District

**Dennis Sun**, President of Wyoming Stock Growers Association

#### ENGAGE Council

**Amber Savage** of Provo, UT, President

**Madison Mankin** of Gillette, Vice President

**Mikole Bede** of Rock Springs, Chief of Outreach

**Jasmine Varos** of Cheyenne, Chief of Marketing

**Shannon Wilson of Casper**, Chief of Data Management

**Chase McNamee** of New York, NY, Chief of Development

**Mandy Fabel** of Lander, Chief of Planning

**Casey Terrell** of Pinedale, Deputy Chief of Logistics

**Caroline Baker-Donza** of Teton Village, Deputy Chief of Outreach

**Audrey Jansen** of Laramie, Deputy Chief of Marketing

**Sarah Hamlin** of Chagrin Falls, OH, Deputy Chief of Marketing

**John Strandholm** of Taylors, SC, Deputy Chief of Data Management

**Allison Connell** of Sheridan, Deputy Chief of Planning

**Bailee Harris** of Laramie, Deputy Chief of Development

**John Houghton** of Modesto, CA, Deputy Chief of Development

**Jonathan Updike** of Palo Alto, CA, Past President



## Appendix B.1. Natural Resources

### A STRENGTH WYOMING MUST LEVERAGE

Wyoming is proud to be a global leader in energy and natural resources. The state boasts many traditional and renewable resources that are of the highest quality and abundance in the nation and the world. This is a unique advantage. It presents opportunities beyond those available in other states and sectors.

To create a diverse economy, Wyoming must leverage this exceptional advantage to maintain and grow the energy and natural resource sector and grow other industries.

To do this, Wyoming must employ the following strategies:

- Retain demand for and production of Wyoming's carbon resources in a changing global energy market
- Capture economic benefit from untapped resources, including wind, solar, rare earth elements, water, and others
- Leverage natural assets to provide critical industry components and workforce to targeted industries in other economic sectors, thereby creating economic diversity

### THIS REPORT AND ONGOING WORK

Opportunities, aspirations, barriers, and recommendations have been identified for each strategy listed above.

Opportunities are put forth with recognition that technology, innovation and further collaboration could present more and different opportunities in the future. Given market volatility, outcomes in commodity and energy markets are especially difficult to predict. As such, aspirations are provided not as forecasts, but as ambitions to inspire advancement.

While the opportunities and recommendations here are prospective, ENDOW recognizes that achieving meaningful advancement in this sector requires an ongoing commitment and continuous adjustment. ENDOW will continue to work with industry,

academic and public leaders to identify additional challenges, opportunities and policies. The work here will be checked and adjusted at the pace of business to anticipate and respond to future advancement.

### STRATEGY 1: RETAIN PRODUCTION OF STRONGHOLD RESOURCES

#### OPPORTUNITIES - Retain Production of Stronghold Resources

##### COAL

Wyoming produced more than 316 million short tons of coal in 2017<sup>1</sup>, making the state the number one coal producer in the country. In addition to the benefits of extraction and export of coal, innovation in development of products made from coal has the potential to help retain and increase demand for the commodity. State leadership in this sector, and the work of the UW School of Energy Resources, Western Research Institute and others in world-class facilities like the Integrated Test Center (ITC), have made Wyoming a leader in coal innovation. **Continued development of exports, and further innovation in products like asphalt, soil amendments, graphene, fuel, carbon fiber, coal composites, and other products from coal, present opportunity for retaining demand for coal through growth and diversification, thereby retaining production.**

##### OIL & GAS

Oil and gas extraction has been and continues to be big business in Wyoming. In 2017 the state produced 76 million barrels of oil and 1.8 TCF of natural gas<sup>2</sup>. Enhancing and adding value in this industry will have benefits in the short and long term.

Recent increases in activity in Wyoming, especially in the Powder River Basin<sup>3,4</sup>, are drawing more companies and production to Wyoming. The Center of Innovation for Flow Through Porous Media, Enhanced Oil Recovery Institute and others are leveraging world-leading facilities such as the High Bay Research Facility to innovate in oil and gas. UW produces well-trained energy graduates, leveraging the drilling simulation lab and industry-trained faculty, and is working through the Tier 1



Engineering initiative to increase and improve their programs. Wyoming is also known for its collaborative leadership in this sector, as in its accomplishment of being the first state to develop rules for fracking.

**With the right strategies and policies, these unique advantages present tremendous opportunity for growing production, increasing value-added opportunities, and increasing innovation.**

### CO<sub>2</sub>

CO<sub>2</sub> tech is a \$1trillion industry<sup>5</sup>. Wyoming has prioritized this opportunity. The Integrated Test Center, built at Basin Electric Power Cooperative's Dry Fork Station, located seven miles north of Gillette, enables researchers to access flue gas otherwise released from the plant. This allows for testing of methods and products that aim to turn CO<sub>2</sub> from a liability to an asset, utilizing it in the production of everything from fuel, building materials and animal feed to specialty chemicals and plastics. Additionally, testing will start soon on the capture and sequestration of carbon dioxide in northeast Wyoming.

By leveraging Wyoming's carbon assets and world-class facilities, building on previous successes, **Wyoming can diversify end uses of CO<sub>2</sub> and retain demand for carbon-based resources by creating products** like nanomaterials, aggregates, and synthetic cloth from CO<sub>2</sub>.

### TRONA

Wyoming is the number one Trona producer in the U.S. and globally (20 million tons in 2016,<sup>6</sup>) and produces about 90% of all soda ash used in the U.S. and 50% of the soda ash used globally<sup>7</sup>. Wyoming has the potential to grow the manufacturing sector by leveraging this resource. Trona companies in Wyoming are innovators and are currently looking into ways to grow their business to additional end-use markets like pharmaceuticals. By supporting and building on these efforts, Wyoming may be able to **tap into diverse markets for a resource stronghold.**

### BENTONITE

Ranking first in the U.S. in bentonite production, Wyoming produced about 3.2 million tons in 2016, 70% of the world's supply<sup>8</sup>. Wyoming bentonite is unique in its chemistry, giving it advantageous properties that make it suitable for more applications than other sources around the world. By developing its supply chain, the state may use its unique bentonite to develop **value-added applications.**

### URANIUM

Wyoming also ranks first in the U.S. in uranium production (2017 production ~ 1.65 million pounds<sup>9</sup>), presenting opportunity to innovate in this industry. Several companies operate in Wyoming. Prospective value-added opportunities for diversification in this space are **small-scale nuclear energy and uranium conversion facilities.**

### ASPIRATIONS TO INSPIRE ADVANCEMENT

- Maintain or increase production of coal, oil and gas, trona, bentonite, and uranium
  - Wyoming leads the world in number of coal and CO<sub>2</sub> innovators and innovative companies
- At least 10 additional manufacturing facilities that add value to Wyoming resources are located in Wyoming.
- UW is the world's preeminent energy research university

### BARRIERS - Retain Production of Stronghold Resources

Wyoming's natural resource industries are strong, but a number of barriers present challenges to retaining production of stronghold resources. Primary challenges include:

- Infrastructure and Transportation
  - Inadequate pipelines (gas, CO<sub>2</sub>, oil, others) and transmission limit offtake opportunities
  - Distance to markets
  - Limited rail availability in some Wyoming locations



- Taxes and Regulation
  - o Large proportion of federal land and federally regulated opportunities results in long permit time and complexity in project development
- Innovation Culture
  - o Wyoming ranks last in the nation in National Science Foundation (NSF) funding<sup>10</sup>
  - o Tech transfer mechanisms are difficult to access and provide little targeted support to entrepreneurial researchers
- Emerging oil and gas plays are early in their evolution and underexplored compared to other U.S. plays

## Policies and Recommendations

### 1. Leverage UW facilities and innovation to drive production

- a. UW innovators must work in Laramie and throughout Wyoming with energy companies to develop innovative technologies that will increase energy production and generation in Wyoming.

### 2. Streamline permitting

- a. Work with the Environmental Protection Agency and other federal agencies to increase efficiency and decrease timelines
- b. Advocate for streamlined regulations to federal delegation

### 3. Develop offtake infrastructure

- a. Pre-permit corridors for pipelines and transmission  
*Building on the Wyoming Pipeline Corridor Initiative, which created a right-of-way network designed to connect sources of carbon dioxide (CO<sub>2</sub>) to existing oil fields that are suitable for enhanced oil recovery (EOR), via CO<sub>2</sub> flooding.*

### 4. Continue work to develop ports and importer relationships

### 5. Make and develop products that add value to natural resources

- Create a world-class innovation environment to encourage technology development
  - o Drive targeted, measurable, value-adding energy research to develop new markets and products at UW and other institutions through funding and infrastructure
  - o Increase and improve applications from UW and others for federal research funding related to energy
  - o Create and support Innovation Centers (see Appendix G) for value-added research
- Develop markets, infrastructure, workforce, and businesses to transfer emerging tech to economic opportunities
  - o Create Industrial Focus Zones (see Appendix G) near natural resource assets
  - o Streamline permitting in IFZs
  - o Develop Kickstart program, Startup: Wyoming Investments, and larger, more industry-targeted capital programs
  - o Improve technology transfer procedures and culture at UW



## STRATEGY 2: CAPTURE BENEFIT FROM UNTAPPED RESOURCES

### OPPORTUNITIES - Capture Benefit from Untapped Resources

#### WIND

There are 8 gigawatts (GW) of proposed but undeveloped wind energy in Wyoming<sup>11</sup>, and 472 GW of technologically possible capacity<sup>12</sup>. The proposed 8 GW is enough energy to power almost 6 million homes, 20 times the number of households in Wyoming. If developed, the proposed capacity would potentially create \$1 billion in investment, \$9 billion in new economic activity, \$4 billion in income, 68,000 job-years, and \$2.5 billion in new tax revenue, as well as contributing to growing manufacturing and other industries<sup>13</sup>. The state ranks 6th in the U.S. for potential wind capacity, but 15th for installed capacity<sup>14</sup>. Current efforts in this space include Rocky Mountain Power's Energy Vision 2020, Wyoming Power Company's Chokecherry Sierra Madre Project, and efforts by local and state organizations to recruit wind-energy-related manufacturers. Building upon this activity and addressing critical infrastructure and policy issues to leverage **Wyoming's outstanding wind resource is a prospective opportunity to drive diversification, jobs, and revenue.**

#### SOLAR

Wyoming ranks 11th in the country for potential solar generation<sup>15</sup>, but ranks 49th in installed generation<sup>16</sup> and 43rd in per capita solar jobs<sup>17</sup>. Developing this enormous untapped potential could help Wyoming grow jobs, and help develop ancillary industries in this quickly growing sector. The first commercial solar plant in Wyoming is being developed by Sweetwater Solar, LLC north of Rock Springs, and is expected to provide 150 jobs<sup>18</sup> in that area over the construction period of the project. By building on this success and addressing critical policy issues, **Wyoming can benefit from further solar development and follow-on business and industry.**

#### RARE EARTH ELEMENTS

Northeast Wyoming is home to one of the highest-grade rare earths deposits in North America<sup>19</sup>. Currently, 90% of the world's Rare Earth Elements (REEs) and the majority of the world's strongest magnets (which are made from REEs) come from China<sup>20</sup>.

However, U.S. Department of Defense demand and past Chinese restrictions of supply may pose a need for U.S.-sourced rare earths. **A U.S.-sourced priority on REEs would help to grow the industry in Wyoming.**

#### METALS, GEMS, AND OTHER MINERALS

Wyoming's rich geologic landscape has proven lucrative to metals and gems miners in the past. Exploration continues, and some believe there is potential for significant economic impact in this space due to discovery or development of minerals. The Wyoming State Geological Survey studies and tracks mineral resources, and small exploration companies are working to prove up several plays currently. **Development of these resources poses an opportunity to diversify Wyoming's economy and revenue sources.**

### ASPIRATIONS TO INSPIRE ADVANCEMENT - By 2038 - Capture Benefit from Untapped Resources

- Wind energy generation is increased 10x to 15 GW.
- Solar generation is increased so that Wyoming is ranked 11th in the country, equaling Wyoming's national ranking for solar generation potential.
- Two to three other vibrant mineral industries are developed in Wyoming
  - o For example, REEs, metals, gems, aggregates, byproduct metals

### BARRIERS - Capture Benefit from Untapped Resources

Primary Challenges that impede development of untapped resources include:

- Taxes and Regulation
  - o The wind tax and uncertainty around it is detrimental to wind development and follow-on industries such as wind energy component manufacturing, data centers, and other complimentary activities.<sup>13</sup>
  - o Restrictive net metering regulations and other policies are barriers to growth for solar development, especially for commercial businesses.
- Infrastructure and Transportation
  - o Inadequate transmission
- Innovation Culture
  - o Renewable research and curriculum is limited compared to resource potential



## POLICIES AND RECOMMENDATIONS

1. **Create a friendlier tax environment for wind energy. In order of priority:**
  - Promote stability regarding taxes on renewable energy
  - Oppose tax increases on renewable energy
  - Promote lowering or eliminating the wind tax
2. **Develop transmission infrastructure**
  - Pre-permit corridors for transmission lines
3. **Streamline permitting**
  - Work with the EPA, other federal agencies, and Wyoming DEQ to increase efficiency and decrease timelines
  - Advocate for streamlined regulations to federal delegation
  - Promote less restrictive net metering regulation
    - i. Determine economically efficient models
4. **Develop siting and environmental plans for renewables to increase transparency**
5. **Encourage investment in Wyoming resources**
  - Perform and publicize economic studies on undeveloped resources
6. **Work with federal delegation to pursue a U.S.-sourced priority on rare earth elements**
7. **Create a world-class innovation environment to encourage technology development**
  - Drive targeted, measurable, value-adding energy research to develop new markets and products at UW and other institutions through funding and infrastructure
  - Increase and improve applications from UW and others for federal research funding related to energy

## STRATEGY 3: LEVERAGE NATURAL RESOURCES TO DIVERSIFY

### OPPORTUNITIES - Leverage Natural Resources to Diversify

#### ADVANCED MANUFACTURING

Many of the energy and natural resource industries in Wyoming require manufactured inputs. Additionally, many of Wyoming's natural resources are used globally as inputs for other products, from baking soda to tennis shoes. Building manufacturing that uses Wyoming natural resources as inputs, or provides inputs to Wyoming natural resource industries, **leverages the quality and abundance of Wyoming resources to diversify the state's economy.**

One of the most basic and abundant inputs to manufacturing that Wyoming produces is power. Very low-cost power and reductions in power have been shown to help attract manufacturers. Nevada offered a discount to Tesla that reduced its power costs by 30% in their first two operating years<sup>21</sup>. This incentive made up about a third of a broader incentive package that helped Tesla locate in Nevada. Leveraging its resources to provide very low-cost power, combined with other solutions for industry inputs like workforce and transportation (see advanced manufacturing section), presents an opportunity for Wyoming to differentiate itself from surrounding states.

#### KNOWLEDGE AND CREATIVE ECONOMY

About 70% of UW grads in the energy industry are employed out of state. Recent increases in energy activity in Wyoming, especially in the Powder River Basin, are drawing more companies to the state. Wyoming innovations and innovators (e.g., Center for Innovation for FLOW Through Porous Media, Enhanced Oil Recovery Institute) are some of the best in the world.

With the right policy, these advantages present tremendous opportunities to leverage Wyoming's resources to attract energy knowledge jobs—e.g., engineers,



geoscientists, economists, etc.—to the state, keeping more grads in Wyoming and providing more good jobs to experienced workers. With a core of knowledge workers established, Wyoming will be able to more easily attract and grow other knowledge industries like healthcare and professional and business services, thereby creating a diverse Wyoming knowledge sector.

**Growing the energy knowledge sector may have potential not only to help reach the educational attainment goals outlined in Governor Mead’s Executive Order 2018-1, but to spur growth in diverse industries.**

#### **ASPIRATIONS TO INSPIRE ADVANCEMENT - By 2038 - Leverage Natural Resources to Diversify**

- At least two wind or solar energy component manufacturers are located in Wyoming
- At least 10 additional manufacturing facilities that add value to Wyoming resources are located in Wyoming.
- At least 70% of energy workers in Wyoming have post-secondary credentials

#### **BARRIERS - Leverage Natural Resources to Diversify**

Primary challenges that impede leveraging Wyoming’s natural resources to diversify the economy as a whole include:

- Infrastructure and Transportation
  - o Distance to reliable air service
  - o Lack of community amenities
- Workforce and Education
  - o Workforce numbers limit energy-related manufacturing recruitment opportunities.<sup>22</sup>
  - o Wages are high due to energy and natural resource jobs, making it difficult for energy-related manufacturers to compete.<sup>22</sup>
  - o Limited opportunities for educated spouses
- Business climate
  - o Wind energy, which presents opportunity for manufactured inputs, is limited by policy and infrastructure

#### **POLICIES AND RECOMMENDATIONS**

1. **Develop policies and strategies to achieve the lowest cost power in the nation.**
2. **Develop manufacturing along supply chains**
  - Connect leaders from all parts of natural resource supply chains via events like CEO summits
  - Support local recruitment efforts
  - Uphold manufacturing sales tax exemption
3. **Grow the manufacturing workforce (See advanced manufacturing recommendations.)**
4. **Develop underdeveloped resources (See Strategy 2 recommendations)**
5. **Develop policies and strategies to retain and attract the energy knowledge sector**
  - Provide severance incentives for companies who hire workers with post-secondary-credentials, encouraging companies to locate more energy company headquarters and regional headquarters in Wyoming, and nucleating a knowledge workforce.

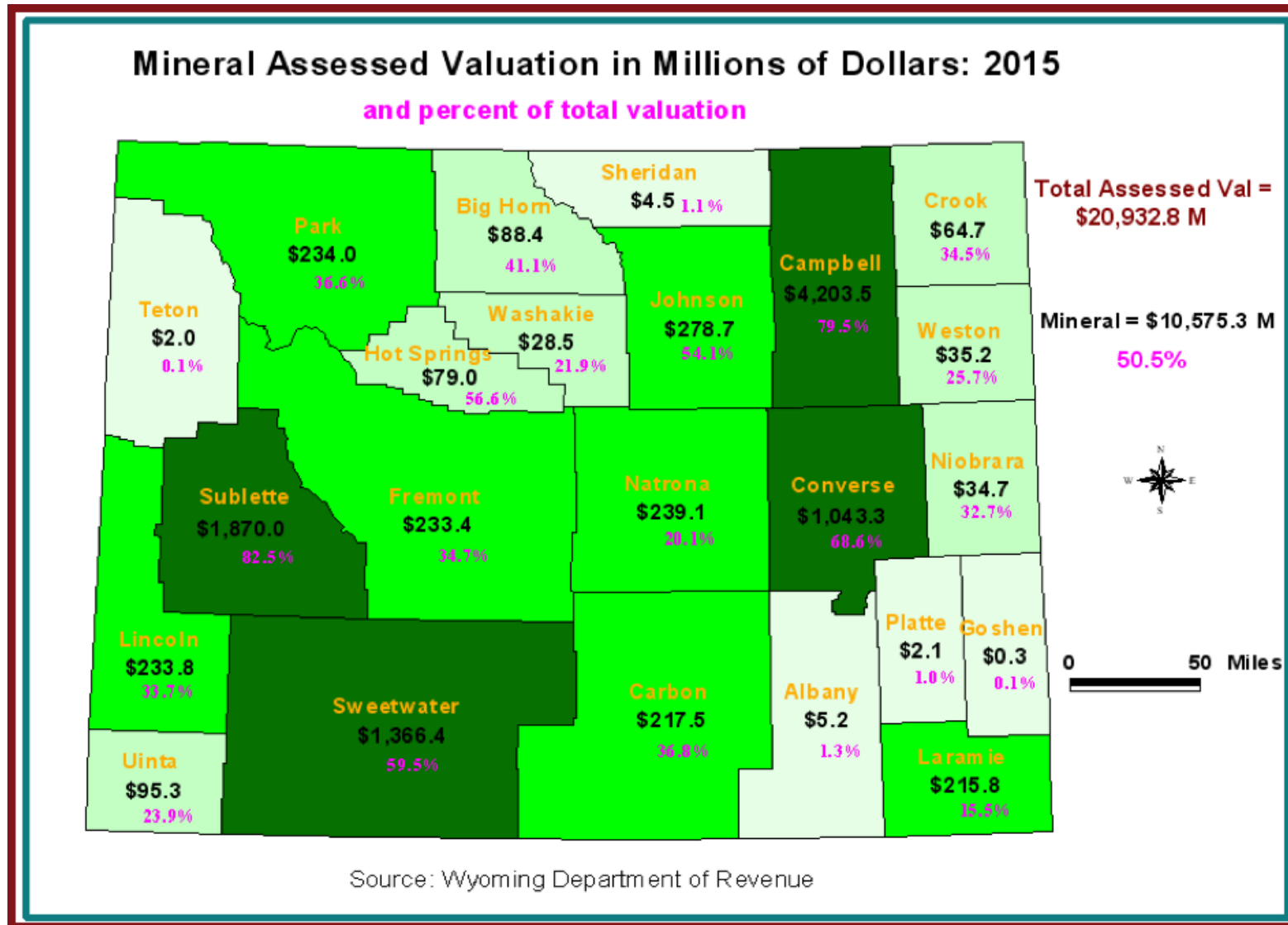
#### **TAX TOLERANCE IN NATURAL RESOURCES**

Revenue from minerals consistently makes up a significant portion of state revenue. In 2015 it made up 50.5%. (Figure 1). Precedent is set for mineral severance taxes and producers are tolerant to them. Wyoming’s tax policies for renewables are different from most other states. Where Wyoming taxes wind, most states where renewable energy development has flourished have policies that incentivize renewable energy, such as renewable portfolio standards and other incentives. When considering how to grow all resource bases, policy makers must consider competition from states with more development-friendly policies.





Figure 1. Mineral assessed valuation and percentage of total valuation in 2015.



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## Appendix B.2. Tourism and Recreation

### Why Tourism and Recreation?

The travel and hospitality industry is the second largest industry in Wyoming, making up 3.7 percent of the state's total gross domestic product or \$3.57 billion in 2017<sup>1</sup>. Since 2007, tourism has grown at an annual rate of 3.4 percent<sup>2</sup>. Visitors stimulate the local economy and benefit hotels, meeting facilities, attractions, restaurants, cultural institutions, tour companies, transportation providers, local farmers, and countless other businesses.

Travel and tourism industries sell a significant share of their goods and services to consumers from outside of the state who bring new money into local economies, making the sector one of Wyoming's greatest exports. In 2017, domestic and international visitors spent \$3.5 billion and Wyoming welcomes 8.7 million overnight visitors<sup>3</sup>. Visitor spending directly affected Wyoming's economy by generating \$188 million in local and state tax revenues and supported 32,120 full and part-time jobs<sup>4</sup>.

Outdoor recreation is integral to Wyoming's historical, cultural and economic identity. According to a 2017 Outdoor Industry Association (OIA) report, outdoor recreation in Wyoming generates approximately \$5.6 billion in annual consumer spending, \$1.6 billion in wages and salaries, \$514 million in state and local tax revenue, and accounts for 50,000 jobs<sup>5</sup>. With its majestic mountains, pristine lakes, vast landscapes, and abundant wildlife, Wyoming has many authentic and diverse recreation opportunities. Yet, according to the OIA, Wyoming trails its neighboring state in terms of an outdoor recreation economy.

Growing tourism and recreation amenities and services has proven to retain and attract young, skilled workers – an important aspect of economic growth. The tourism and recreation sectors of Wyoming's economy are ripe for advancement and regional diversification across the state.

#### Priority Economic Sectors:

- **Retail** – shops/rental, recreation gear/sporting goods, firearms and ammunition, knives, specialty clothing, boats/RVs/other vehicles

- **Service** – accommodation, restaurants, transportation, entertainment, outfitters, guides, concessions
- **Manufacturing** – firearms and ammunition, knives, optics, recreation gear/sporting goods, clothing, boats/RVs/other vehicles

### Aspirations (Benchmarks/Recommendations):

Modeling of the 2017 Great Solar Eclipse shows that Wyoming communities are thriving<sup>6</sup>. Visitors participate in many local experiences/events while respecting the environment and fellow travelers. They receive exceptional customer service and leave with a high level of satisfaction as well as a strong likelihood to return/recommend to their friends and family. Additionally, exposure to Wyoming's landscape inspires entrepreneurs to move businesses to the state adding to workforce and job creation.

- **Economic Opportunity and Job Growth:**
  - o Grow the tourism and outdoor recreation sectors' contributions to Wyoming's economy by \$4 billion by 2028 and \$8 billion by 2038 (in fixed 2016 dollars).
  - o Grow the tourism subsector's contribution to Wyoming employment by an additional 10,000 workers by 2038.
  - o For Wyoming to be a recognized leader in developing and building the outdoor recreation industry cluster, including retail, service and manufacturing.
  - o Increase the average length of stay by one-full day, generating a 30% increase in local and statewide sales tax.
  - o Increase all segments of travel – leisure, group, corporate, meetings/conventions, event, etc. Statewide accommodations occupancy (12 months running) increases to 65% by 2028 and 73% 2038.
  - o Grow and recruit business:
    - 200+ manufacturing/service companies
    - 1,000 businesses with 10+ employees



<b>Visitor Generated Employment</b>			
<b>Industry</b>	<b>Direct</b>	<b>Secondary</b>	<b>Total</b>
Accom. & Food Service	18,630	1,120	19,750
Arts, Entertainment, Recreation	7,740	700	8,440
Retail Trade	5,120	2,120	7,240
Transportation	630	760	1,390
Agric & Food Processing		290	290
Construction		660	660
Finance, Insurance, & Real Estate		1,200	1,200
Government		2,350	2,350
Mining/Manufacturing		400	400
Other Services		1,220	1,220
Professional Services		2,770	2,770
<b>Total</b>	<b>32,120</b>	<b>13,570</b>	<b>45,690</b>

Table 1: Wyoming-Visitor Generated Employment-2017 Source: Dean Runyan & Associates

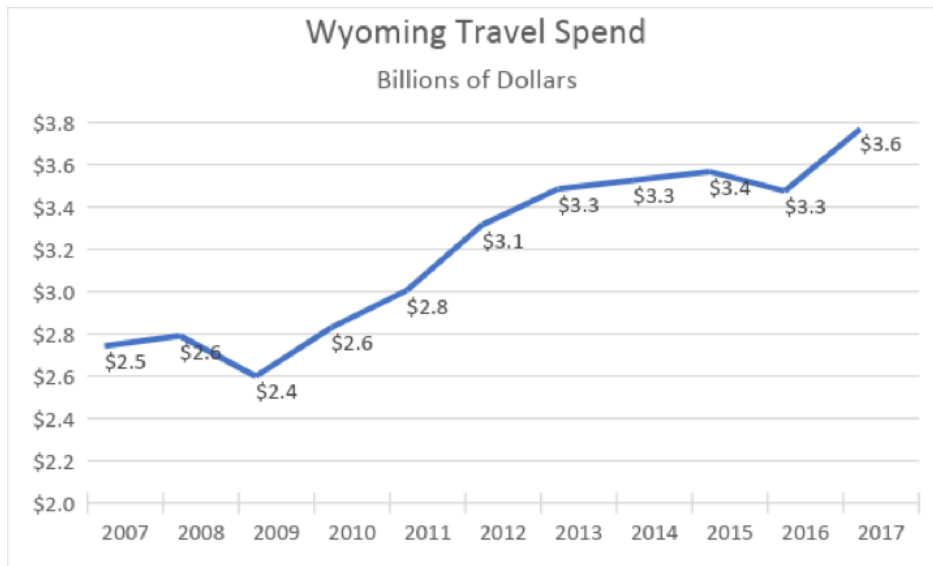


Figure 1: Travel Related Spending in Wyoming, 2007-2017 Source: Dean Runyan & Associates



WOT also measures the impacts of the aggregate of all travel on Wyoming’s economy. The table below quantifies the travel directly attributable to the advertising campaign as it relates to all travel (leisure, business, convention, sports, etc.).

2017 Results	Incremental travel directly attributed to advertising campaign (Source: SMARI)	Aggregate of all travel (Source: Dean Runyan & Assoc.)	Incremental travel in relation to all travel
Visitor Volume	3,945,377	8,747,000	45.1%
Visitor Spend	\$1,166,132,532	\$3,571,000,000	32.7%
Taxes Generated	\$45,232,184	\$188,000,000	24.1%
Travel Party Trips	1,011,635	3,524,333	28.7%
Travel Party Size	3.9	2.4	59.3%
Length of Stay	3.3	2.8	17.9%

Table 2: Travel Impacts on Wyoming Economy Source: Wyoming Office of Travel - SMARI and Dean Runyan & Associates

**Recommendations and Suggested Policies:**

- Invest in infrastructure and capital to attract and retain tourism and outdoor recreation businesses.
  - o Promote more geographically, conceptually, and culturally diverse tourism and outdoor recreation in Wyoming- with emphasis on innovation and sustainability.
  - o Consolidate, inventory, and develop tools and information related to funding, business development, business facilities and shared assets, sourcing of materials, and best practices.
  - o Deliver information on the economic benefits of outdoor recreation in a manner that is compelling to the public and useful to business.

- o Develop a strategy to recruit existing tourism and outdoor recreation-focused events, including conferences, to Wyoming.
- o Facilitate a network of public-private partnerships to provide tourism and outdoor recreation businesses with expert support in the form of mentorships and technical assistance to help with business development.
- o Direct State and Federal multi-agency groups, like the Recreation Action Team (REACT), to streamline and simplify permitting for outdoor recreation businesses and organizations and to create an integrated toolkit for service providers.
- o Maintain and enhance a tax environment that supports tourism and outdoor recreation businesses.

- o Direct resources to the Wyoming Business Council to:
  - prioritize outdoor recreation as a growth target industry;
  - partner with successful or existing, diverse tourism and outdoor recreation businesses in Wyoming to help business expand and to attract new investment to the state.
- Provide technical expertise and develop tools that aid with the acquisition of funding for business development, improvement, expansion and stabilization.
  - o Apply public and private financing mechanisms to address a variety of tourism and outdoor recreation business growth needs, for example, venture, angel, and mezzanine capital, investment



Funding Mechanisms for All 50 State Tourism Offices			
100% General Fund 15 States	Lodging Tax 13 States	NAICS* 5 States	Other 17 States
GA	AL - 5% mtn lakes, 4%	AR - 2%	AK - was GF, propose TID
IN	DE - 1% of 8%	ME - 5% of 8% rest, 9% lodging	AZ - tribal gaming, hotel+rental car tax+GF
MD	HI - 9.25%	MO - 17 NAICS	CA - assessment on gross sales>\$1 million
MA	ID - 2% (50% grants)	OH - similar to MO	CO - gaming+GF
MN	IL - 6%	UT - similar to MO	CT - hotel tax+GF
MS	KY - 1%		FL - rental car tax+GF
NH	MT -4% (65%)		IA - gaming+GF
NY	NE - 1%		KS - gaming+ad sales
ND	NV - 3/8 of 1% (5/8 local)		LA - 0.03% S/U tax (special district to levy)
PA	NJ - 7% (\$12 million min)		MI - tobacco settlement
SC	OR - 1.8% (1.5% in 2020)		NM - GF (75%)+ad sales
TN	RI - 5%		NC - 501c(3) contract w/ Dept. of Commerce
VT	TX - 6%		OK - S/U tax + GF for salaries/benefits
VA			SD - gaming (40% to tourism)+1.5% NAICS
WY			WA - was GF, propose TID
			WV - lottery
			WI - tribal gaming+5% car rental tax
		*North American Industry Classification System	

Table 3: Funding Sources of State Tourism Offices, 2017

Source: WY Office of Travel, US Travel Association, WY A&I, WY Department of Revenue, National Council of State Tourism Directors

- credits, and loan participations.
- o Determine a stable funding source –apart from the general fund– for the Wyoming Office of Tourism to enhance marketing efforts for tourism and outdoor recreation.
- Commit to a long-term process of finding solutions, including the development of information, tools, planning and infrastructure.
  - o Conduct comprehensive state and community level inventories of existing tourism and outdoor recreation amenities and business resources and a gap analysis of opportunities.
  - o Using an inventory and gap analysis, create a pilot city program as a template for Wyoming communities to improve their tourism and outdoor recreation economies.
  - o Commit to the improvement of transportation infrastructure, especially reliable and accessible air service.
  - o Incentivize communities to include amenities like walkable and rideable pathways, as well as alternative transportation links between population centers and outdoor recreation opportunities and facilities.
  - o Improve the reliability, affordability, and accessibility of communications technology.
  - o Work with agencies and other organizations to facilitate and expand volunteer opportunities.
- Enhance access through landscape level planning, collaboration, and creation of connections that secure access to recreation areas.
  - o Develop a prioritization method to secure new access and connectivity to and on public lands,



- taking into consideration factors such as cost, conservation needs, economic impact, historical use, and value to the public, regardless of age and ability.
  - o Recognizing the importance of private lands and private landowner rights, it is important to encourage incentives and efforts with private landowners to provide expanded recreation access, including streambeds, through easements, property tax breaks, leases, and in-kind compensation.
  - o Explore partnerships as a means to support outdoor recreation opportunities on state trust lands.
- Incorporate the concepts of conservation, sustainability and stewardship into all tourism and outdoor recreation planning, development and implementation.
  - o Support existing programs and innovate new programs that incentivize private landowners to preserve and conserve intact landscapes.
  - o Incentivize business practices that are ecologically sustainable.
  - o Establish and support local, full-consensus, collaborative processes that seek to evaluate new and existing wilderness and roadless areas in a manner that balances conservation, multiple use, and stewardship.
  - o Use existing and create new conservation tools on public lands, such as adopt-a-trail programs and Ride On Wyoming.
  - o Develop and promote a “Wyoming code of conduct” related to private and public land ethics and wildlife for use across all outdoor activities, considering existing messaging like Ride On Wyoming and Leave No Trace.
- o Fully fund the corpus of the Wyoming Wildlife and Natural Resource Trust fund.
- Maintain and expand funding mechanisms that support access, infrastructure and conservation.
  - o Convene a collaborative working group or groups including users to investigate ways to fund the development and maintenance of tourism and outdoor recreation infrastructure and programs. Suggestions for possible areas to explore include:
    - fee and donation programs;
    - coordinated grant programs, for example, a best-in-class matching grant program;
    - user-funded programs;
    - state matching funds.
  - o Ask for reauthorization of the Land and Water Conservation Fund (LWCF) consistent with the original intent of the Act.
  - o Advocate for full, recurring funding of the Recreation Trails Program (RTP).
  - o Establish a Wyoming Outdoor Recreation Trust Fund using creative public and private funding mechanisms that provide funding for recreational infrastructure on state and federal lands.
  - o Create a user fee (in-state and out-of-state) for all adult non-motorized users on enrolled trail areas to be used to fund the construction, improvement, and maintenance of enrolled trails. Request that the National Park Service enroll its trails.
  - o Partner with businesses (such as beverage companies) to develop a voluntary, per-unit donation program to fund recreation trails and encourage physical activity.
- o Introduce an opt-in fee on motor vehicle registration to be used for creating, maintaining, and repairing non-motorized, multi-use trails and paths.
- o Raise awareness and voluntary participation in the conservation stamp program and/or consider creating a recreation stamp program.
- o Support local retention of ski area permit fees on federal lands to improve permit administration, which would facilitate private investment.
- o Explore a user fee program for recreational use of State Trust Lands.
- Use governance tools (e.g., legislation, funding and cooperation) to enhance tourism and outdoor recreation, including special use permits.
  - o Pursue legislation that supports tourism and outdoor recreation by:
    - decreasing business liability;
    - covering “natural surface” trails under the Wyoming Governmental Claims Act;
    - prioritizing the development of “backyard trails” – trails close to homes and within communities.
  - o Identify areas desirable for outdoor recreation and explore land consolidation and/or cooperative management between private, state, and federal land managers.
  - o Pursue legislation to give Wyoming Game and Fish Commission (WGFC) the authority to set license fees.
  - o Work proactively with federal agencies to



- increase flexibility and responsiveness in the management of federal public lands.
- Dedicate resources and funding at state level to provide continuity and accountability.
  - o Expand the charter and rename the Department of State Parks and Cultural Resources to prioritize statewide outdoor recreation. Provide resources to focus on expansion of recreational opportunities, for example, infrastructure, outreach, and streamlining permitting. Identify appropriate staffing and relationships to implement outdoor recreation recommendations.
  - o Designate resources within the Wyoming Business Council to expand and support the outdoor recreation economic sector, similar to current efforts focused on agriculture and industrial development.
  - o Identify staff within the Governor's office responsible for long term implementation of recommendations and to form interagency groups that coordinate with all relevant government agencies and non-governmental organizations.
  - o Create a statewide advisory group, including outdoor businesses, to provide oversight and accountability in implementing these recommendations.
- Create collaboration fund to financially and technically support local outdoor recreation collaborative to allow for information sharing and locally based decision-making.
- Improve, expand and maintain digital and physical infrastructure that connects communities and local businesses.
  - o Strategically assemble, maintain, and distribute – utilizing innovative and dynamic means – a comprehensive inventory of tourism and outdoor recreation infrastructure, opportunities, providers, education programs, and events in Wyoming.
  - o Include statewide outdoor recreation activities on Wyoming Department of Transportation highway maps with assistance from the Wyoming Office of Tourism.
  - o Fund the creation and long-term maintenance of a best-in-class, digital user interface that showcases all tourism and outdoor recreation assets in Wyoming.
  - o Expand the existing State Parks and Cultural Resources website to include information on outdoor recreation grants available at the local, state, and national scales.
  - o Designate and develop high-quality, purpose-built motorized areas to increase access for users and to concentrate motorized use, which would provide for conservation and responsible use in other areas.
  - o Build and maintain trails and other infrastructure by capitalizing on youth and veterans' programs and paying visitors, as well as collaboration through existing programs.
  - o Improve geographic information system data for roads to increase access to public and state lands.
  - o Designate and develop high-quality, purpose-built non-motorized areas to increase access for users.
- Promote, increase, enhance, and support inclusive outdoor recreation programs and train a qualified and diverse tourism and outdoor recreation workforce.
  - o Increase opportunities and resources available for local school districts to incorporate tourism and outdoor recreation and education in K-12 curricula that focuses on creating lifelong recreationists, such as: developing a mechanism to create, collect, and share lesson plans and necessary equipment between Wyoming school districts and other partners including governmental agencies.
  - o Use public-private partnerships to develop more incentive programs to foster a culture of youth participation in tourism and outdoor recreation - focused on skill development and creating lifelong recreationists.
  - o Develop and incentivize community (adult and family) outdoor education programs, such as clinics and classes for entry-level outdoor skills through community colleges or state and city recreation programs. Strive to provide public or private grant funding for these programs. Example programs include the National Hunting and Shooting Sports Action Plan and WY Outside.
  - o Implement "train the trainer" certification programs to build capacity for teaching outdoor skill development in public schools and in the greater community by:
    - Creating partnerships between education institutions (such as NOLS, Teton Science Schools, and the University of Wyoming, Wyoming Game and Fish Department, State Parks and Cultural Resources) and the state's



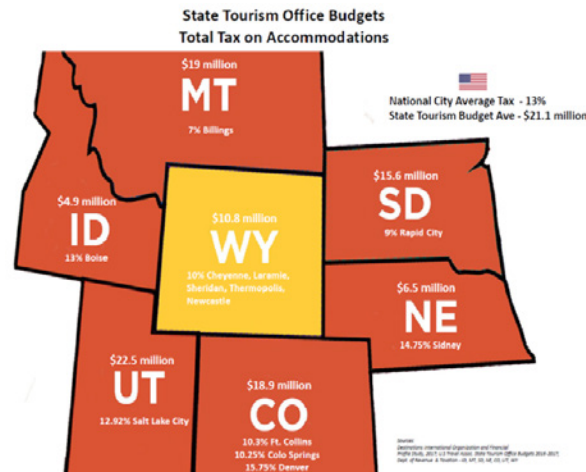


educators;

-Ensuring that training opportunities are available within Wyoming for Leave No Trace, Tread Lightly, and similar responsible use programs.

- o Support education, training, and retention of a qualified and diverse tourism and outdoor recreation workforce by supporting the University of Wyoming and Wyoming Community Colleges in efforts to enhance tourism and outdoor recreation-related degree programs.
- o Develop partnerships between public and private entities to provide workforce development and continuing education to meet the talent needs of outdoor recreation businesses, including equipment manufacturers, the hospitality industry, and experience providers.
- o Establish a working group to develop, fund, implement, and actively promote programs and events for veterans and active-duty military that increase access to the outdoors and focus on the physical and mental health benefits of outdoor recreation.
- o Expand funding for and promotion of the Wyoming Conservation Corps and the Veterans Conservation Corps.

**Tax Tolerance of Sector/Subsector:**



The tourism and recreation economy relies on a competitive tax environment to help businesses compete in the region and the Executive Council recommends maintaining that advantage. It is important to be sensitive to the tax rate on accommodations and the subsequent impact on the group segment (meetings/conventions, all-inclusive (e.g., dude ranches), outfitters). One of the competitive positions in hotel sales is the local tax on rate on rooms. As the below map demonstrates, several Wyoming communities are already at a 10% total tax on rooms. The national average is 13%. Any increase in the tax rate on overnight accommodations will impact room rate and ultimately RevPar (revenue per available room), which is an indicator of overall business health.

**Endnotes**

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## Appendix B.3. Sustainable Harvest

### Why Sustainable Harvest?

Wyoming has a long and vital legacy in agriculture, predating statehood, and has a brilliant future termed in this discussion as ‘Sustainable Harvest.’ Sustainable Harvest is defined as growth in the agriculture sector that can be maintained for future generations both economically and with respect to our natural environment. The ENDOW Executive Council sees opportunity to diversify and grow in proposed new areas of agriculture production and commerce, as well as enhancing existing products and industries. After all, food and fiber are the lifeblood of our country and our world.

The Executive Council believes the future of Wyoming’s agriculture calls on modernization of communications (both ‘last mile’ of cellular service and internet connection), expanding Wyoming’s brand of excellence to reach national and global markets, developing new value-added processing operations, leveraging research and workforce training in the state’s institutions and maximizing water and soil resources to recreate a vibrant sustainable harvest for Wyoming.

Agriculture is Wyoming’s third largest industry<sup>1</sup> and is a vital component of the state’s economy:

- The agriculture sector contributed 1.5 percent of Wyoming Gross Domestic Product<sup>1</sup> (GDP) in 2016 and 1 percent of the U.S. GDP<sup>1</sup>.
- The value added to Wyoming’s economy by the agricultural sector totaled \$1.72 billion in 2016<sup>2</sup>, and of that total, animals and animal products accounted for \$1.1 billion<sup>2</sup>.
- Crops totaled \$338 million<sup>2</sup>, and farm-related income totaled \$300 million<sup>2</sup>.
- Cattle and calves ranked as the largest livestock commodity rose in the state, followed by horses, sheep and hogs<sup>2</sup>.
- Hay was the largest crop raised based on cash receipts, followed by sugar beets and barley<sup>2</sup>.
- Livestock and crops are raised in Wyoming on 30.3 million acres spread across 11,600 farms and ranches<sup>2</sup>.

With its unmatched natural resources and open spaces, Wyoming remains attractive to those who wish to pursue an agricultural lifestyle. The agricultural industry is, by

definition, tied closely to the land. The men and women who work in the industry tend to be those who not only derive their income from the land, but also who recreate in and pay close attention to the natural resources. The state’s synergy with tourism and recreation, including its inherent outdoor lifestyle and livability; abundant hunting and fishing opportunities; strong agriculture tourism market; and world-class recreation attractions are among the amenities that make Wyoming a top choice among agricultural producers as a place to live and work.

Accessibility of water and the future ability to leverage it to support other important resources is another key feature of Wyoming. The availability of water, particularly for irrigation -- as well as strong state support to fund infrastructure rehabilitation for irrigated agriculture -- make the state attractive to producers while opening up untapped potential for select new crops and livestock.

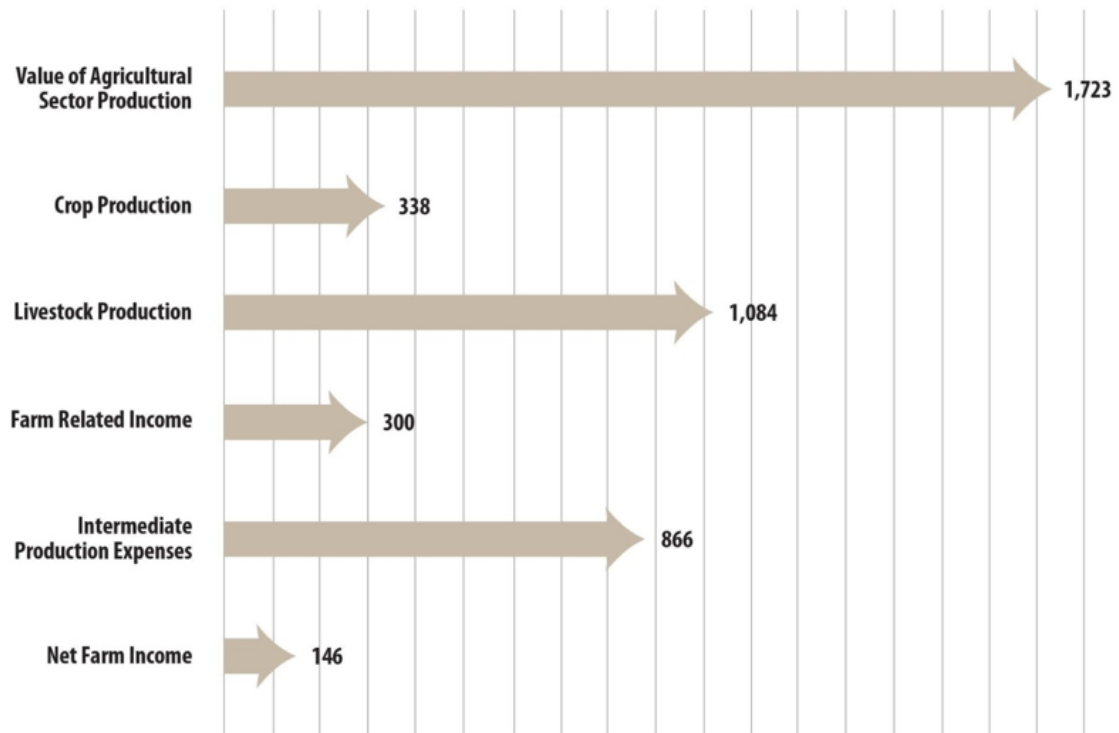
In addition to Wyoming’s natural resources and vast landscapes, perhaps Wyoming’s greatest asset is its people. Generations of industry experience, knowledge and opportunities for mentorship, a strong history and tradition rooted in agriculture with its ingrained Western culture and traditional Western core values and work ethics, define the Wyoming agriculture producer.

The state’s land grant mission of the University of Wyoming and its Agriculture Research and Experiment Stations, extension resources, and community colleges throughout the state are key to the sector’s continued success. Further, the strong collaboration between Wyoming producers, organizers, coalitions and their relationships with federal and state entities are considered critical to ensure the voice of the Wyoming agriculture producer is being heard.

From the iconic bucking horse and rider symbol that proudly represents Wyoming, Wyoming has long recognized that ranchers and farmers serve as stewards of Wyoming’s land. Agriculture producers are the experts in sustainable practices, as evidenced by those who that have managed to survive and thrive for generations. The Executive Council believes this strong history lends itself to an even stronger future.



## Wyoming Agriculture's Contribution to the U.S. Economy in 2016<sup>3</sup>



Economic sectors targeted within Sustainable Harvest to promote growth, diversity and sustainability of Wyoming's economy:

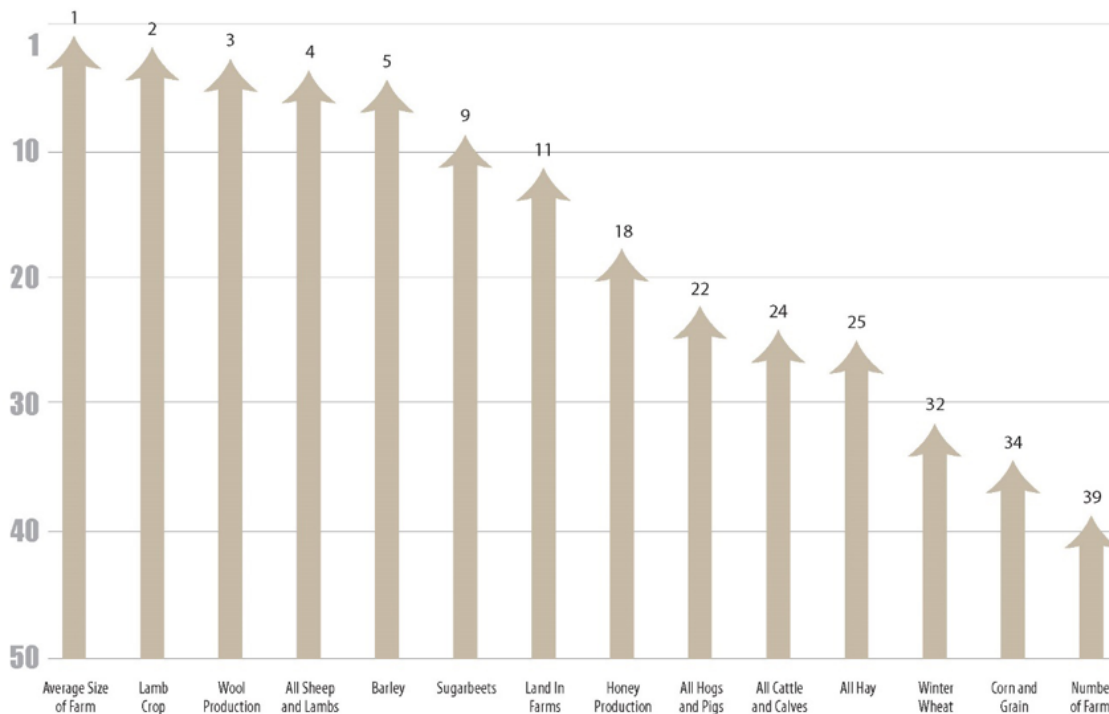
**Crop production:** hay, sugar beets, grains, corn, beans, and fiber

**Livestock production:** cattle, pork, sheep, horses, bison, and dairy

Wyoming's diverse agriculture industry has always been a supporting force in the growth of the state. The industry boasts 345,000 sheep and lambs, 1,320,000 cattle and calves and an average farm size of 2,649 acres. Traditionally predominant industries of cattle and sheep production are coupled closely with hay production as commodity leaders in the state. The Sustainable Harvest subcommittee focused not only on traditional industries but any other options to improve and diversify crop and commodity offerings in the future.



### Wyoming's National Rankings (2018)<sup>4</sup>



#### Aspirations for Sustainable Harvest:

Acknowledging the vital role agriculture and rural communities play in our state's future, the Executive Council's Sustainable Harvest subcommittee started its research with a public forum to discuss opportunities and economic drivers in agriculture. The event brought together a wide array of Wyoming

people interested in the future of Wyoming food, fiber and rural places. Through the forum and ongoing conversations throughout the process, the Sustainable Harvest subcommittee has received an abundance of suggestions from producers, business owners and citizens revealing how best to support the future of Wyoming agriculture and rural communities. These recommendations are detailed here.

**1. Rural Connectivity: access to reliable and affordable high-speed broadband/internet and cellphone service in remote areas is imperative to everyone in today's digital economy.**

- **The Executive Council's Goal is to meet 100% of needs of rural population.**

The Agriculture industry today is in constant flux with advancement in technologies such as machines, sensors, robots, Global Positioning System (GPS), and satellite imagery, which allow these businesses to be more effective, efficient and profitable.

The number one opportunity raised at the Sustainable Harvest forum and throughout engagement and conversations with stakeholders and experts was the opportunity to connect and take advantage of the technological advancement occurring in today's digital economy. In this period of technological evolution and disruption, if access to cell phones and broadband availability is limited in our state's rural communities where most agriculture industry takes place, Wyoming's agriculture sector will not be able to compete in today's global economy.

The accomplishment of this aspiration is critical to meeting many of the following aspirations within the Agriculture pillar and others set forth by ENDOW.



## 2. Expand and enhance the Wyoming brand to become a trademark of excellence

Similar to Idaho potatoes, Georgia peaches, and California raisins, a unified Wyoming brand would allow Wyoming producers to highlight the superior quality of Wyoming agriculture products. The Wyoming agriculture brand would represent a trademark of excellence for the most discerning consumers on a global basis. This includes collaborative work with the Department of Tourism to jointly promote Wyoming agriculture’s “Clean air, clean water, open spaces” message using agri-tourism to allow people to stop and visit with producers and industry. In developing the connection and relationship with the consumer, the Wyoming brand allows the consumer to experience first-hand Wyoming’s outstanding stewardship, culture and pristine resources.

The Executive Council recommends the expansion and enhancement of Wyoming markets to include enriched value-added markets. This would include the development and promotion of both horizontal and vertical processes throughout the supply chain for existing commodities, organics and specialty niche markets for local, regional, national and global consumers.

According to the U.S. Department of Agriculture, farmers and ranchers currently receive only 14.8 cents of every food dollar spent by the American consumer.<sup>4</sup> In fact, \$0.13 of each loaf of bread and \$1.93 of every sirloin steak are received by agriculture producers.<sup>4</sup>

Agricultural producers are encouraged to voluntarily unite to meet common needs and challenges; solely owned and operated for the benefits of its member/owners through a democratically controlled cooperative business enterprise – “power of the group.” Today nearly 300,000 cooperatives exist in the United States – Sunkist, Land-o-Lakes, Welches, Whole Foods, Ocean Spray, Ace Hardware, and Nationwide Insurance are examples of producer-owned cooperative business models.

Grassroots producers can join together and achieve an objective for processing their value-added agricultural commodities to compete at the consumer retail level

markets – “from the field to the fork.”

Additionally as an important piece of this branding initiative, the Executive Council supports current efforts already underway that will play an important role in the advancement of this initiative. This includes the establishment of a trade representative in Taiwan and the Wyoming Business Council study to build federally-inspected processing facilities throughout Wyoming and their potential distribution and marketing channels.

Finally, the Executive Council recommends leveraging the Wyoming brand to further promote Wyoming’s unique and compelling culture through robust agri-tourism efforts. This includes the recruitment of major, multi-year agriculture, western, equine and rodeo events, the promotion of dude ranches and trail riding, and the development and maintenance of first class facilities at the private, city, county and state levels. Additionally, Sustainable Harvest supports strengthening the Wyoming State Fair and expansion of year-round activities at the State Fairgrounds, which will further enhance the state’s culture and cultivate the agriculture sector message.

## 3. Maximize Wyoming resources by establishing a premier agriculture innovation and research/training center at the University of Wyoming

Wyoming should not be content to follow technological advances in the agricultural sector. In order to lead the cutting edge, innovation is critical, and innovation requires research and training. Working with the University of Wyoming and the state’s community college network, Wyoming’s agriculture industry can develop a research and training center to drive those technological advances and transform the university into the nation’s foremost agriculture institute for research and high-tech vocational training. As agriculture and natural resources are inextricably linked, this will not only advance agriculture in the state by maximizing the quality and quantity of livestock and crops, but also will enhance and sustain Wyoming’s natural resources.

Among other topics, the center should consider research in precision agriculture through technology; genetics; reuse or recycling of production water for agriculture;



high altitude performance and management; efficiencies for irrigation; and ethics surrounding cloning, GMOs (Genetically Modified Organisms), and artificial intelligence as it can be used for agriculture. The center also will develop an Agriculture innovation and sustainability research and extension program, similar to the UW School of Energy Resources, with help from the community colleges, UW Colleges of Agriculture and Business, and partnerships or alliances with industry leaders locally, nationally and globally. This will develop workforce opportunities, innovative techniques and pilot or commercial testing.

The center model will include agriculture innovation exchanges, in which high school and college students from Wyoming are given the opportunity to visit and study other innovation zones around the globe, and students from those areas are invited to learn from and share their knowledge with Wyoming. In addition to increasing the knowledge base of Wyoming agriculture, the program will invest in our youth in order to give them an incentive to remain in the state.

Further, the model should reach down into the K-12 system and incorporate the development and implementation of the Wyoming Stewardship Project (which is a current program that builds upon the WY Ag in the Classroom curriculum). In addition, UW should develop a long-term plan to heighten and enable the curriculum and research in the College of Agriculture to elevate the school to Tier 1 status.

Water development should be a particular emphasis of the center. Water quality and availability are topics as important to agriculture as they are to the general population of the state and nation. Protecting and maximizing use of water is of high importance in making Wyoming the nation's leading state on evolving head-water storage for agricultural purposes, as well as expanding water development for increased utilization of natural resources. Collaboration with the partners of the research and training center will result in the promotion of irrigation methods that promote return flows to river basins, restoration of stream beds to reduce river bank erosion and improve fisheries and wildlife habitat and maintain Wyoming's strong water law system. In addition, research will be conducted to find more efficient systems for irrigation to reduce water loss to evaporation and other inefficiencies, including

subsurface irrigation techniques, indoor farming, recycled water, and other methods.

Considering all aspects of agriculture -- land use, biology, botany, business practices, etc. -- the center will generate techniques and technology to increase the quantity of livestock and crops that can be raised in Wyoming; the quality of livestock and crops; and identify new agriculture products that can be raised efficiently in the state. In order to accomplish these goals, the state will need incentives for micro agriculture producers who farm or ranch small acreages to develop cooperatives for economy of scale efficiencies; and the use of hydroponic greenhouses to expand the growing season and crop variety. The center will develop accessible and affordable genetic tools for producers and identify management innovation and advancements. In addition, it is of critical importance that the state continues to press for increased federal grazing permits and allocated AUMs (Animal Unit Months). This will provide greater stability for producers with operations on federally owned lands, in turn providing opportunities for innovation and expansion.

Together, these advances in technology and practices for agriculture will result in similar positive results for the natural resources of the state. They will protect the world-class big game habitat and blue-ribbon fisheries already present, and they will improve habitat statewide for all wildlife, including big game, upland and migratory waterfowl, and even nongame and protected species.

### **Barriers to growth of Sustainable Harvest:**

Some of the same features that make the state attractive to people with interests in line with agriculture also create challenges. The small population is dispersed, creating large areas free of human occupation. While this is a benefit to wildlife and the people who enjoy nature and wild places, it provides little incentive to private companies to provide infrastructure to people living at a distance from population centers. In a world that is becoming more digitally connected, producers who are left out of the broadband loop are at a disadvantage.

There is a lack of last-mile broadband and cell phone service in many areas of Wyoming. The high cost of entry (land, machinery and livestock), and general



transition and succession challenges are other barriers to young people getting started in the agricultural industry in Wyoming. Other challenges include a lack of skilled workforce and specialty laborers (such as sheep herders, ranch hands, etc.); limited availability of migrant, immigrant and foreign workers; uncertainty of federal land-use policy and regulations; elevated transportation costs due to remoteness; limited food industry networks; limited access to timber resources; difficulty attracting private sector investment from outside the agricultural community; and limits to crop and livestock production options created by the climate, elevation and northern latitudes.

### Policies and initiatives needed to achieve the development of Sustainable Harvest:

In order for Sustainable Harvest to succeed, the state needs to enhance and create opportunities in the workforce, education, infrastructure, government policy, and other areas. A systematic process is needed for opening and clearing the path for farmers, ranchers, and agribusinesses by providing voluntary innovative opportunities for private sector agri-businesses to not only survive but to thrive. Streamlining regulation processes, capitalizing on enablers, and overcoming barriers must be a prime focus to enhance Wyoming’s agricultural economy.

## Policy Priorities of Interest to the Agricultural Community<sup>5</sup>

<p><b>LICENSING</b> More than any other issue, small business owners' evaluations of their local governments are driven by licensing requirements - training or testing obligations, forms and fees needed to start and run a business. Professionals want these requirements to be easy to navigate and uniformly enforced.</p>	<p><b>HEALTH &amp; SAFETY</b> Health and safety regulations range from insurance rules for employees to safety codes affecting business operations. These regulations particularly impact small businesses in the home improvement, events and wellness industries who want clear and consistent rules to protect themselves and their workers.</p>	<p><b>LABOR REGULATIONS</b> Labor regulations on hiring and employment are key for small businesses looking to expand. Small business owners want to see policies that make it as easy as possible to hire new workers quickly.</p>	<p><b>TAXES</b> On the state and local level, tax regulations are a top priority for small business owners: professionals don't mind paying their fair share as long as the tax requirements are easy to understand. They are more frustrated by a tax code that they often see as unnecessarily complicated than a tax rate a majority view as fair.</p>
<p><b>ZONING</b> By making the process of complying with local zoning policies and acquiring building, operational and construction permits more straightforward, policymakers can make it easier for small businesses to start and run their businesses.</p>	<p><b>ENVIRONMENTAL RULES</b> Environmental rules affect small businesses across range of industries, especially home improvement, moving, landscaping, and event planning. Access to clean parks and sustainable spaces is key for many professionals who rely on outdoor venues, and some rules restricting use can be seen as overly burdensome.</p>	<p><b>WEBSITES</b> Government websites often help small businesses comply with regulations, apply for licenses, or provide information about operating in the community. Governments that offer informative, easy-to-sue website experiences are consistently rated more highly than those with limited and less-interactive sites.</p>	<p><b>TRAINING</b> Training and networking opportunities - offered by chambers of commerce, government agencies, and local organizations - are valuable to small businesses looking to develop new skills, run their business more efficiently, or network with industry colleagues or potential clients.</p>

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### Workforce and Education

There are generations of institutional knowledge on Wyoming farms and ranches. To share that knowledge, Wyoming needs agriculture innovation centers and agriculture innovation exchanges. The former would cluster agriculture ecosystems around community colleges, and the latter would create opportunities for student exchanges between Wyoming and global Ag innovation zones.

Also helpful would be Ag in the Classroom enhancements, to support development and

implementation of the Wyoming Stewardship Project. In addition to sharing knowledge, these initiatives would rekindle the desire in our young people to remain in Wyoming and continue their agricultural heritage, rather than leave the state for careers perceived to be easier and more lucrative.

The University of Wyoming is poised to become a premier agriculture research and technology institution. With proper assistance, UW could achieve that distinction. Considerably more assistance would be needed to establish a Tier 1 College of Agriculture at UW, but this is crucial to the Sustainable Harvest mission, as well.



## Health and Quality of Life

Wyoming enjoys beneficial quality of life amenities, especially for those who enjoy unpopulated areas and the natural world. With the bulk of our citizens living outside population centers, though, housing, health care, food, fuel, transportation, schools and recreation can become less affordable. It is vital to promote affordable rural access to these amenities.

It also is crucial to promote agricultural land use and to deter or limit unplanned agriculture land conversion. Much of the removal of land from agricultural use is driven by higher values of the land for housing or industrial uses -- values that make the land unprofitable for agricultural use. Along with limits to urban sprawl, mentorship opportunities should be developed for first-time or new producers and the value of conservation easements should be explained in order to maintain the profitability of agricultural lands.

## Infrastructure

There are increasing demands among consumers for source tracking and traceability of agricultural products. These demands require more consistent internet and cell service, yet much of Wyoming is underserved or unserved by reliable connectivity. Last-mile broadband connectivity and 5G cell service should be expanded to reach at least 95 percent of the rural population, with a focus on new technology. The infrastructure should be capable of supporting future changes to connectivity and technology needs.

Also needed are agriculture innovation and processing

facilities, as well as improved energy source options for rural areas, including natural gas, wind, solar, bio-mass and other energy sources.

Wyoming's agriculture sector supports the work of the Wyoming Aeronautics Commission through a statewide Plan that: defines an efficient, overall approach to commercial air service and ensures reliable, long-term commercial air service for all of Wyoming.

## Entrepreneurial Ecosystem

In order to foster the entrepreneurial ecosystem, affordable and accessible health care is needed. This could come in the form of telehealth, but it would require the last-mile broadband connectivity mentioned above.

Ag innovation centers and student exchange centers also would improve the entrepreneurial ecosystem, as would an expanded entrepreneurial awareness and access to government programs. An innovation app, serving as a clearinghouse for agriculture business resources, would be a good first step to tapping the institutional knowledge of the state's producers. Further, an increase in State Loan and Investment Board (SLIB) agriculture loan limits, and broader availability of affordable agriculture loans, are necessary to allow Wyoming families to continue their agricultural heritage.

## State Capabilities

A universal Wyoming brand for value-added retail agriculture products is needed and would not be difficult to implement. This Wyoming brand would provide assurance to the consumer of the source of the

product and boost value for Wyoming-grown products. This would require the creation of standards for traceability, and last-mile broadband would be critical to implementation.

Also needed is an inventory of current private and governmental agribusiness resources and programs, or programs that exist and need some modifications to be relevant to the agriculture industry. Further, an increase in workforce development and training are necessary, as is access to processing facilities for food and fiber.

Finally, the state must develop tools to help young people overcome barriers to agriculture production entry -- develop mentorships, internships, apprenticeships and exchange programs for beginning agriculture producers.

## Tax tolerance of Sustainable Harvest:

There is an inherent low tolerance for taxes in the agriculture industry. The current agriculture tax status should be preserved, and few, if any, additional taxes should be implemented.

## Endnotes:

1 "Quick Stats." USDA's National Agricultural Statistics Service, Wyoming Field Office, Statistics by State, [quickstats.nass.usda.gov](http://quickstats.nass.usda.gov).

2 "Wyoming Agriculture; January 2018." U.S. Department of Agriculture's National Agricultural Statistics Service, Wyoming Field Office; [nass.usda.gov/wy](http://nass.usda.gov/wy)

3 USDA Economic Research Service, [www.ers.usda.gov](http://www.ers.usda.gov)

4 "2016 Food Dollar Application," USDA Economic Research Service, <https://data.ers.usda.gov/reports.aspx?ID=17885>

5 "Creative and Knowledge Economy Fostering Innovation in Wyoming," Accenture Research, May 2018





## Appendix B.4. Advanced Manufacturing

### Why advanced manufacturing?

Throughout history people have applied innovation – processes, materials and workforce – to the manufacturing process. This integration defines advanced manufacturing. Advanced manufacturing is altering the landscape of the global economy, fueling research and development spending and expanding high-wage, high-skill opportunities for workers. This combination, which in and of itself fuels growth, presents an exciting opportunity for Wyoming communities (urban and rural) and residents.

If Wyoming can capitalize on technological advancements, develop a strong pool of skilled workers, and remain nimble and flexible, Wyoming will be positioned to accelerate in front of competitor states. To complement this, Wyoming must brand and market its advanced manufacturing economy, raising awareness of its many strengths. These strengths include pro-business and accessible local and state elected officials, productive workforce, a friendly tax climate, cost-competitive utility rates, available land, and a favorable regulatory environment. Please see Figures 1 and 2 for economic trends in manufacturing observed in the US and Wyoming, respectively.

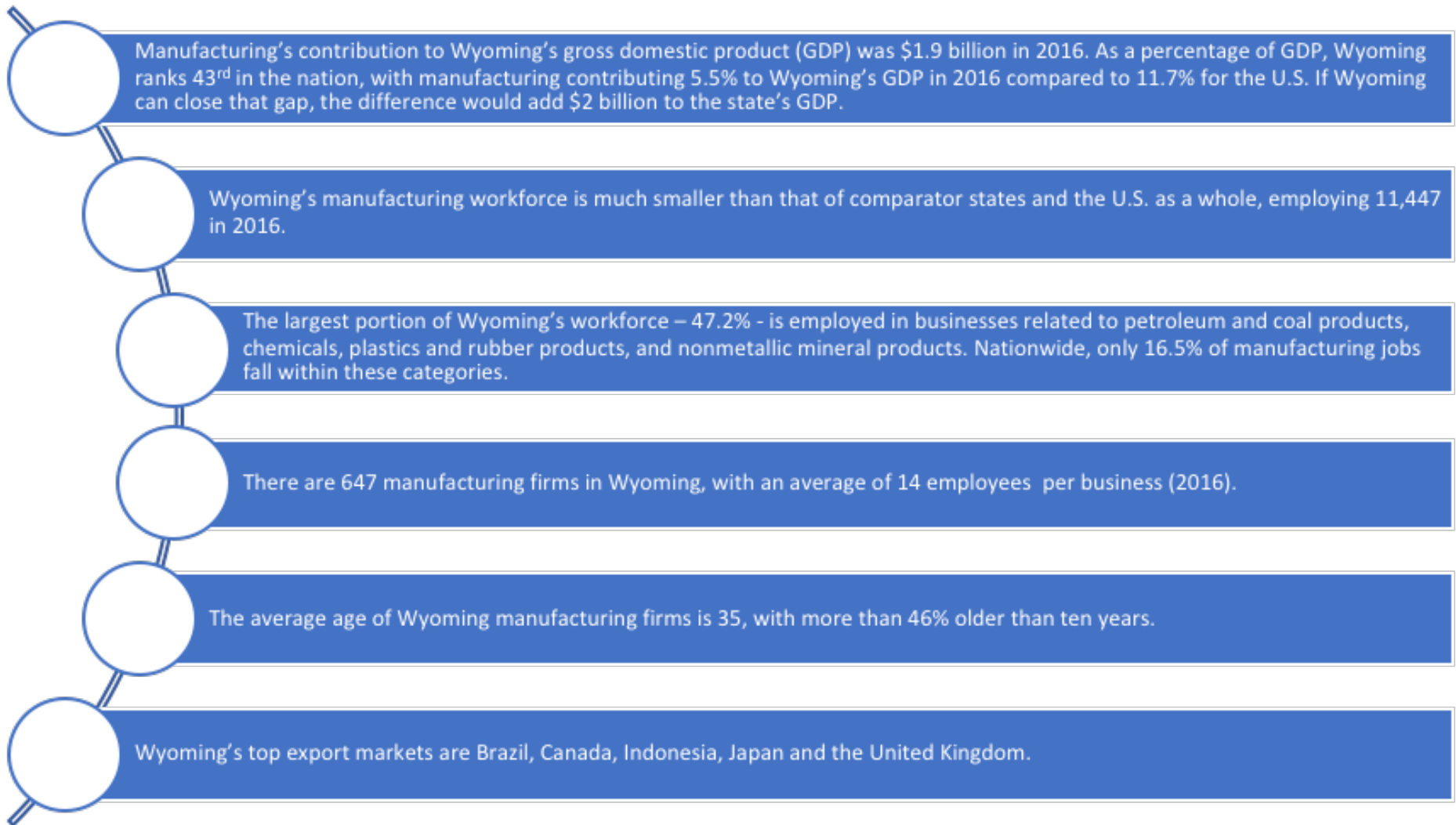
Figure 1: US Trends in Manufacturing



Source: National Manufacturers Association



**Figure 2: Wyoming Trends in Manufacturing**



Source: ENDOW Socio Economic Assessment of Wyoming



### Our aspirations for advanced manufacturing:

- **Economic Opportunity and Job Growth –**
  - o We aspire to grow the monetary value of manufacturing goods and services produced (GDP) in Wyoming to \$5.0 billion by 2028 and \$8.5 billion by 2038 (in fixed 2016 dollars).
  - o We aspire to grow the manufacturing sector's contribution to Wyoming employment by, at a minimum, 20,000 workers by 2038. Of this, we aspire for 7,000 to be in rural communities.
- **Workforce and Education –**
  - o We aspire for Wyoming to be ranked in the 1st quartile of states in the number of science, engineering and technology graduates (associate's and bachelors) per 1,000 individuals' ages 18-24 years old by 2038. Wyoming was ranked in the 1st quartile for associate degrees and 4th quartile for bachelor's degrees in 2013 (National Science Foundation).
  - o We aspire to create over 1,000 apprenticeships in advanced manufacturing occupations by 2023 and over 7,000 by 2038.
- **Infrastructure –**
  - o We aspire, at a minimum, for one makerspace, co-work space, incubator and/or accelerator to be established in every Wyoming county by 2023.
  - o We aspire for, at a minimum, development plans for one advanced manufacturing Business Development and Innovation Zone to be complete by 2028 and established by 2038.

o We aspire for one national lab/federal research institution to be identified for establishment in Wyoming by 2028 and operational by 2038.

- **Entrepreneurial Ecosystem –**
  - o We aspire for 1,400 manufacturing firms to be established in Wyoming by 2038 with an average employment of 15 persons.
  - o We aspire for Wyoming to be ranked in the 1st quartile of states in patents awarded per 1,000 individuals in science and engineering occupations. Wyoming was ranked in the 3rd quartile in 2014 (National Science Foundation).
- **International Trade –**
  - o We aspire to increase export of advanced manufacturing products by 5% per year.
  - o We aspire for \$25 billion in foreign direct investment in the manufacturing sector by 2038.

### Priority economic sectors within advanced manufacturing:

To accomplish these aspirations, we believe Wyoming will be better served by developing the advanced manufacturing sector and the formation of clusters rather than pursuing a broad recruiting strategy. This strategy seems to be the most successful in the states we have studied. To increase the likelihood of success, we focused on identifying sectors of advanced manufacturing with a presence in Wyoming and/or clusters in close proximity to Wyoming. We believe this focus allows us to exploit our natural advantages that will then attract individuals, families and businesses

from beyond Wyoming's borders.

Further, we prioritized sectors of advanced manufacturing that demonstrate the following strengths:

- Value creation,
- Growth,
- Investment in research and development,
- Durability (structural incumbent advantages, consistent performance, and relatively few large associated disruptors)<sup>1</sup>, and
- Viability.

...and exhibited few of the following weaknesses:

- Labor intensity,
- Volatility, and
- Vulnerability (structural weaknesses and disruptor penetration)<sup>2</sup>

Finally, we identified industries with strong cluster or inter-industry linkages. These connections between clusters include geography, supply, demand, technology, infrastructure, skills, or other capabilities. Exploiting these linkages has natural benefits for existing industry and associated organizations (e.g., government, education institutions, etc.) and may provide pathways for other clusters to emerge.



**Subsectors of emphasis, prioritized as follows:**

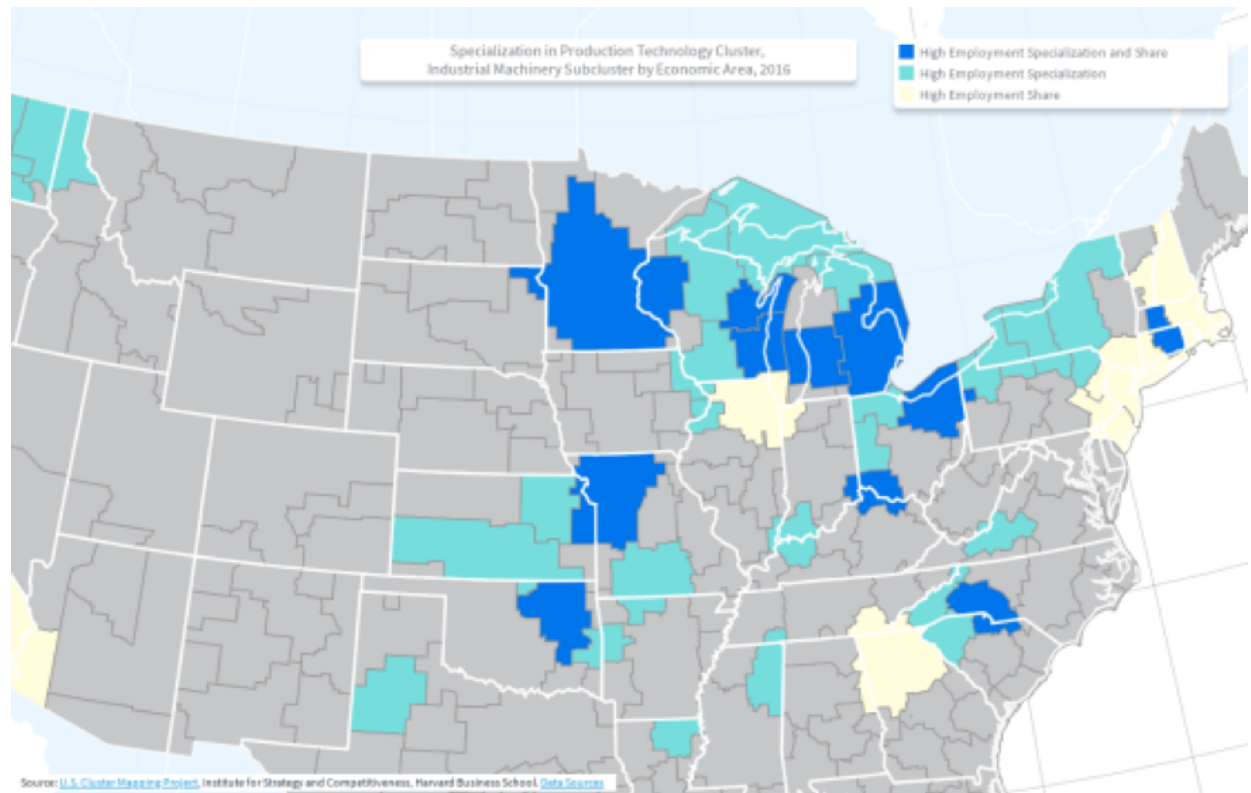
**1. Industrial Equipment Manufacturing (Figure 3)**

- o Primary strength – value creation<sup>3</sup>
- o Primary weakness – openness (concentration of market share; regulatory environment)<sup>4</sup>
- o Subsectors – agriculture, construction, mining, energy
- o Major competitors in the global machinery market include Germany, Japan, Italy and China<sup>5</sup>
- o High-skill and high-wage
- o Majority of manufacturers in this space are small or medium sized enterprises<sup>6</sup>
- o Wyoming example: L&H Industrial, Gillette and Sheridan; Union Tank Car, Evanston; Westech, Casper; FabTech, Casper; NorthStar, Evanston; Automation Electronics, Casper; Puma Steel, Cheyenne

**2. Energy and Energy Storage (e.g., battery storage) Manufacturing (Figure 4)**

Advances in energy and energy storage technology will fundamentally change how, where and when we use energy. Renewables are disrupting energy markets and batteries are already powering vehicles and consumer electronics.

- o Primary strength – growth<sup>7</sup>
- o Primary weakness – technology-led disruptors<sup>8</sup>
- o Wyoming maintains a strength in traditional

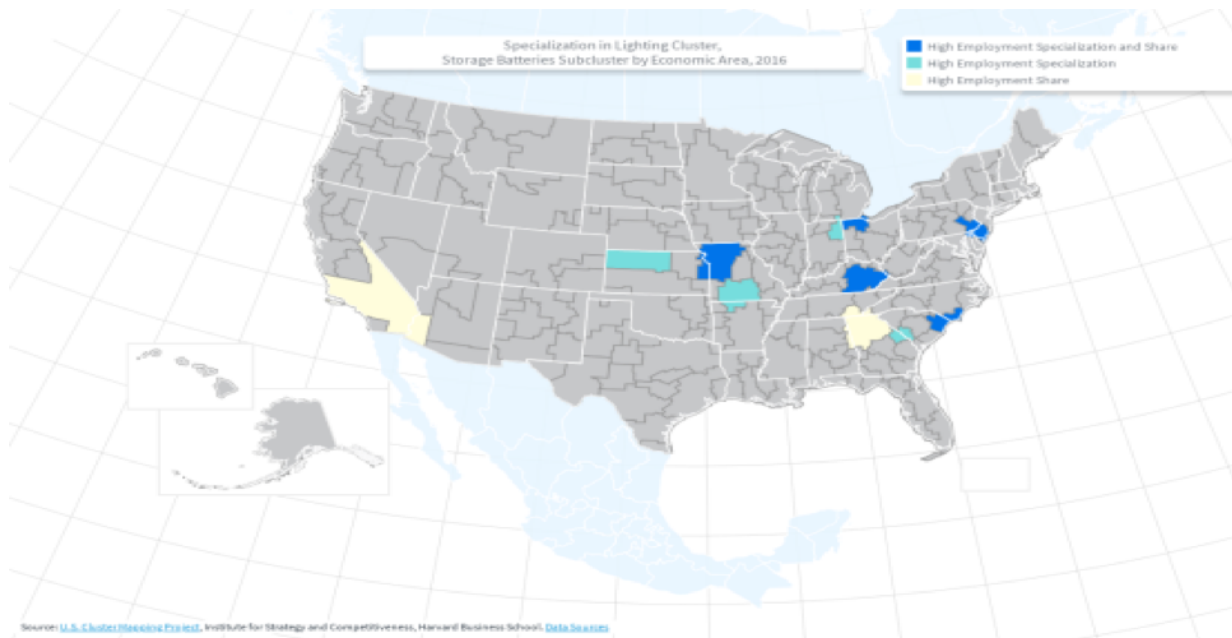


**Figure 3: Industrial Machinery Cluster, 2016** Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

- (coal, oil and gas, uranium) energy manufacturing.
- o Batteries are driving innovation and mineral markets. Lithium demand is anticipated to grow 42% between 2017 and 2020.<sup>9</sup>
- o Renewable energy manufacturing in Wyoming could spur increased renewable energy development and vice versa.
- o Wyoming examples: L&H Industrial, Gillette

and Sheridan; Evanston Carbon Fiber a Group Company of Mitsubishi Chemicals, Evanston





**Figure 4: Storage Battery Cluster, 2016** Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

**3. Recreational Goods (firearms and ammunition, outdoor products) Manufacturing (Figures 5-7)**

- o Primary strength – value creation<sup>10</sup>
- o Primary weakness – labor intensity<sup>11</sup>
- o Bureau of Economic Analysis valued the industry at \$637 billion
- o There are an estimated 170 outdoor recreation companies located in Wyoming manufacturing binoculars, firearms, hunting and fishing gear, clothing, etc.
- o At least 73% of Wyoming residents participate in outdoor recreation each year. (Outdoor Industry Association, 2017)
- o 2017 Wyoming Outdoor Recreation Industry

- Report – [http://wyomingbusiness.org/Uploads/DocumentLibrary/Profiles/industryreports/outdoor\\_profile2017.pdf](http://wyomingbusiness.org/Uploads/DocumentLibrary/Profiles/industryreports/outdoor_profile2017.pdf)
- o Firearms and Ammunition
  - Industry revenue is expected to increase due to strong demand from the military.
  - National Shooting Sports Foundation
    - Companies in the United States that manufacture, distribute, and sell firearms, ammunition, and hunting equipment employ as many as 150,000 people in the country and generate an additional 160,000 jobs in supplier and ancillary industries.
  - Wyoming is No. 1 nationally in gun

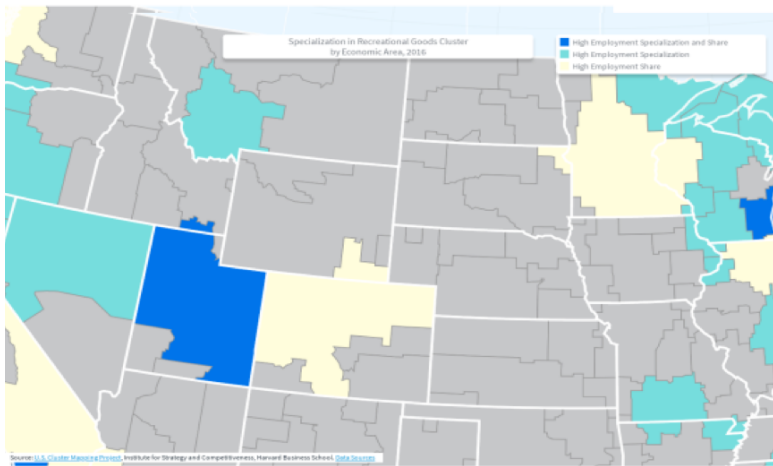
ownership (59.7 percent). Wyoming has the highest number of registered guns per capita of any state. For every 1,000 residents, there are 196 guns, about three times the rate of second place. That’s 114,052 registered firearms.

- 11.3 million customers live within 8 hours of Wyoming.
- National Shooting Sports Foundation estimates the firearms and ammunition industry was responsible for \$51.4 billion in total economic activity in the U.S. (2017)
- “Most recent data shows an estimated 43 percent increase in firearms manufacturing in the U.S.”<sup>12</sup>

o Wyoming examples:

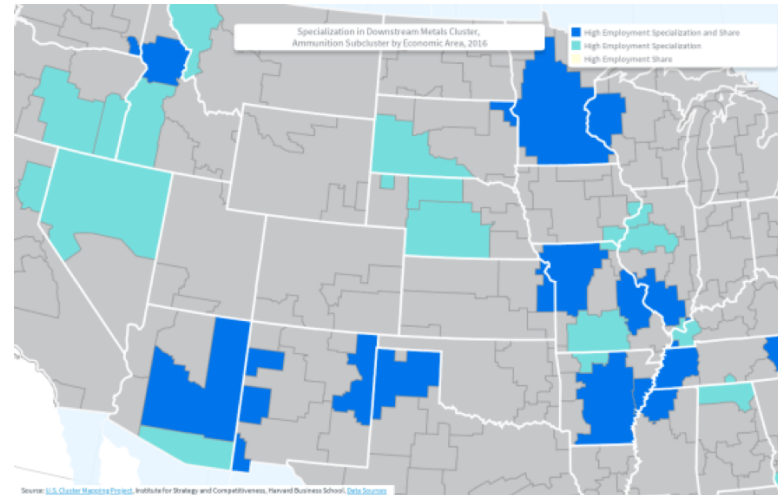
- Firearms and Ammunition – Gunwerks, Burlington; Magpul, Cheyenne; Weatherby, Sheridan; HiViz Shooting Systems, Laramie; Wyoming Arms, Cody; Freedom Arms, Freedom
- Outdoor Products – Sheridan Tent and Awning, Sheridan; Stio, Jackson; Surf Wyoming; Sheridan; Give’r, Jackson; Green River Gear, Pinedale; DirtBags, Laramie





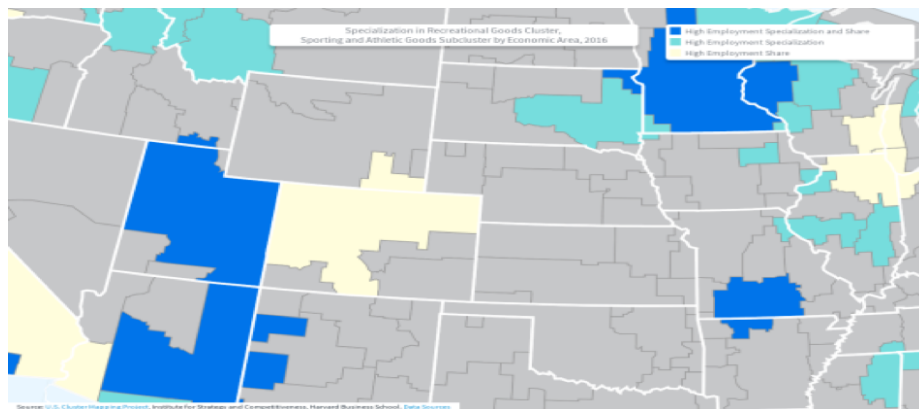
**Figure 5: Recreational Goods Cluster, 2016**

Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)



**Figure 7: Ammunition Cluster, 2016**

Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)



**Figure 6: Sporting and Athletic Goods Cluster, 2016**

Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

#### 4. Advanced Composites and Textiles Manufacturing (Figure 8)

Over the past few decades, researchers have discovered new ways to produce composites and textiles with advanced properties – self-healing, self-cleaning, memory materials, strength-to-weight ratio, electrical properties, etc.

- o Advanced Textiles

- Aerospace, industrial and medical uses of advanced textiles are growth areas.
- Top states for textile jobs are Georgia, North Carolina, South Carolina, California and Tennessee. Top export markets include Mexico, Canada, China and Honduras.<sup>13</sup>
- Wyoming example: Kennon Products Inc., Sheridan

- o Advanced Composites

- Growth in aerospace and the manufacturing of outdoor products and wind turbines will drive growth in this industry.<sup>14</sup>



-Case Study: Utah Advanced Composites Cluster

- Three primary industries – aerospace, outdoor products and renewable energy.
- Advanced Composites Work Group works to address industry concerns and determine initiatives that keep the industry thriving.
- Utah Advanced Materials Manufacturing Initiative (UAMMI)

oPartnership of the public (education, government) and private sectors to support growth and sustainability of the sector. The Utah Legislature provided a \$750,000 investment to formalize the UAMMI structure and begin programming for innovation centers.

oWorkforce and Education – Linking the K-12 STEAM pipeline, engaging industry in providing immersed work-based learning and professional development, and creating access to continuous skill upgrades.

oSupplier Networks – Focused on: 1) increasing intrastate utilization of supplier network capabilities and products; 2) creating a comprehensive understanding of Utah’s current supplier network capabilities and how those capabilities match current and future market conditions; and 3) creating a plan to fill gaps with the

network.

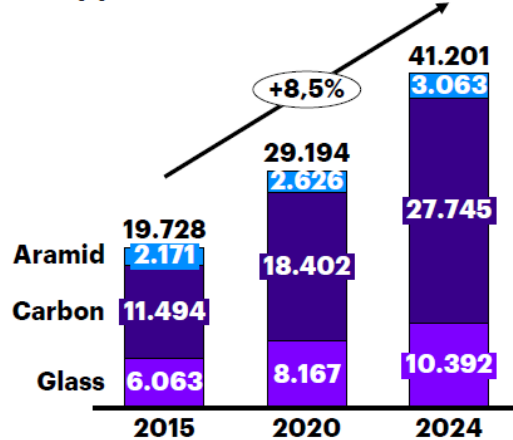
- oResearch and Innovation – Establishing Local Solution Centers in close collaboration with universities and community colleges as hubs where researchers will learn about and address problems faced by industry.
- oEntrepreneurship – The Utah Science, Technology, and Research (USTAR) initiative and University Tech Transfer program spins out more next-generation technology than any others in the nation.

oTrade and Investment – Helping businesses and local governments export and attract foreign direct investment.

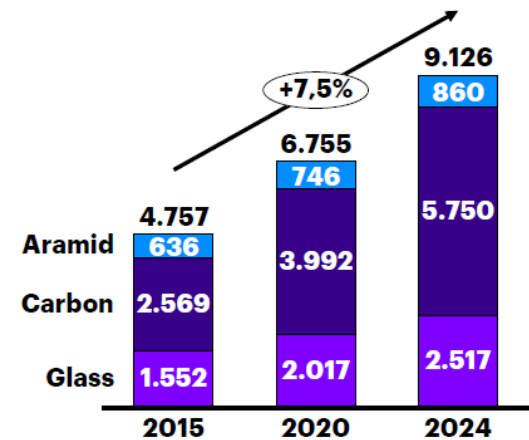
- The Utah Composites Lab at the University of Utah conducts research and development for the computational mechanics of composite materials and structures.

-Wyoming example: Evanston Carbon Fiber a Group Company of Mitsubishi Chemicals, Evanston

**Global Advanced composites market, by product, 2013-2024 (\$Millions)**



**US Advanced composites market, by product, 2013-2024 (\$Millions)**



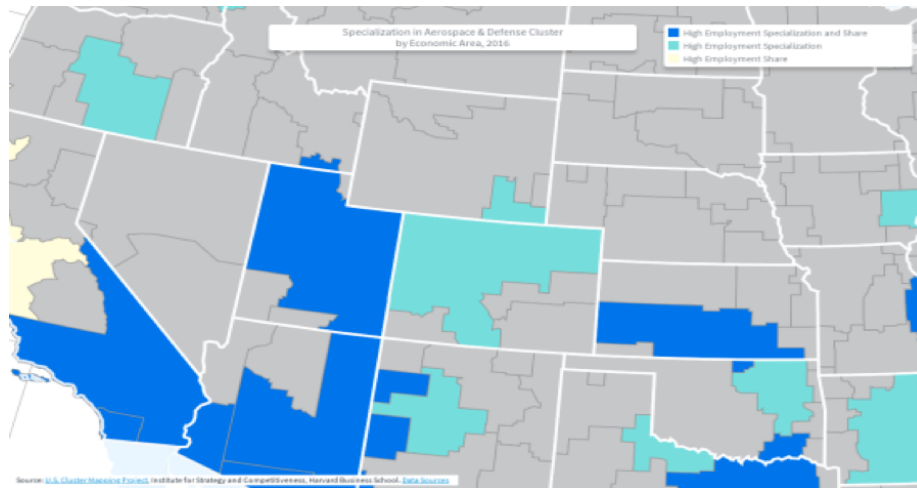
**Figure 8: Comparison of Advanced Composite Markets, Global and US**

Source: Market Estimates and Trend Analysis Advanced Composites Market



**5. Aerospace Manufacturing (Figure 9)**

- o Primary strength – value creation<sup>15</sup>
- o Primary weakness – labor intensity<sup>16</sup>
- o Colorado is the 2nd largest state in private aerospace employment, which results in an annual payroll of \$3.4 billion. Utah is ranked as the 4th largest aerospace state. (Colorado Space Business Roundtable, 2015)
- o Wyoming examples: Aviat Aircraft, Afton; L&H Industrial, Gillette and Sheridan; Scion Aviation, Cheyenne; Kennon Products, Sheridan

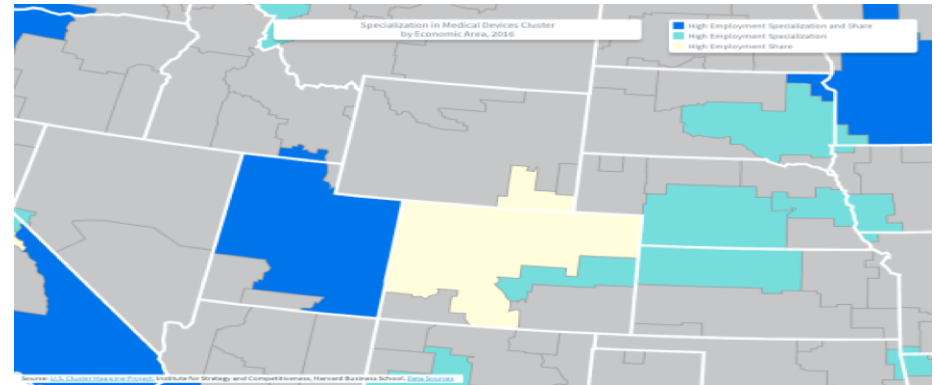


**Figure 9: Aerospace Cluster, 2016**

Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

**6. Medical Device Manufacturing (Figure 10)**

- o Primary strength – value creation<sup>17</sup>
- o Primary weakness – volatility<sup>18</sup>
- o Wyoming example: McGinley Orthopedics, Casper



**Figure 10: Medical Device Cluster, 2016**

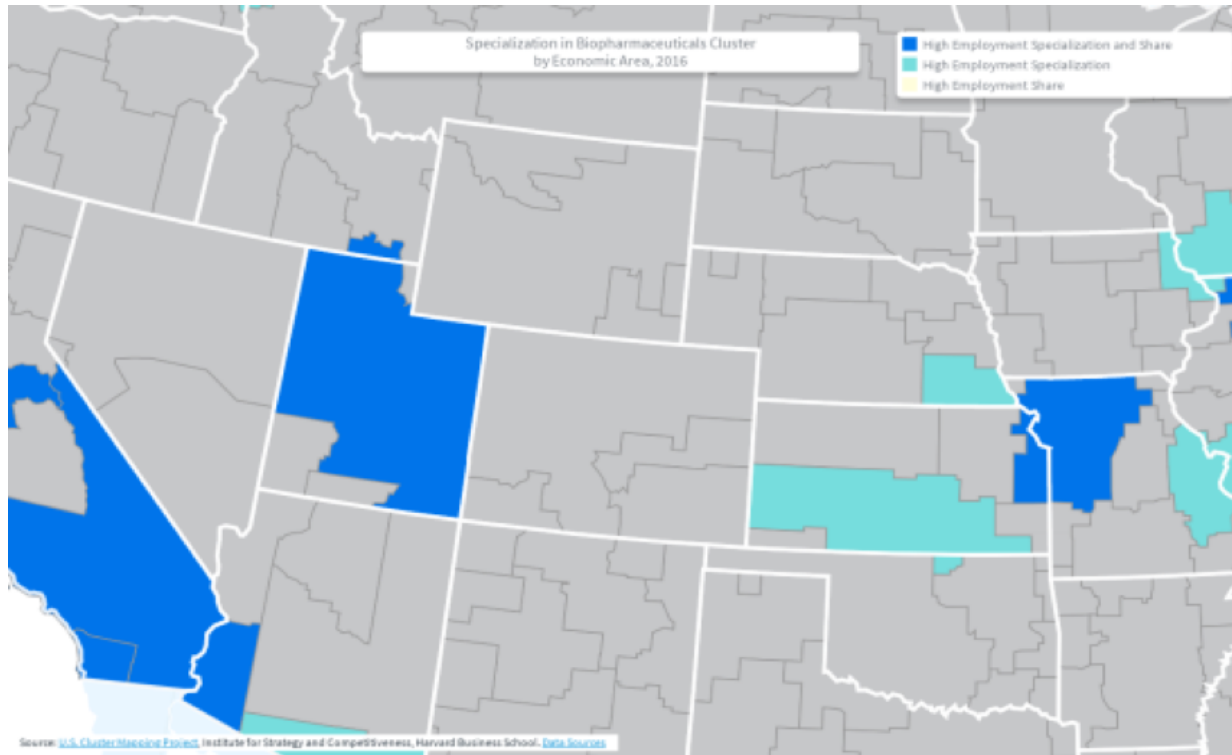
Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

**7. Pharmaceutical Manufacturing (Figure 11)**

- o Primary strength – growth<sup>19</sup>
- o Primary weakness – venture capital<sup>20</sup>
- o Opportunities:
  - Smart factories – utilize the internet of things, artificial intelligence, and automation
  - 3D printing for personalized medicine
- o According to the National Manufacturers Association, pharmaceuticals accounted for nearly one-third of all manufacturing research and development, spending \$74.9 billion in 2014.
- o Wyoming contains significant mineable quantities of trona and bentonite, both of which are used in pharmaceutical applications.
- o Wyoming examples: Exotherid Bioscience, Jackson; Cody Laboratories, Cody; Genesis Alkali, Green River







**Figure 11: Biopharmaceuticals Cluster, 2016** Source: US Cluster Mapping Project, Harvard Business School, [clustermapping.us/](http://clustermapping.us/)

*NOTE: Based primarily on lack of presence in Wyoming we eliminated the semiconductor manufacturing sector from further consideration. However, we were struck by the growth of the industry into the future and its presence in close proximity to Wyoming, primarily in Utah and Colorado. Therefore, we recommend continued evaluation and consideration of semiconductor manufacturing.*

**Barriers to growth:**

The manufacturing sector faces a number of barriers, not all of which are specific to Wyoming. Lack of an available and qualified workforce, particularly in the face of evolving technologies and innovations, is the most pressing challenge. Other primary challenges include:

- Significant supply chain gaps in Wyoming and nationally.
- Proximity and access to markets via land and air.
- Lack of a technology and innovation economy.
- Insufficient access to risk capital for startups.
- Shifting trade policies at the national level, creating greater uncertainty for manufacturers.

These barriers do not need to hold Wyoming back. With proper planning and execution the above barriers can be minimized or eliminated. For example, by exploiting technology, including automation and artificial intelligence, lack of workforce critical mass may be alleviated.

**Policies to develop advanced manufacturing:**

**Workforce and Education**

Approximately two-thirds of advanced manufacturing occupations require some sort of on-the-job training such as industry certificate, internship, apprenticeship, or other high-quality credential. The need for high-level technical skills combined with soft skills (communications, critical thinking, creativity, leadership, team work, work ethic, etc.), particularly in an advanced manufacturing economy, will only grow.

To build an advanced manufacturing workforce for the next two decades, it will be necessary to develop a strategy for developing, attracting and retaining a skilled, flexible, and technically and scientifically competent workforce. This will require the evolution



of the secondary and tertiary education system and an investment in technical, scientific and specialized talent development and training. To accomplish this, we recommend:

- **Short-term (immediate to 2 years):**

- o Establishing and investing in a statewide career and technical education program that provides students with a high-quality, rigorous career-focused technical education between high school and post-secondary institutions, in partnership with the advanced manufacturing industry.

- Case Study: Utah Aerospace Pathways – a program that prepares graduating high school students with the skills and knowledge for a rewarding and sustainable career in aerospace manufacturing. It was created and endorsed by industry, government and education leaders and is targeted at high school students in Davis and Granite School Districts. Students entering the program expect to graduate with an aerospace manufacturing certificate. (<http://uapathways.com/>)

- o Promoting and incentivizing (e.g., tax exemptions, workers compensation coverage, etc.) the advanced manufacturing industry to create modern apprenticeship and training programs – starting in high school and ending with college and career success – for both new and seasoned workers.

- Case Study: CareerWise Colorado: Modern Youth Apprenticeship – A program of CAMA

to encourage manufacturers to develop their own talent by supporting career exploration, internships, pre-apprenticeships and registered apprenticeships. To help businesses, CAMA also created the Innovative Industries Internship Program to provide businesses \$5,000 a year to help off-set the cost of a student intern. (<https://www.careerwisecolorado.org/>)

- o Expanding the Wyoming Grown program to include an “intern or apprentice in Wyoming” program to connect workers to businesses across the state.

- Case Study: L&H Industrial Internship Program – In collaboration with the University of Wyoming and Sheridan and Gillette Colleges, L&H Industrial works to match interns from the engineering and business in skilled trades, such as machining. Company employees volunteer on advisory boards and work with teachers to place interns in training and based on career interest and fit with business culture. Interns work during school breaks or after school as interns to sort out compatibility and performance. L&H Industrial provides approximately \$1,000 per student per semester to their home school as a show of their appreciation. Once the intern graduates they are an established employee with a career at L&H Industrial. A majority of L&H Industrial talent has been created through this process.

- **Mid-term (3 to 7 years):**

- o Allocating funds for advanced manufacturer-run youth programs and investment in regional career development initiatives.

- Case Study: Colorado Advanced Manufacturing Association (CAMA) – CAMA offers a continuum of programs geared towards students from kindergarten through high school. For K-5 students there is the Cardboard Challenge – a challenge to create and build with cardboard and their creative imagination. For middle schoolers there is the Empowering Creators program – a program to provide the opportunity to learn about manufacturing careers while applying their knowledge and conceptual understanding to real-world problems or situations. And for high schoolers there is CareerWise Colorado, which supports experiential learning by turning businesses into classrooms.

- o Developing the scientists, technologists, engineers, artists and mathematicians of the future. This must start early and be engaging, relevant and connected to the real world. We encourage policy makers and educational institutions (K-12 through post-secondary) to embrace and rapidly implement STEAM – Science, Technology, Engineering, Arts and Math – curriculum and lesson plans and establish throughout the state STEAM focused elementary, middle and high schools.

- o Developing portable and stackable credential



programs by local school districts, community colleges and the University of Wyoming that are recognized by employers. The value – workers have continuous opportunity for short-term credentials with labor market value and access to more advanced jobs and higher wages.

- **Long-term (8 to 20 years):**
  - o Investing in the development of engineers, programmers and developers specialized in artificial intelligence, robotic technologies and other disruptive technologies to ensure Wyoming manufacturers develop and maintain a competitive edge.

### Health and Quality of Life

Community amenities and access to healthcare are critical to the development of the advanced manufacturing industry. Wyoming must do more to develop its communities by investing in local amenities and infrastructure (transportation, water and waste, telecommunications, civic and cultural, recreation facilities and spaces, etc.) and we must reduce the cost and improve the availability of medical service (general and specialized).

### Infrastructure

Available land and low-cost energy are key factors in developing the advanced manufacturing sector. While Wyoming may have both, it is important that these assets are development ready and remain low cost. Further, the quality and reliability of transportation

and digital infrastructure is a significant consideration in investment decisions. To accomplish this, we recommend:

- **Short-term (immediate to 2 years):**
  - o Increasing public investment in infrastructure (e.g., transportation and communication systems) that is coordinated with industry. Specifically, we recommend evaluating the development of additional transportation systems, including railroad.
  - o Evaluation by the Wyoming Water Development Commission of opportunities and ways to use available water resources as an incentive to attract and develop the advanced manufacturing industry.
- **Mid-term (3 to 7 years):**
  - o Maintaining Wyoming's cost-competitive utility rates and driving the lowest cost industrial energy in the nation. For example, work with power companies to create a new industry marginal rate to attract development and expansion.
  - o Supporting shared infrastructure, including Federal and university laboratories, which could be easily accessed by small and medium-sized firms and would facilitate significant productivity gains by allowing those companies to rapidly prototype, test and produce new products.
- **Long-term (8 to 20 years):**
  - o Increasing electricity supply, including from carbon-neutral or renewable energy sources.
  - o Preparing for and facilitating the development

of bold, innovative and transformative transportation systems – autonomous and semi-autonomous vehicles (drones, cars, etc.) and high-speed modes of transportation (e.g., Hyperloop).

### Entrepreneurial Ecosystem

To bring new products to market, industry must be able to develop technologies or have access to new sources of research and innovation. Our research has demonstrated time and again that industry and researchers benefit from locating near one another. We also know that insufficient access to risk capital stymies startups. Innovation and commercialization require adequate flows of patient, risk-tolerant capital. Our vision for Wyoming includes a functioning and vibrant entrepreneurial ecosystem where one startup creates jobs and leads to another startup. To accomplish this, we recommend:

- **Short-term (immediate to 2 years):**
  - o Developing public and private learning and doing spaces, such as incubators, accelerators, co-working spaces and makerspaces.
    - Case Study: Area 59 – Developed by the private sector and operated by Gillette College, the Center for Innovation and Fabrication is Wyoming's largest maker space. Area 59 serves Gillette College science, technology, engineering and math students and the community at large. The facility includes a wood shop, a machine



shop, and a metal working area. The facility hosts camps for K-12 student to explore STEM fields in a creative setting. Gillette College students and local entrepreneurs are able to test out innovative ideas without the financial burden of purchasing their own equipment.

- o Providing matching grants for an “entrepreneurial leave” or “intrapreneurship” program for the public (e.g., University of Wyoming, community colleges) and private sector.
- o Encouraging and rewarding faculty innovation and entrepreneurship at the University of Wyoming and community colleges by instituting new policies and providing incentives.
- o Exploring new avenues for leveraging the unique capabilities of U.S. National Laboratories, the University of Wyoming, and other public and private laboratories (e.g., Wyoming Integrated Test Center) for the benefit of manufacturers.
- o Providing access for small entrepreneurial businesses to sophisticated research tools at the University of Wyoming and other research institutions.
- o Developing more industry-friendly university-to-business technology licensing agreements.
- **Mid-term (3 to 7 years):**
  - o Establishing high-impact entrepreneurship programs at high schools, community colleges and the University of Wyoming.
    - Case Study: University of Utah Lassonde Studios – A hub for entrepreneurship

and innovation at the University of Utah, Lassonde Studios is a home for students to live, create and launch. All students are welcome to use the 20,000 square foot innovation space on the first floor to connect, test ideas, build prototypes, launch companies and learn by doing. Above are four floors of themed residential and dorm space where students can apply to be one of the “Lassonde 400” residents. (<https://lassonde.utah.edu/studios>)

- o Increasing funding to support research and development, product development and patent output at the University of Wyoming and timely transfer of technology to the private sector.
- o Aiding projects that are likely to be commercially viable, but that possess unique technical and risk characteristics that otherwise deter private sector investment by establishing conditions of the award, major milestones, and other key metrics to assess performance.

### State Capabilities

The State of Wyoming, not exclusively, has a role to play in the development of the advanced manufacturing industry in our state. To accomplish this, we recommend:

- **Short-term (immediate to 2 years):**
  - o Establishing a state advanced manufacturing cluster champion and further map the industry to help improve coordination and collaboration within the advanced manufacturing sector (see

UAMMI example above). Further, Wyoming champions should collaborate with external consultants, business leaders, and stakeholders to create actionable objectives around how each cluster can grow, address challenges, and maximize job creation.

- o Branding and relentlessly marketing of Wyoming’s advanced manufacturing economy to raise awareness of the many strengths that Wyoming offers.
- o Offering high-return targeted state and local tax credits and incentive programs for training/retraining, investment in research and development, and capital investment especially where manufacturing clusters exist and can grow.
- o Emphasizing research and development, collaboration among companies and between industry and research institutions, and the commercialization of innovation. In 2012, Wyoming ranked in the 4th quartile (less than 1%) of research and development as a percentage of GDP (National Science Foundation)<sup>21</sup>.
- **Mid-term (3 to 7 years):**
  - o Strengthening foreign market access for Wyoming-made products by disseminating market information, identifying and assisting businesses that need export assistance, supporting trade missions, trade financing and other resources, while coordinating with state and local industry groups and economic developers.



- o Soliciting foreign direct investment.
- o Increasing Wyoming's regulatory competitive edge by incentivizing agencies to decrease the variability of local, state and federal regulations that deter investment and create high compliance cost and legal risk.
- o Providing additional capital for Wyoming's state-managed revolving loan funds that provide low-cost financing for the retooling or expansion of advanced manufacturing facilities and the adoption of innovative manufacturing process technologies.
- **Long-term (8 to 20 years):**
  - o Creating business development and innovation zones dedicated to advanced manufacturing where industry has access to research and development facilities, special permitting and tax incentives.

### Industry Capabilities

In addition to the State of Wyoming, we believe the current advanced manufacturing industry and those to come have an important role in driving expansion of Wyoming's economy. To accomplish this, we recommend:

- **Short-term (immediate to 2 years):**
  - o Establishing an advisory board or trade organization to advance the manufacturing sector and ensure members stay competitive through process improvements, adoption of innovative technologies and development of their workforce.

- o Increasing internal research and development investment in next-generation technologies.
- o Supporting the development of a Wyoming advanced manufacturing innovation hub, which will strengthen the state's innovation ecosystem and foster collaboration.
- o Invigorating venture capital efforts, which will afford larger firms improved access to cutting-edge capabilities while also helping small companies break into advanced manufacturing markets.
- o Partnering with up/downstream manufacturers to fill identified gaps in availability of product inputs or components (e.g., through volume commitments).
- **Mid-term (3 to 7 years):**
  - o Enhancing how industry models future skill requirements to improve talent development, attraction and retention. Share this information with educators (e.g., local school districts, community colleges, universities, etc.) to update and develop new curricula.
  - o Matching public and private resources against the need to develop curricula that addresses local industry-identified gaps.
  - o Targeting recruitment and training toward non-traditional labor pools to fill workforce gaps, e.g., women, minorities, veterans, and displaced workers.

### Tax tolerance of advanced manufacturing:

Regulatory and tax uncertainty – more than imposition of regulation or taxes – is a significant inhibitor and creates barriers to investment. When tax laws are in constant flux or uncertainty is high, long-range financial planning is difficult and companies typically delay major decisions and/or investments. If new taxes are to be imposed, Wyoming must remain competitive in the inter-mountain west.

### Endnotes:

1. [Accenture Disruptability Index](#)
2. ibid
3. ibid
4. ibid
5. [Grandview Research](#)
6. [Select USA](#)
7. [Accenture Disruptability Index](#)
8. ibid
9. [Greentech](#)
10. [Accenture Disruptability Index](#)
11. ibid
12. [Bureau of Alcohol, Tobacco, Firearms and Explosives](#)
13. [Euler Hermes, NCTO](#)
14. Market Estimates and Trend Analysis Advanced Composites Market
15. [Accenture Disruptability Index](#)
16. ibid
17. ibid
18. ibid
19. ibid
20. ibid
21. Includes research and development performed by federal agencies, businesses, universities, other nonprofit organizations, federally funded research and development centers, and state agencies



## Appendix B.5. Knowledge and Creative

### Introduction

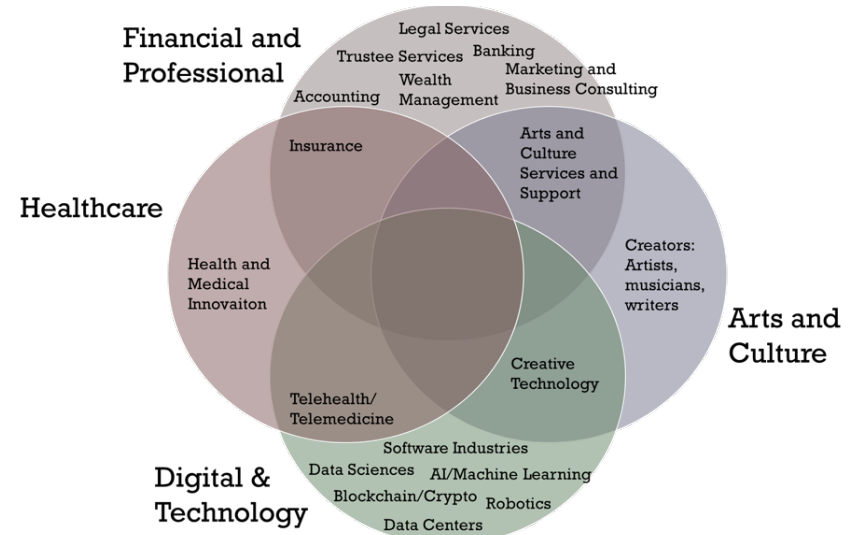
As has been discussed at length through the presentation of data, economic trends, as well as the testimony of various businesses and community members, it is clear the knowledge and creative economy is fast growing. The knowledge and creative economy and supportive businesses, (information, professional services, finance, insurance and real estate, and education and healthcare), Figure 1, is responsible for 46.7 percent of the U.S. gross domestic product (GDP)<sup>1</sup>. However, in Wyoming the knowledge and creative economy is severely under represented, claiming only 24.7% of the state’s GDP<sup>2</sup>. Not only is Wyoming missing out on the opportunities associated with these high growth industries, Wyoming is struggling to attract and retain the creative, educated, and entrepreneurial populations that generally support these types of industries.

The ENDOW Executive Council, Knowledge and Creative subcommittee, has identified key areas of the economy where we believe there is the most opportunity for Wyoming today and in the future. The Executive Council has assessed the information and research provided to us, and we believe investing and pursuing certain focus areas of the knowledge and creative economy makes tremendous sense for Wyoming.

These focus areas include enhancing and developing the existing workforce, identifying key economic and political factors that will increase entrepreneurial activity, improving access to technology and capital, and increasing interest from global industry. In doing so, Wyoming can gain tremendous ground in economic diversification. Of course, many of these sub-industries cannot thrive overnight. We believe many of these recommendations will pave the way for future success and are foundational to the success of many of the state’s priority economic subsectors.

The knowledge and creative sector supports high paying employment and will help achieve several of the specific aims articulated in the ENDOW statute: “Support new and emerging industries, international trade, and the marketing and development of the international trust and fiduciary business and related sectors.” Additionally, the

professional and financial services sector is critical to supporting new industry across all sectors.



**Figure 1: Subsectors of the knowledge and creative economy.**

The following actions are necessary to create a vibrant and diversified knowledge and creative sector for Wyoming and are provided in detail for consideration and implementation.

### Action 1: Build a Next Generation Knowledge and Creative Workforce

To produce a thriving knowledge and creative workforce, Wyoming must create the necessary instructional offerings within the state’s higher education system and provide opportunities for the population to have access to the skills and degrees they will need to contribute to the state’s economy.

The following observations document the barriers and set the stage for solution:

- Wyoming ranks 40th per capita in bachelor’s degree or higher.<sup>3</sup>



- It is geographically difficult to get a 4-year degree in Wyoming because of the location of the university is in the southeast corner of the state and largely remote from most citizens.
  - o “Geography will be even more important for future post-traditional college students who are balancing work, family, and school responsibilities. Finding an accessible and affordable institution in close proximity to home or work will become even more important for tomorrow’s college students<sup>4</sup>.”
- Beyond workforce, enhanced educational opportunities have distinct economic impacts on rural locations.
  - o “Something that is becoming increasingly clear throughout America: College campuses and educational institutions can bolster the economies of small towns that otherwise would be struggling like many other rural locations throughout the country. ... The main benefits of educational institutions are twofold: They often produce research and technology that can be parlayed into new businesses, creating jobs nearby. And they bring to the area students, who spend money on restaurants and services, and attract professors and administrators, who do the same and also buy houses and cars.”<sup>5</sup>
- Wyoming’s professional and financial services sector is increasing in size and visibility due to the state’s advantageous trust and business statutes and global changes to the financial industry. Businesses and individuals in this sector are able to conduct business from any location with a strong internet connection and can create great opportunities for Wyoming. Unfortunately, jobs within these professions are moving toward increased specialization and there is a disconnect between the needs of the industry and certification programs at the community college and university level.
  - o Jobs in this sector continue to grow at a rapid rate: in 2017 growth in the sector added 1,200 jobs, accounting for 25% of total job growth in Wyoming.<sup>6</sup>
- In the healthcare sector, Wyoming has even more glaring workforce gaps. We have an existing healthcare provider shortage and in the next 10 years retirement of health care providers will significantly exacerbate this problem.<sup>7</sup>
  - o Wyoming ranks 47th in per capita physicians and 43rd in per capita primary care physicians.<sup>8</sup>
  - o At 26%, Wyoming ranks 47th for percentage of physicians that are female.<sup>9</sup>

- o Ranks 10th for percentage of physicians that are 60 years of age or older.<sup>10</sup>
- o There are only 4 states that do not have medical schools (Wyoming, Montana, Delaware, Alaska.)<sup>11</sup>

### Policies and Recommendations

- Significantly expand the University of Wyoming’s footprint beyond Laramie, including the establishment of branch campuses, research facilities and distance learning centers in partnership with community colleges and local economic development, to ensure Wyoming residents have physical and digital access to a wide range of bachelor and graduate degree programs to ensure communities across the state have access to workforce and innovation development programs for next-generation jobs. Today, less than 30% of Wyomingites have this sort of access, and most communities are forced to depend entirely on talent recruitment at the upper end of the education spectrum.
  - o Increase access to 4-year degree programs
  - o Increase in-state innovation capacity
  - o Keep more young people in state during formative years (the “College Town” effect)
- Evaluate development of healthcare and telemedicine medical education facilities to train physicians, physician’s assistants, nurses, nurse aides, etc. with a focus on developing providers with expertise in rural healthcare, primary care, elder care, and telemedicine/telehealth. And, further leverage and expand the WWAMI Medical Education Program with the University of Washington, School of Medicine, to provide more medical professionals to serve the State of Wyoming.
  - o Develop needed capacity for health innovation sector
  - o Significant economic impacts beyond just health education
- Fund UW to become a top 20 university in technology transfer and intellectual property.
- Establish world class education programs at UW for:
  - o Emerging Technologies (AI, Unmanned Transportation, Data Sciences)
  - o Certified Trust and Financial Analyst (CTFA)



- o Certified Financial Planner and Certified Financial Analyst
- o LLM Degrees at Law School in Trusts, Estates, and Taxation
- o Entrepreneurship (Undergraduate and LLM)
- o Contemporary, Traditional, Creative Media Arts and Arts Administration

### Case Studies:

The following case studies on increasing educational opportunities and opening medical schools are offered to provide inspiration for making this change to Wyoming's higher education system:

- Oklahoma State University Center for Health Sciences<sup>13</sup> educates and trains osteopathic physicians, scientists and health care professionals, with an emphasis on providing health care for rural and underserved areas of Oklahoma.
- Idaho College of Osteopathic Medicine – Opening in September, 2018 with a mission “to train osteopathic physicians prepared for caring for persons in Idaho, Montana, North Dakota, South Dakota, Wyoming and beyond.”<sup>14</sup>

## Action 2: Develop Wyoming into the #1 State for Business Entities, Trusts and Estates

### Opportunities

Wyoming has multiple enablers to spearhead success in the area of business entities, trusts and estates, namely:

- No corporate, personal or estate tax (*NOTE: The financial trust sector is particularly susceptible to the imposition of taxes, in particular an income tax.*)
- Modern trust laws
- Strong asset protection statutes

There is tremendous opportunity for growth in this sector. Currently it contributes significantly less to Wyoming's economy compared to other states and the U.S.<sup>15</sup>. Wyoming can grow its economy by \$2 billion by increasing the professional and

business services from its current contribution to the current U.S. percentage of GDP.<sup>16</sup>

In over 30 years one third of all investable assets will change hands. Estimated at \$30 trillion dollars, the majority of these assets will go to the next generation and surviving spouses and held in trusts<sup>17</sup>.

### Barriers

Wyoming ranks behind the U.S. and other surrounding states such as South Dakota and Colorado in this industry. Financial activities contributed 4.6% to Wyoming's GDP in 2016 compared to 12.8% for the U.S.<sup>18</sup>.

Currently Wyoming is listed as a “Tier 2” jurisdiction by a number of leading trade publications and by some experts. Research in the field indicates that developing and implementing changes and additions to the state's regulatory, judiciary and educational framework will improve the state's standing and attract business from both domestic and international markets. In addition, other states such as South Dakota and Delaware have highly developed marketing platforms and trade industry associations, an area of opportunity for Wyoming.

### Policies and Recommendations

**Proactively develop new regulations in Wyoming to invite new industries and create regulatory certainty for new technologies.**

Many companies are continuously developing products, ideas and companies that have no clear guidance as to statutory legality. Artificial intelligence, machine learning, robotics, unmanned transportation and many other emerging industries have tremendous future promise; however, without some regulatory guidance many of these companies may not be enticed to develop in Wyoming. Taking advantage of Wyoming's small size and nimble legislature, we can and should, continue to be a leader in new regulatory frameworks.





As the first state in the U.S. to enact statute governing the use of blockchain technologies and protections for utility token development, the creator of the LLC and now as one of few states that offer Series LLC's, Wyoming has already set itself apart. Potential examples of new statutory entities could include:

- Personal Data Trusts
  - o Treats online access, passwords and other digital identity as protected assets
- Smart Contracts
  - o Computer protocols that digitally facilitate, verify, or enforce the negotiation or performance of a contract
- Use Blockchain Technology Trusts to prove jurisdictional situs
  - o Currently no jurisdiction domestic or international has the ability to prove that a transaction has been initiated or that a document has been signed within a geographic location – make Wyoming the first

**Create a supreme court of jurisdiction for business entities, trusts, probate and fiduciary matters.**

1. Having a knowledgeable and efficient judiciary system adds credibility to the jurisdiction. As Wyoming competes with Delaware and Nevada as a preeminent business destination, having a business court similar to Delaware, but with smaller dockets, quicker access to legal remedies, and more consistent judiciary having experience with the court's subject matter, will significantly add to Wyoming's desirability as a business jurisdiction.
2. This new business court does not need to be a bricks and mortar court. Rather a dedicated judge with expertise, who can travel throughout Wyoming, as needed, utilizing existing court rooms will be sufficient.
3. The new business court can be designated as an alternative State District Court with general jurisdiction throughout Wyoming, and specific jurisdiction over business, corporate, trust, probate and fiduciary related matters.

**Ensure Wyoming has a presence in key financial centers to access global business opportunities.**

- Will be responsible for marketing a variety of Wyoming industries and the state of Wyoming in its entirety
  - o Will augment splintered efforts by individual economic development agencies
  - o Will create consistent messaging and networking capabilities
  - o Improves marketing and communication efforts between state agencies, the public sector and the global marketplace
  - o Provide resources to create accessibility to state statutes and agencies
- Suggested locations:
  - o Miami – will help reach Latin America
  - o San Francisco – reach tech entrepreneurs, Asia
  - o NY – Other international markets, Europe
  - o Other possible sites - Singapore, Hong Kong, London

**Action 3: Develop A Thriving Entrepreneurial Ecosystem in Wyoming**

### Opportunities

The Executive Council has investigated numerous models for driving economic diversification –specifically looking at efforts (both successful and not) in locations and regions that have some similarity to Wyoming – Utah, the western slope of Colorado, Oklahoma, Houston, and Alberta to name a few. A constant theme is that the communities that have promoted entrepreneurship and startup businesses have successfully diversified their economy and provided next-generation jobs for the younger generation. A common thread in the successes is that communities have systems and programs in place to bring talent together and provide that talent the right resources – namely capital, expertise, and space. Research is clear that without sufficient capital access, access to mentors and business service professionals geared toward helping startups and entrepreneurs, as well as creative and collaborate work spaces, the rate at which new companies emerge can be inhibited. We aim to help set policy and develop metrics to ensure startups and entrepreneurs have the elements necessary to launch in Wyoming.



## Aspirations

We aspire in the next twenty years for:

- Over 5,000 new jobs are created in the Wyoming startup ecosystem.
- Over \$25 million of follow-on venture funding is invested in Wyoming-based startups.
- More than 100 companies are started and establish roots in Wyoming.
- The State of Wyoming begins investing an increasing amount of its investment portfolio in locally started and growing companies.

## Barriers

### *Access to risk-based capital.*

It has become abundantly clear to the Executive Council that Wyoming has a lack of financial services, and local financial markets. This is also true of risk-based investment activity. Many startups, high growth and digital focused companies need at various times and at various stages, angel capital, growth capital, venture capital, private equity, and various other developing forms of private capital. It is imperative that Wyoming educate its business community on the types of capital available and help to develop the private capital market in Wyoming to allow startups and entrepreneurs a menu of financing options when funding new ventures.

Forty-six states have some sort of state-sponsored capital access program for start-up companies<sup>19</sup> ranging from small seed-stage funds to commercialized university research like Utah's Get Seeded (<http://lassonde.utah.edu/getseeded/>) program, to larger state-sponsored capital programs such as Oklahoma's Technology Business Finance Program and the Alaska Accelerator Fund (<http://www.akacceleratorfund.com/>). Utah alone has at least six of these programs. A single one of Colorado's programs – the Advanced Industries Accelerator – has invested nearly \$50 million. Wyoming joins South Dakota, West Virginia and Vermont in a short list of states without any such programs. The lack of such programs puts Wyoming at

a significant disadvantage in the market for new businesses. The missing public component of capital is also likely a key reason Wyoming consistently ranks last or near-last in state rankings for "Access to Capital."

### *Clustering and shared knowledge.*

Building off of the previous barrier, in regions of the world with some of the most robust digital economic growth, there tends to be a clustering effect. That is, employers generally benefit from being around other employers seeking workers with the same types of skillsets, the same types of interests, and the similar industrial focus. In fact, significant research exists supporting the idea that the movement of workers amongst employers in the same industrial sector leads to more growth through shared knowledge and advancement. Wyoming has lacked any significant clustering. However, trends are beginning to emerge in various parts of Wyoming, that, if fostered may give rise to increase clustering. It is imperative that this clustering effect be cultivated where possible.

### *Culture, community amenities, quality of life and cool factor.*

As with many of these barriers the research and the testimony made the case clear. Wyoming has to do a better job investing in its communities, in community amenities, and increasing the cool factor of our local towns and downtowns. Time and time again we have heard that new workers, millennials, as well as companies being recruited have indicated that compared to so many other places, Wyoming lacks the amenities to retain talent and families. This is important for two different populations, both of which Wyoming is trying to attract. First, it is important to retain the young people that we currently export, but secondly it is also important for those companies, and entrepreneurs considering moving to Wyoming.

### *Public communication and awareness of knowledge and creative industry growth.*

As is true of the clustering effect discussed above, knowledge and creative economy companies particularly benefit from shared community support. Startup and high-



growth companies need increased community awareness, financial and political support, and help conveying that the digital economy does exist in Wyoming. Connectivity to state and local resources are of paramount importance. Wyoming cannot afford to have services available and not make them known to startups and entrepreneurs across the state. Similarly, it is of little use for the state to continue to fund such programs if we are not communicating the availability of these programs to the types of entrepreneurs who can leverage these resources to better diversify the state's economy.

- Wyoming needs a cohesive plan to help companies understand the state resources available, which ones to use, and where to find them.

#### ***Skilled Professional Services***

A final barrier, which may be one of the easier to address, is that Wyoming is severely underrepresented in specialty and skilled professional services required by many digital economy companies. Services such as intellectual property services, specialized private market financial services, and even bank and insurance services that are more suited toward the digital economy are absent in Wyoming, and as such, serve as an impediment, as well as a draw to other clustered areas. Currently, many Wyoming startups, entrepreneurs, and even well-established companies seek out of state advice, counsel and representation, further exacerbating the problem.

#### ***Lack of Innovation and Research***

With only one major university in the state, there is an underrepresentation across the state for scientific and academic research, commercialization of research and new technology, as well as an underdeveloped research and development culture. Wyoming has seven community colleges, which help equip many different sectors with workforce, but do not create enough volume of technical research, technological development, testing, and scaling opportunities for new ventures. This situation stunts innovation and research in our state.

#### ***Health Care Cost and Access***

Although this barrier exists for all business in Wyoming, this is an even larger barrier for small business and entrepreneurs.

#### **Policies and Recommendations**

##### **Capital Access Programs**

In order to have a healthy private capital market that is accessible by startups and entrepreneurs, Wyoming needs to develop and have a variety of capital access points. As demonstrated in Figure 2, various types of capital exist for new ventures. Seed stage capital is money often sought to create a proof of concept, develop prototypes, hire initial employees and begin to formalize a business venture. Angel and early stage capital is capital that is often provided pre-revenue or pre-profit stage for a company as it is attempting to grow. Often times early stage and angel investors understand their investment may be going to pay professional fees, engineering, development, marketing plan, etc. In Wyoming we have very little seed and early stage capital availability. Wyoming has few options for companies at these stages to even gain introductions to investors.

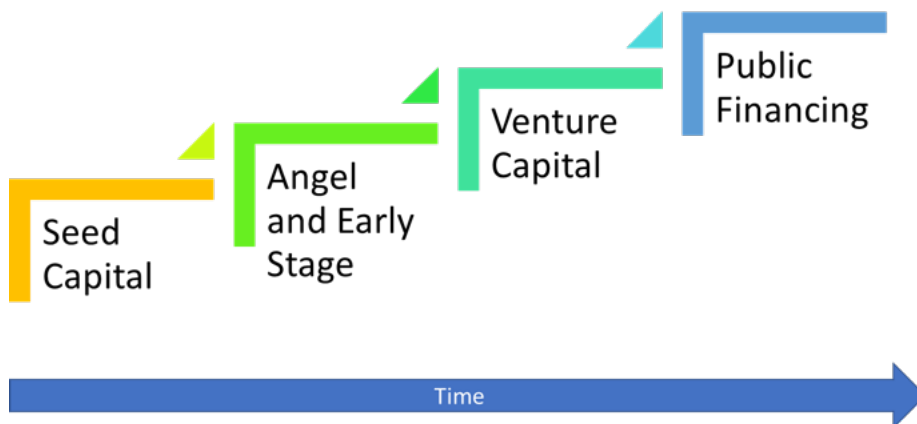
After these stages, companies that are high growth typically hit a point (assuming they have not failed) where they either have acquired cash flow and/or assets such that they can obtain traditional bank financing or consider venture capital from professional investors. Venture capital funding is generally provided with an expectation of quick or accelerated growth and venture capital professionals are generally well connected and experienced in helping companies scale and grow quickly. Wyoming has virtually no presence of venture capital and essentially no businesses in Wyoming are routinely receiving venture capital financing.

Once a company has grown, proven its business model and then seeking to either scale-up to be a very large company, or conversely is scaling to acquire market presence, re-finance, or seek an exit strategy, companies will often evaluate either



going to public markets or seeking professional private equity. Again, Wyoming has virtually no access to private equity markets. In terms of taking a company public, while some Wyoming companies have done this successfully, it is a tremendously expensive venture, and not a viable option for many.

- We propose multiple programs to assist Wyoming-based businesses to access the capital they need to start, grow, scale and succeed. Please see Figure 2 for the suggested stream of capital opportunities we envision.



**Figure 2: Stream of Capital Options**

- o Seed Capital Programs: Grant program for companies in the very early stages
- o Angel and Early Stage: Small (less than \$500K) investments into high-growth potential startups
- o Venture capital: Larger Investments (\$500K-5M) into business to enable them to scale
- o Public Equity: Large Investment into established business for them to grow and sustain

**We recommend the state:**

***Invest 2% of Wyoming's investment portfolio in Wyoming-based companies to create available capital and create a dedicated organization to own the entrepreneurial ecosystem.***

- Create an independent single-mission organization in charge of the entrepreneurial ecosystem in Wyoming.
- Specific, dedicated staffing and programs for startups in the following sectors:
  - o BioScience Innovation
  - o Outdoor Products and Lifestyle Brands
  - o Digital and Technology Companies
- Create, own and manage a statewide communication network for startups
  - o A "one Stop shop" to help entrepreneurs navigate the various programs and resources available to them
- Develop opportunities/incentives for Wyoming to be beta/testing ground for scaling technologies, similar to Utah's USTAR Program.<sup>20</sup> This entity should be organized as an independent non-profit, public/private partnership
- \$8 million biennial funding for staffing and other resources for Startup:Wyoming operations as well as Kickstart:Wyoming Grants.

***Create new collaborative work spaces and accelerators (Wyoming Innovation Centers).***

A critical component of any startup ecosystem is giving the pioneering creative class a place to work. Call it an incubator, an accelerator or an innovation center (herein they are referred to as Innovation Centers); at the end of the day it is an attractive well-organized space equipped with the tools needed to do the essential work and engage the outside world. It can be a new custom-built facility or it can be an existing building repurposed for creative work. Either way, the key is that it is attractive—it is a place where entrepreneurs want to spend their time. The existing UW-sponsored facilities (Wyoming Technology Business Centers) in Laramie, Casper and Sheridan have the beginnings of the brick-and-mortar components to an ecosystem.

As to not duplicate efforts, we propose adding funding towards existing facility-creating programs (e.g. WBC Business Ready Community Grants). This additional



funding should be earmarked towards communities looking to add to the network of Innovation Centers in Wyoming. It is preferential to locate these additional Innovation Centers in places that people from outside Wyoming will find most desirable. Locations should also have easy access to air service, modern communication infrastructure, plenty of outdoor recreation opportunities and a reasonably vibrant arts scene.

Beyond just space for startups, a portion of the new Innovation Centers will be set aside as remote work space for established business professionals serving two demographics:

- Space populated on a short-term basis (six months) by companies seeking to award a small, self-contained team with a skiing or fly-fishing sabbatical.
- Remote employees of larger companies looking for co-working space so that they can live in Wyoming.

The proximity of these seasoned professionals will inevitably result in valuable cross-pollination with our cadre of young entrepreneurs. Participants would pay the market rate for their space and no official obligations would be placed upon them. An additional benefit of this component of the program is that it will introduce successful tech entrepreneurs to Wyoming and all it has to offer.

The final component of these Innovation Centers will be the resources needed for creative technological expression. These will resemble traditional “maker spaces” populated with CAD-equipped computers, 3D printers, circuit assembly tools and computer-controlled laser cutters. These spaces will provide essential fabrication resources for tenants but will also be made available to local students and the public at large. Here again, the primary goal is to demystify the tech universe and the professionals that inhabit it by giving the public the opportunity to spend some time immersed. A talented high school student that has a chance to work side-by-side with daring and successful entrepreneurs is much more likely to aspire to starting his or her own company.

***Create incentive packages for startups that could be advertised globally.***

One of our recommendations is to globally draw attention from the startup and entrepreneur communities around the world. There is much conversation around new ventures in the western and mid-western states, as well as a national push to see more rural entrepreneurship. While this is happening, many states are coming up with creative incentive packages for entrepreneurs in an effort to attract new businesses and startups. Wyoming must begin competing in this space. With this in mind, we believe Wyoming has the unique position and resources to be a pre-eminent destination. However, Wyoming first needs to refine its offering incentives to startups and entrepreneurs, and then needs to market them. We envision being able to market Wyoming as a location with special programs for startups to assist them with:

- Lowest cost electricity for target industry ventures.
- Access to broadband connections/fiber connections. Perhaps even access to the state’s network for a reduced cost with guaranteed speed and access.
- Limited term property tax waivers and market the low tax environment
- Subsidy for healthcare access and/or participation for startup and new ventures in the State of Wyoming Employee’s Group Health Insurance plan. Alternatively, the state could sponsor a new health insurance pool for startups and new ventures.
- Others appropriate incentives should be tailored as needed.

The idea here is that Wyoming can round out its incentive package for new ventures and then market globally to announce to the world the new incentives Wyoming is offering. We believe that such a marketing effort, combined with the attention Wyoming has recently received for new blockchain and cryptocurrency legislation, combined with the recommendations of ENDOW for solidifying Wyoming as a premier business jurisdiction, creates a powerful tool for recruiting new ventures.

***Develop advanced telemedicine, telehealth and remote healthcare policies and platforms.***

- Telemedicine Grant Program for providers to establish remote clinics
  - o Including high speed broadband
- Telemedicine Parity Law



- Fund a Statewide Telehealth Initiative to aid providers
  - Similar in goal to the Wyo Telehealth Network – but with significant funding and staffing to allow providers turn-key solutions
- Digital Medical Diagnostic Technologies
- Platform for using Wyoming as a test-bed for new medical technologies
- Leveraging state health programs (Medicaid/state insurance pool)
- Electronic medical records systems

***Establish a “Wyoming Small Business Healthcare Task Force”.***

- Similar to other states efforts (Colorado, Oregon, Vermont, Maryland)
- Would be tasked with:
  - Developing policies to lower cost, increase access to quality healthcare in Wyoming specifically targeted to small business and startups.
  - Revisit the full-tier medical education system in Wyoming
  - Conduct a study to quantify “leakage” of medical dollars across state lines and develop proposals to keep these dollars in-state

***Modernize Wyoming liquor laws.***

Wyoming’s Liquor laws are an undue burden on hospitality-industry entrepreneurs. In many communities in the state, obtaining a liquor license is economically unfeasible because of Wyoming’s population-based liquor license quota system. While limiting entrepreneurship in this sector, this also limits the quality-of-life assets the next generation is looking for in a community.

We need to allow next generation entrepreneurs to develop community assets aimed at the next generation of Wyomingites. In 2017 Resonance Consultancy conducted a survey of Americans aged 18-34 years of age, it found that “Quality of Restaurants” was the 7th most important thing they looked for in a city to live in – ranking above things like ‘variety of shopping’ and even average wages and income<sup>21</sup>. As we look towards the future, we need to ensure we are developing quality of life assets the next generation is looking for.

There is a direct economic impact of encouraging this sector. According to the

National Restaurant Association, restaurants in Wyoming produced \$1.0 billion in sales and 21,000 jobs in 2016. “What’s more, for every dollar spent in restaurants, an additional \$2 is generated in sales for other industries, generating even more tax dollars and economic activity.”<sup>22</sup>

Additionally – driven in most part by these younger generations – the market for bars and restaurants are growing. In 1970, Americans spent 26% of their household food expenditure in restaurants and bars and by 2006, that was up to 40%.<sup>23</sup> In 2016, for the first time – Americans spent more at restaurants and bars than they did at grocery stores.<sup>24</sup> As we live our lives more and more in a digital America, people are craving the social experience of dining. This is a growing market and unfortunately our liquor laws are not allowing us to keep up.

As such the Knowledge and Creative subcommittee is proposing to revisit the states liquor licenses so as to not create an undue burden to the private sector for those developing a more livable community.

***Ensure that Wyoming’s residents and visitors are treated equally, in a welcoming and non-discriminatory manner.***

Recruiting, hiring, and retaining high-quality talent is essential to growing successful businesses in a global economy. It is important that Wyoming residents and visitors are treated with equality.



## Action 4: Become a Top Tier State for Investment in Arts & Cultural Infrastructure

### Opportunities

The creative and cultural industries of Wyoming are an important sector—estimated at about 4.7%<sup>25</sup> of the state’s overall economy—with significant potential for growth. This industry is also unique because it serves a dual purpose as it also attracts entrepreneurs, technology workers and other professionals, and is an important factor for companies looking at expanding or relocating to Wyoming. In short, the creative and cultural sector leads to diversification because other sectors rely on the creative and cultural to retain and grow a workforce. Without the creative and cultural sector, even if a workforce is educated here, they will not want to stay and will seek other areas rich in music, art, culture, and the humanities.

Wyoming’s creative and cultural sector is a large driver of Wyoming’s economy. Indeed, the cultural landscape of our state is as significant of a factor in our economy as the physical landscape that attracts so many visitors and new residents. According to the U.S. Bureau of Economic Analysis, in 2014, there were 11,451 jobs devoted to our state’s creative sector and Wyoming employment in the arts and cultural sector was 30 percent above the national average, second only to New York. This sector produces sales of \$116 million and estimates from the Wyoming Business Council of local and state taxes revenues between \$17 and \$23 million. For every dollar of additional sales in the creative and cultural sector, an additional .44 cents are generated in the economy from other businesses.

Wyoming has a strong organizational structure to help strengthen the creative sector in Wyoming. Currently, the Wyoming Humanities Council, Wyoming Arts Council, and Wyoming Cultural Trust Fund (WCTF) are the backbone of this cultural landscape by providing educational, promotional, and much-needed financial resources to support the creative and cultural sector. Their investments in the cultural sector are matched at the local level at a minimum of 1:1 with grants from the Wyoming Arts Council being matched at 1:35 and the Cultural Trust Fund at 1:10. This funding is a catalyst

to a vast range of projects that support communities and stimulate local economies.

### Barriers

Although a strong organizational structure is in place to support the creative sector, these organizations are resource limited in providing the type of assistance that would truly energize this sector and contribute to the ambitions of a 20-year economic diversification plan.

### Policies and Recommendations

These policies and recommendations have the ability to double the current individuals working in the creative sector from 11,500 to 23,000 and raise the local and state tax revenues by double, accounting for an increase in approximately \$20 million. The following policies, and recommendations break down how this investment could be targeted at this sector through specific state agencies, private sector investment, and other organizations.

#### *Invest in the Wyoming Cultural Trust Fund to substantially fund arts and cultural infrastructure.*

- a. The WCTF can be repositioned as a powerful funding vehicle to grow the sector. By growing the endowment, we can ultimately reduce the amount of state funding needed to support the creative/cultural sector through the other statewide agencies.
- b. Through private and public investments, grow the trust to \$100 million. This is a growth of \$85 million to the corpus which will generate approximately \$4 million annually to be invested into local communities, doubling the current annual state and federal investment in the sector.



*Creative ready community program.*

- a. Use the Wyoming Business Council's Business Ready Community Grant and Loan program (BRC) as a model for funding infrastructure (arts incubators, creative districts, museum enhancements, and revitalization) related to the creative and cultural sectors—this could be essentially a **Creative Ready Community Grant and Loan Program**.
  - 8 projects per biennium
- b. Develop a **creative districts program** using New Mexico, Colorado, and the Wyoming Main Street program as a model.
  - 10 communities per biennium
- c. Develop a **creative and cultural industries business support and technical services** program. Although resources exist through the University of Wyoming's Business Resource Network, these resources are not specific to the creative and cultural sector.
  - Expand the **Career Advancement/Professional Development** grant offered by the Wyoming Arts Council for individuals and organizations to obtain training and professional development specific to their disciplines.
  - Develop a robust professional development initiative conducted by the Wyoming Arts Council like the Montana "**Artrepreneur**" program that brought a 397% increase in artist sales and 44% increase in out-of-state sales to individuals involved in the program. This program would focus on artistic excellence, business, and marketing/promotion training.
- d. Develop a **creative sector planning grant** to help non-profit cultural institutions set innovative, forward thinking strategic plans for programming, development, and capital projects.
  - 20 projects per biennium

*Increase capacity of the creative sector's infrastructure.*

Through the Wyoming Humanities Council, Wyoming Arts Council, and Wyoming Cultural Trust Fund, increase funding opportunities for non-profits and local municipalities that support the creative and cultural industries. Currently, funding

levels for non-profits are small (averaging between \$2,000-\$3,000 per applicant), few, and are not in line with diversifying Wyoming at the levels required by a 20-year economic diversification strategy.

- a. The **Wyoming Arts Council** is only able to fund 47% of requests for Community Support Grants yearly, which include funding for operations, education, and arts programs. These requests only account for a small portion of need due to the declining amount of funds which has lowered the overall amount that can be requested.
  - Increase the current amount of **Community Support Grant** funds available for non-profit arts and cultural organizations for education, operations, and programming.
  - Develop a **Wyoming Music Ambassador** program of Wyoming musicians who can promote the importance of the music industry around the state. Two Groups/individuals per biennium.
  - Support the **Wyoming Independent Music Initiative** by developing local music venues that can present and promote independent musicians. Provide mini-grants to 30 venues per biennium.
- b. The **Wyoming Humanities Council** faces similar funding shortfalls when supporting the network of cultural nonprofits around the state in their programming and development projects. They typically run out of grant funds about 8 months into the year, and in many years are able to fund less than half of the applications received.
  - Increase **Community Support Grants** in public humanities and cultural heritage tourism programming.
  - Develop a **Wyoming Literary Ambassador** program of Wyoming writers who can promote the importance of authors and writing to the state. Two groups/individuals per biennium.

*Integrate tourism into the creative sector.*

- a. Promote and market cultural assets that drive tourism. Those traveling for the arts stay longer and spend more, averaging double the amount spent in a





community compared to someone traveling for another interest. Individuals traveling to attend arts events are more likely to spend \$1,000 or more during their stay and are more likely to stay at a hotel or bed and breakfast.

- Provide tourism advertising and marketing with a focus on arts and cultural programs and institutions.

### *Creative and cultural tax district*

- Allow local communities the ability to impose a tax to build capacity in the creative and cultural sector. This could take the form of Tax Increment Financing (Sales Taxes) or the ability for a community to generate an additional ¼ penny for creative and cultural districts.

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## Appendix C. ENGAGE Recommendations Report June 28, 2018



**ENDOW: ENGAGE Council Members**

**Jonathan Updike, MD, MPH, of Banner**, PGY-1 in psychiatry at Stanford Health Care, President of ENDOW: ENGAGE

**Patrick Harrington, of Laramie**, Director of Wyoming Conservation Corps, Vice President of ENDOW: ENGAGE

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ENDOW: ENGAGE Council  
June 28, 2018

**Dear Governor Matt Mead, Members of the Joint Minerals, Business and Economic Development Committee, and ENDOW Executive Council,**

Throughout the ENDOW process, many folks have said young people are Wyoming's greatest resource. When many of us wrote the Casper Star-Tribune in February calling for a seat at the table for Wyoming's Next Generations, we had no idea the extent to which our voices would be heard. We were astonished to have been recruited directly by the Office of the Governor to coordinate a summit focused specifically on the hopes, thoughts, and dreams of Wyoming's Next Generations. By accepting our proposal to create ENDOW: ENGAGE (Empowering the Next Generations to Advance and Grow the Economy), the state of Wyoming has given a voice to its future in a way no other place has done. We are honored to present to you our Recommendations Report, which is an initial document in the ongoing dialogue ENDOW: ENGAGE will have with ENDOW and the state of Wyoming in years to come.

ENDOW: ENGAGE has been requested to prepare and present a report of the recommendations generated by feedback and analysis from the ENDOW: ENGAGE Summit held on June 9th in Laramie. Recommendations from ENDOW: ENGAGE will be considered by the ENDOW Executive Council for inclusion in their Final Recommendations Report due August 24, 2018. This document serves as a foundation for the many years of continued dialogue between Wyoming's Next Generations, ENDOW, and the state of Wyoming.

In addition, ENDOW: ENGAGE has been tasked with long-term activity, including continuous ENDOW: ENGAGE involvement, a four-year strategic plan due to the ENDOW Executive Council on November 1, 2018, and a gubernatorial transition plan due to the ENDOW Executive Council and the incoming administration on November 15, 2018.

The conversation from ENDOW: ENGAGE Summit contributors from all over Wyoming and beyond provided plentiful feedback, with appendices of over 100 pages of notes

compiled from the Solution Sessions. Within these many notes, the ENDOW: ENGAGE data management team found key themes of connection, inclusion, and investment arose.

A primary theme emerging from conversations among Wyoming's Next Generations was the need for connection. Whether it is connecting entities, individuals, or resources, Wyoming should ensure that it is building bridges among those who can help effectively foster the state environment that they want. In doing so, future generations can learn from past generations and one another in order to work together on diversifying and growing Wyoming's economy.

Another common theme was expanding Wyoming's collective narrative to include its diverse populations. Wyoming is the Cowboy State and the Equality State. It is also much more. Wyoming is more than just the West, and its Next Generations want to appreciate the multitude of perspectives and voices within and outside of the state that can promote personal, community, and state-wide growth. This involves providing space not only for those demonstrating our traditional Wyoming heritage, but also cherishing those outside of the cowboy paradigm.

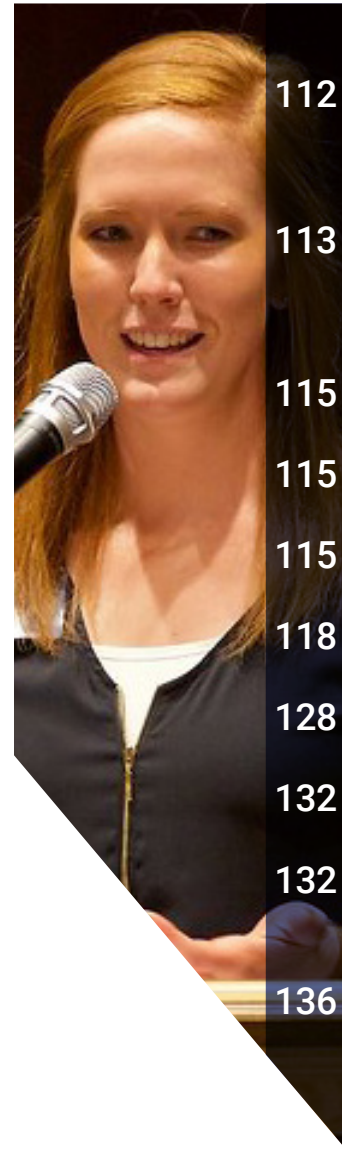


Lastly, the theme of investment was heavily discussed. Participants demonstrated the perception that Wyoming has plentiful resources in many sectors, but could do more to invest those resources in its people, whether by providing more infrastructure, more services, and more opportunities in employment and education. Many in Wyoming have said that the state’s most valuable resource is its people, and the state of Wyoming ought to invest the most in its most valuable resource. Furthermore, Wyoming has invested in current industries and sectors that have made our state great, but they must continue to invest in innovative and up-and-coming areas to continually develop the state’s economy and resources.

We are honored to provide the feedback to support the diversification of Wyoming’s economy and the formation of the state of Wyoming its Next Generations want to inherit. Our enthusiasm for Wyoming, its residents, and its migrants is evident in the discussions we have had as is our commitment to making the dreams described a reality. We look forward to your consideration as we strive to develop the strong, diverse, and robust economy Wyoming is more than capable of having. In Wyoming, #WeAreWY anything is possible.

Sincerely,

**The ENDOW: ENGAGE Council**



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## A NOTE ON THE REPORT

This report intends to fulfill the charge of the Office of the Governor in requesting Wyoming's Next Generations feedback in- and out-of-state prior to the ENDOW Executive Council's drafting of their Final Recommendations Report due on August 24, 2018. The Office of the Governor and ENDOW have provided tremendous and continual support in our efforts to recruit over 200 attendants in-person and remotely to participate in the ENDOW: ENGAGE Summit held at the Marian Rochelle Gateway Center in Laramie, Wyo. on June 9, 2018. The ENDOW: ENGAGE Council anticipates furthering this dialogue with the presentation of this report on Thursday, June 28.

Our Recommendations Report is structured to provide recommendations within the Summit's ten Solution Session topics that ENDOW: ENGAGE developed with guidance from ENDOW, including Advanced Manufacturing, Agriculture, Energy & Natural Resources, Tourism & Outdoor Recreation, Community Health & Quality of Life, Technology & Financial Services, Healthcare, Workforce & Education, Entrepreneurial Ecosystem, and Arts & Culture. Within each topic are both findings and recommendations to be considered for inclusion in ENDOW's Final Recommendations Report, which will outline a 20-year vision for Wyoming and its economy. The findings attempt to summarize perspectives discussed in the Solution Sessions based on the notes provided in Google Docs by the sessions' note takers. Several recommendations were crafted as broadly or specifically as possible with the best quantitative and qualitative data collection and analytic methods available to our volunteer Council in the time frame between the ENDOW: ENGAGE Summit and the ENDOW: ENGAGE Recommendations Report presentation on June 28, 2018. Lastly, the overarching themes are discussed and individual recommendations are compiled from all ten topics. The ENDOW: ENGAGE Council's Next Steps until the end of the calendar year are then outlined, and additional information about ENDOW: ENGAGE is provided at the end of this document. A separate document, the ENDOW: ENGAGE Recommendations Report Appendices, provides the raw notes from the Solution Sessions, Mentimeter data, and organizations contacted during outreach.

Since the formation of the ENDOW: ENGAGE Council in April 2018, with our presentation

of the Recommendations Report and with the selection of the 2018-2019 ENDOW: ENGAGE Council, we anticipate the dialogue between Wyoming's Next Generations, the ENDOW Executive Council, and the rest of Wyoming to continue on a regular and ever expansive basis.

## BACKGROUND

ENDOW reached out to vocal Wyomingites in March 2018 to develop the dialogue between the state of Wyoming and its Next Generations. In early April 2018, a group of Next Generations voices, recruited both by ENDOW and by their peers, submitted a proposal for ENDOW: ENGAGE, which stands for Empowering the Next Generations to Advance and Grow the Economy. This proposal was accepted with enthusiastic support, and planning for the ENDOW: ENGAGE Summit and beyond began. In this proposal, a mission, vision, goals, and target audience were drafted, and apart from light editing, hold true today. Over time, an organizational structure, roles and responsibilities were developed. All are included at the end of this document in Additional Information about ENDOW: ENGAGE for reference.

## ENDOW: ENGAGE Summit 2018

### Event Details

The design of the 2018 ENDOW: ENGAGE Summit was structured with one purpose in mind: help craft the strong, diverse, and robust economic future we want to inherit. The Summit, held in Laramie at the Marian H. Rochelle Gateway Center and the University of Wyoming Conference Center at the Hilton Garden Inn from 8:00 am - 5:30 pm on Saturday, June 9th, welcomed over 200 participants, 60% of which were 16-35 year old contributors whose voices we were committed to hearing in the 40 Solution Sessions focused on the ten unique topics listed in this report. These Solution Sessions were facilitated by ENDOW team members and professionals throughout the state and were coupled with surveys. These sessions provided both the quantitative and qualitative data underpinning this report.



Speeches by Governor Matt Mead, Chairman Greg Hill, Superintendent Jillian Balow, and members of the ENDOW: ENGAGE Council helped set the tone for the day, yet it was the Solution Sessions that were the crowning effort of the Summit. The opinions, insights, and feedback from Wyoming's Next Generations are an invaluable resource for all, and we believe that the Summit's platform provided ample opportunity to do just that.

### Marketing

Marketing hit the ground running and utilized a broad approach to get the word out about the 2018 ENDOW: ENGAGE Summit to possible attendees, including the use of radio, social media, and digital/mobile ads. The driving force behind the marketing efforts were four main goals: building awareness of the ENDOW: ENGAGE process, driving attendance to the ENDOW: ENGAGE Summit, encouraging global participation, and soliciting ENDOW: ENGAGE pre-Summit survey responses. Each of these goals are apparent when looking at media created and released promoting the summit.

Radio ads held great influence with a majority of the ads reaching statewide. The following stations hosted radio ads for the Summit: Northern Ag Network, Wyoming Public Radio, Day Weather, Cowboy State News Network, and Townsquare Media. Radio ads were recorded by members of the ENDOW: ENGAGE Council.

Digital and mobile ads were targeted in the Laramie area. Those ads received 26,242 impressions, 538 clicks, and an impressive 2.05% Click-through rate. This is much higher than the industry average Click-through rate of 0.08%. Facebook, Instagram, and Twitter were the applications utilized for connecting through social media. Ten ads ran through Facebook with 1,011 link clicks and post engagements. This resulted in a reach of 62,276 and 171,691 impressions. The seven posts on Instagram accumulated 277 likes, and the eight Twitter posts boasted 5,009 impressions and 301 engagements.

### Outreach

Outreach took an all-inclusive approach to ensuring that the ENDOW: ENGAGE Summit had diverse and inclusive populations of people. Inclusivity and accessing diverse populations was an overarching goal for Outreach. It was integral to ENDOW: ENGAGE

to include a robust population of people so that Wyomingites from all walks of life may be heard. It was important that not only young professionals were targeted for outreach, but that trades, Tribes and as many underrepresented groups as the ENDOW: ENGAGE Council could think of were reached for inclusion.

Outreach worked off of a master list of organizations across the state of Wyoming. The governor's office also sent personal invitations to a select group and dignitaries. The master outreach list was the ENDOW: ENGAGE Council's collaborative effort to include government agencies, professional organizations, underrepresented populations, educational institutions, and more. The list is extremely comprehensive and will be passed down to the next ENDOW: ENGAGE Council to work off of. The list was so comprehensive that it would be cumbersome to name all of the populations that were reached out to in this report, and is best understood when accessed.

Once the master outreach list was formulated, there were three rounds of contact performed. The first was an initial blast email sent to all organization's contact emails. The next round of contact was performed by the governor's office and the ENDOW: ENGAGE Council. Each member chose several organizations that they may have identified with or had a contact at. Then each member sent an email or called the organization to follow up with the initial invitation to provide more information. The last round of outreach was again done by each member and the governor's office to remind all organizations of the event and to inform the organizations about global participation. After the event, Outreach also sent an invitation to apply for the ENDOW: ENGAGE Council and the ENDOW Executive Council.

### Logistics

The ENDOW: ENGAGE Summit required a multifaceted approach to logistics planning. The Summit utilized one large room able to host 300+ participants, allowed for speeches from dignitaries, provided screens for projecting Mentimeter questions, and used 10 smaller rooms for the Solution Sessions. With the support from ENDOW, ENDOW: ENGAGE selected the Marian H. Rochelle Gateway Center and University of Wyoming Conference Center, both on the University of Wyoming campus, for the event



because the combination provided ample room for the plenary and Solution Sessions. The ENDOW: ENGAGE Council was successful in generating financial support to make lodging available at no cost to participants at the University of Wyoming Residence Halls. Room blocks were also made at local hotels for the event. The University of Wyoming Residence Halls have a stipulation for minors on campus, which may require special attention in the future. Catering for the event was managed by the University of Wyoming Catering and Events and was paid for by the Office of the Governor.

Technological logistics were coordinated by the data management team but were somewhat limited by the technology available to the leadership team. There is tremendous potential to expand technology inclusion in subsequent years.

### **Global Participation**

The ENDOW: ENGAGE Council took a hands-on approach to making the event accessible to anyone who wished to participate around the world. Wyoming's economy affects millions of people with Wyoming ties all around the state, the country, and the globe. We hoped that inability to travel or sheer distance would not exclude any young leader from giving their input into the future health of the state of Wyoming. As such, multiple opportunities were developed to engage Wyoming's leaders globally in these dialogues. Throughout the day, all of the large group sessions, including the words said by Governor Mead, Chairman Hill and Superintendent Balow, were live streamed on Facebook, as well as a meeting application, GoToWebinar. This allowed anyone with a computer and internet to hear all of the presentations, and allowed participants to "raise their hand" and ask a question via a chat room.

During the Solution Sessions, small group sessions occurred in a conference room in the Marian H. Rochelle Gateway Center with video capabilities covering Entrepreneurial Ecosystems, Tourism & Outdoor Recreation, and Community Health & Quality of Life. During these sessions, participants joined from Laramie, across the state, and Mexico. The opportunity for in-depth dialogue with smaller groups was beneficial. As the last session concluded, one of our participants thanked the facilitators and said, "as a pregnant mother, on crutches, I could not have made it to Laramie. I can't thank you

enough for giving me the opportunity to give back to my state." Going forward, the standard should always be to accommodate Global Participation. Thanks to modern technology, we can continue to fight some of the battles we see in Wyoming of distance, weather, and other factors, and show that leadership efforts in Wyoming are inclusive and acceptable to all constituents, no matter the circumstances.

### **Data Management**

ENDOW: ENGAGE's data management team agreed to collect both qualitative and quantitative data with the intent to increase trustworthiness by ensuring that themes were supported by both data types. While participation in the quantitative data collection was too low to report in a statistically significant manner, certain themes did appear in both the quantitative and qualitative data collected. The ENDOW: ENGAGE data collection methodology is as follows:

Both qualitative and quantitative data was collected simultaneously through facilitated discussion groups called Solution Sessions and through survey questions distributed through Mentimeter live polling software. Approximately 200 participants were broken out across ten Solution Sessions. Each Solution Session topic corresponded to one of ten economic sectors identified by ENDOW: ENGAGE as foundational to Wyoming's future economic development. Each Solution Session lasted forty-five minutes and was repeated four times throughout the day, allowing participants to potentially attend up to four Solution Sessions total. At the beginning of each Solution Session, participants were asked to use their smart phones to answer three multiple choice questions distributed through Mentimeter's online platform. The multiple choice questions were standardized across each session for consistency, and requested that participants identify existing opportunities and barriers to growth, as well as vital opportunities for growth in the Solution Session's topic sector. These questions were purposefully open-ended so that participants were not biased and provided their own insight and opinions.

Facilitators in each Solution Session were also provided with a list of three discussion questions with additional sub-questions which were used as discussion prompts and as guidelines to encourage relevant conversation development. The discussion questions





were also standardized as much as possible across each Solution Session topic, and asked participants to discuss: what role, if any, each sector would play in Wyoming's future economy; how, if at all, Wyoming supports opportunities available in each sector; and what kinds, if any, of education or training would be most beneficial for each sector. Again, to decrease bias, these questions were open-ended. Note takers were also present in each session and recorded participants' discussion. These notes and, where appropriate, trends from the Mentimeter questions were analyzed to form the basis of the ENDOW: ENGAGE Recommendations Report findings.

To increase trustworthiness, the data management team used "triangulation," or the process of ensuring that data is found in either quantitative and qualitative responses or at least three different solution sessions from the same sector topic. This practice ensured that one statement or opinion was not provided as a finding, but instead findings were corroborated by more than one source of data. Additionally, trustworthiness was also enhanced by the data management team, once finished with their analysis and findings, meeting with facilitators and/or note takers from each Solution Session. These meetings allowed for the data management team members to discuss the findings and check to ensure that findings were consistent with what the facilitators and note takers witnessed from the discussion in their sessions.

### Pre-Summit Survey

A Pre-Summit Survey was compiled to inform the structure of the ENDOW: ENGAGE Summit, the ENDOW: ENGAGE Council, and ENDOW for activities going forward. A total of seventy-five people completed the Pre-Summit Survey, and qualitative analysis of the free-form answers provided helpful information in structuring the Solution Session questions and format. Results will be shared internally with the ENDOW: ENGAGE Council in the 2018-2019 term, who will incorporate the feedback into dialogue with ENDOW, upcoming efforts, the four-year strategic plan, and the gubernatorial transition plan later this year.

## Solution Sessions

### Advanced Manufacturing

**Facilitator:** Ron Gullberg

**Note taker:** Jerimiah Rieman

### Findings

The participants at the ENDOW: ENGAGE Summit identified advanced manufacturing as a sector that has ample potential to play a significant role in diversifying Wyoming's economy. Specifically, participants at the summit identified that this sector has potential for job growth for all education levels. Current physical maker-spaces exist to support growth, and Casper being a foreign trade zone also fosters growth potential of this sector.

Though responses to distributed survey questions were limited (19 responses), some trends appeared. First, participants recognized that there are education and training opportunities, opportunities to start a new business, and internship opportunities available in advanced manufacturing (11, 8, and 6 respondents, or 58%, 42% and 32%, respectively), while 12 respondents (63%) were unsure what opportunities exist.

Respondents also identified that there are significant obstacles to starting a new business (10 out of 19 respondents or 53%) and that there is a lack of available startup capital for new businesses (12 respondents or 63%). This was supported in the discussion sessions. The discussions around the difficulty of obtaining startup capital identified that access to materials, rather than financing or investors. However, maker-spaces around the state, such as Area 59 in Gillette, help make capital obtainable. These maker-spaces give access to educational programs, accelerate entrepreneurs, and build skills needed to join the industry. A potentially untapped manufacturing resource recognized by participants also lies in bringing other markets to Wyoming that would give the opportunity for existing companies to expand their operations into these markets.



A topic that came up in every session was the lack of a state-wide community or network in this sector. The types of networks described would ideally be a cooperative network of talent, equipment, materials, education, and other production markets. A second type of network would be one that connects the industry with research and education. Besides training a workforce, this partnership would allow access to entrepreneurial education to help get businesses off the ground.

### Recommendations

- Develop statewide networks between resources (workforce, businesses, education, etc.), including opportunities for education to join the advanced manufacturing workforce and entrepreneurial training.
- Market existing resources (such as existing maker-spaces and education) and new resources as they become available.
- Maintain and improve infrastructure to contribute to development of this sector.

### Agriculture

**Facilitator:** Jessie Dafoe

**Note taker:** Madison Mankin

### Findings

It is clear from participants that agriculture is an important industry in Wyoming. However, participants noted that while agriculture is dynamic, the state needs to more effectively market this industry. For example, participants saw Wyoming as having a specific “brand” and discussed the importance of marketing that brand to those outside the state. This would include showcasing Wyoming products, such as beef and wool, but also the “lifestyle” of being a farmer and rancher in Wyoming, in order to encourage individuals to join the agriculture sector and buy products from the state.

While traditional forms of agriculture are still solidly well-known and present in Wyoming, participants discussed the need for the state’s agriculture industry to

diversify. Participants stated that diversification efforts could focus on tried-and-true aspects of Wyoming agriculture, such as a livestock and crops. For example, ideas brought out in discussion focused on finding other forms of livestock and insects, such as bison and bees, to serve as products in the state. While there were less specific examples for crops, participants stated that diversification of crops can be hard, due to Wyoming’s soil and temperature, but should be considered. Other ideas involving diversification centered around new and up-and-coming businesses, including the creation of a USDA packing plant for processing Wyoming meat, as well as movements, such as “local, sustainable farming” and “farm to fork” initiatives.

Participants discussed the varying generations of agriculturalists and people interested in agriculture and how those generations affect the current and future state of production agriculture. The aging of ranchers is a current issue in Wyoming, as these individuals are coming to ages that make it difficult to continue running and/or working on their operations, yet their family members either cannot or do not desire to assist in ranching. While these problems persist, participants noted that there are “new generations that are interested in [agriculture] that may not have ties to family ranches.” Participants stated that these younger generations could take over agriculture operations, but that they need to be mentored and guided by older generations. Additionally, the importance of incentive programs for older ranchers to pass off their operations and mentor younger agriculturalists was mentioned.

17 out of 20 (85%) ENDOW: ENGAGE Survey respondents marked that is difficult to start an agriculture business in Wyoming, which was reiterated through discussion from participants noting barriers to entering the agriculture sector in Wyoming. One of the largest obstacles includes “financial barriers,” which was corroborated by 18 out of 20 (90%) respondents on the ENDOW: ENGAGE Survey marking that startup capital was an obstacle to entering the state’s agriculture industry. Another barrier noted by participants centered around land acquisition. It can be difficult for those entering agriculture to buy land when it is already owned by generational family



operations, and participants also noted how hard it can be for those entering and even for those already in agriculture to acquire public land leases.

### Recommendations

- Market Wyoming products to those both inside and outside of the state, specifically focusing on what makes Wyoming-made products unique.
- Showcase the Wyoming agriculture lifestyle to encourage others to join the agriculture industry.
- Diversify forms of livestock and crop-based agriculture in Wyoming, while still capitalizing on current livestock and crops.
- Explore innovative and up-and-coming agricultural endeavors, such as less traditional forms of animals and plants, as well as new businesses like a meat packing plant and farmer's markets.
- Encourage and support younger generations of agriculturalists to engage in agricultural pursuits.
- Create mentoring programs for younger farming/ranching generations and incentive programs for older farming/ranching generations to foster supportive relationships among younger and older agriculturalists.
- Market current and create new start-up capital programs for young agriculturalists to enter farming/ranching.
- Determine how to make land acquisition easier for both new and continuing agriculturalists.

### Energy & Natural Resources

**Facilitator:** Jessica Western

**Note taker:** Sara Fitz-Gerald

### Findings

ENDOW: ENGAGE Summit Participants provided discussion and feedback on the role of Energy and Natural Resources in diversifying Wyoming's economy. Major topics that were discussed throughout the day include the need to support all forms of energy (traditional and alternative), provide a level playing field through the tax

structure, engage in siting and bonding, and maintain and protect public lands and watersheds for multiple uses.

Responses to distributed survey questions were limited (max 31 participants); however, the results suggest some trends that are consistent with the Solution Session discussions. 16 respondents (52%) identified significant obstacles to starting a new business as a barrier to entering/developing Energy and Natural Resources in Wyoming. The second most popular answer was lack of available start-up capital for new businesses at 11 of 29 respondents (38%).

Opportunities identified as most vital to Energy and Natural Resource development were education and training opportunities, opportunities to start a new business, and accessible startup capital for new businesses with 20, 20 and 29 respondents (65%, 65% and 61%), respectively. Opportunities in Energy and Natural Resources that are currently available in Wyoming were identified by participants as education and training opportunities with 16 of 31 respondents (52%) and plentiful entry level jobs with 14 of 31 respondents (45%). However, unsure what opportunities exist was selected by 15 of 31 respondents (48%).

Participants discussed the need for the state to encourage development of alternative forms of energy, while maintaining support for traditional energy forms. A common theme from discussions was the concept of 'us vs. them' that is prevalent within the state and limits discourse and development of alternative energy projects. Another major topic was taxes. Participants noted the lack of certainty within the current tax structure as it relates to energy development and that Wyoming does not compete well with other states from an energy tax perspective.

In all sessions, participants raised the issue about public lands and the desire to keep them in federal hands. All participants strongly agreed that public lands should be kept public and maintained for multiple uses. Additionally, participants emphasized



the importance of keeping water in watersheds for recreation, fish, and agriculture, noting the importance of this as a source of both ecological and economic health within the state.

### Recommendations

- Develop K-12 education curriculum about renewable/alternative forms of energy.
- Implement tech transition or training programs at community colleges (Ex: LCCC Wind Tech Program) to broaden skills of oil/gas industry workers who commonly leave the state during bust cycle but have transferable skills to other industries.
- Improve tax structure and other avenues (ex. net metering) to foster development of renewables and diverse energy options within the state.
- Fund research and development for non-traditional uses of Wyoming's natural resources (ex. carbon nanotubes, carbon sequestration, etc.).

### Tourism & Outdoor Recreation

**Facilitator:** Jenn Ford

**Note taker:** Brittany Perez

### Findings

Participants at the ENDOW: ENGAGE Summit saw tourism and outdoor recreation as an important part of the future economy, and as one with a great deal of potential. Throughout the sessions, participants highlighted common themes of education, access, and marketing, and focused on target audiences including youth and out-of-state visitors. The discussions recognized many opportunities, but also emphasized the importance of the natural state and solitude of our great outdoors.

The Mentimeter survey results for this session are somewhat contradictory. While 23 of 43 respondents (53%) felt that opportunities for education and training are currently available in Wyoming, 19 of 42 respondents (45%) responded that a lack of education and training opportunities presents a barrier to the sector. 19 of 43 respondents (44%) who answered also said they were unsure what opportunities exist. These results may highlight a unique usage of the Education and Training

Opportunities answer choice in this Solution Session. Participants' discussions included consideration of education both from the perspective of employment in the sector, and as users of opportunities to enjoy Wyoming's outdoors. Though determining the reason for the contradictory responses is beyond the scope of this report, it is clear that education played a key role in the day's discussion.

The importance of education about tourism and outdoor recreation opportunities arose in every session. Wyoming is filled with places to recreate, but sometimes even locals do not know what is in their own backyard. Wyoming and its communities should educate locals about trail heads, campgrounds, access points, wildlife preserves, hot springs, historic sites, and more. As one participant noted, parents are the gateways for children experiencing the great outdoors. State and local initiatives that inform community members will educate parents who, in turn, can share these experiences with their kids. The school system is another opportunity for educating our youth. Trainings and curriculum can get kids outside, instill valuable knowledge, and expand their comfort zones to include more of our great state.

An informed community also benefits tourists from out of state. When locals know more about the variety of opportunities around the state, they can do more than just give directions to the highway to get tourists to Yellowstone. Towns can serve as more than just pit-stops, and become valuable destinations in and of themselves.

Education feeds into access. Participants noted that Wyoming needs to prioritize access to public lands. Access includes space for all types of recreation, motorized and non-motorized, and there was even discussion of virtual reality tours for people who are physically limited from visiting certain areas. It also includes building an accessible culture – one that is inviting of and encouraging for out of state visitors.

ENDOW: ENGAGE participants in every session also recognized the importance of marketing the opportunities that exist – of "telling our story." Wyoming is more than just the Cowboy State. It is home to more than Yellowstone National Park and the Teton Mountains. We can do more intra-state marketing. Smaller or lesser-known



attractions could have better signage. Technology and collaboration could facilitate detailed maps for all kinds of recreation and a centralized information point for both locals and visitors. Social media was noted as a toolkit, and could be integrated into more creative marketing strategies to bring in and engage visitors.

### Recommendations

- Increase intra-state communication and education about and centralize information for Wyoming's state-wide recreational opportunities, noting more of the state than the popular destinations of Yellowstone and Jackson.
- Increase the focus on Wyoming's own people, in addition to out-of-state visitors, who enjoy visiting other parts of the state, as well as utilizing the opportunities available in their own local communities.
- Make use of social media tools available to tell and market Wyoming stories to a broader public.
- Maintain access and multiple use for public lands. Access includes space for all types of recreation, motorized and non-motorized.
- Where cellular and internet service are available, use technology to enhance experience. Visualize data, including interactive maps, about the parks, develop and deploy pay for parking/permit software applications, even virtual tours for those with limited mobility.
- Streamline park permits as much as possible to make it easier to understand and access different areas.

### Community Health & Quality of Life

**Facilitator:** Sara Burlingame

**Note taker:** Hana Rogers

### Findings

The discussion and feedback from the Community Health and Quality of Life sessions consistently focused on several common ideas, including diversity, inclusion and communication. Several ideas were discussed as means to improve these areas across the state, and participants emphasized the importance of increasing diversity

and inclusion to growing Wyoming's economy.

Responses to distributed survey questions were limited (max 39 participants). However, the survey results reiterate the common themes from participants discussion. Barriers to developing Community Health and Quality of Life in Wyoming were identified as lack of public spending with 26 of 36 respondents (72%) and few welcoming and inclusive communities with 24 of 36 respondents (67%). Accessible social venues and welcoming and inclusive communities were the most common answers to opportunities that are most vital to Wyoming with 30 and 28 of 36 respondents (83% and 78%), respectively. 24 of 39 respondents (62%) identified opportunities to participate in community leadership as opportunities that are in Wyoming to participate in community activities and social life.

By and large the most common theme discussed during all sessions was the need for Wyoming to improve its diversity and inclusion within communities across the state. Many participants expressed the sentiment that Wyoming is the Equality State and should live up to its name. Others cited a lack of diversity and inclusion as a deterrent for those moving to the state and also as a reason people leave the state.

Another important point of discussion throughout all sessions was accessibility of information about community events and communication between individuals and groups (city councils, boards, etc.) within communities, as well as across the state. Participants felt that there is not so much a lack of community events as a lack of communication and information regarding these events. Additionally, some participants cited lack of diversity and accessibility and not feeling safe or welcome at events as deterrents from participating. David St. Station and the Cheyenne bike path were given as examples of successful community projects.

### Recommendations

- Enact a statewide non-discrimination law and work to ensure the culture of Wyoming is inclusive to all.
- Implement projects and events, such as revitalization projects, that will improve



- communities and provide welcoming spaces for Wyoming's citizens.
- Increase communication and marketing of existing community projects.

### **Technology & Financial Services**

**Facilitator:** Spencer Pollock

**Note taker:** Jasmine Varos

### **Findings**

Participants in Technology & Financial Services focused on several main topic areas that they felt could improve this sector and encourage its growth in the state of Wyoming. Specifically, participants focused on increasing state-wide communications and networks among Wyoming's schools, businesses, and workforce, and increasing high speed internet access across the state.

Though responses to distributed survey questions were limited (max 22 participants), some trends appeared. 13 of 22 respondents (59%) recognized that there are opportunities to access education and training for Technology and Financial Services in Wyoming. 12 of 22 respondents (55%) were unsure what opportunities are available in Wyoming. Participant responses also highlighted a perceived lack of internship and entry-level opportunities in Wyoming (12 and 14 of 18 respondents or 67% and 78%, respectively).

These trends are supported in the Solution Session discussions. Two topics that came up in each session are education and intra-state communication. Specifically, participants repeatedly stressed the need for the University of Wyoming, the community colleges, and trade skills programs to play a greater role in connecting Wyoming students with internship and entry-level opportunities within the state. Some participants noted that Hathaway and scholarship support is not available for certificate programs that offer viable alternatives to a two or four-year degree and would like to see funding expanded to include these programs.

Several participants observed that mid-level positions in Technology & Finance are available in Wyoming, but because internships and entry-level positions are scarce,

Wyoming's talent must relocate to begin their careers. If Wyoming expats start families and settle elsewhere, the barrier to returning and bolstering Wyoming's workforce grows.

Participants also cited a lack of mentorship opportunities and expressed support for increasing connections between potential mentors and mentees. Several times during the sessions, one participant would bring up a problem they were having in this sector, and someone else would be able to provide a solution. These interactions highlighted the importance of having a robust network for people to collaborate across the state.

Another topic that came up repeatedly was a desire for better internet access across the state. ENDOW is making great strides already with increasing access to fiber optics and higher quality internet, and participants' responses recognized how important it will be to have continued action on this front. Participants asserted that a significant portion of Wyoming's population still struggle with slow internet speeds that severely limit access to basic web services and prohibit users from experiencing the full range of opportunities available online. Participants noted that these negative experiences discourage students from focusing on tech-centered careers because they do not have meaningful experience with the possibilities offered by web and technology access. Participants were also concerned that the cost to access Wyoming's fiber-optic pipeline is prohibitive for small businesses. Possible solutions were discussed, including creating an option for small businesses to pool resources for access.

Discussion also repeatedly touched on opportunities to grow the Technology & Financial Services sector in Wyoming. Participants favored increasing access to startup and seed funding, as well as small business development centers. While some of the resources already exist, participants felt there was a lack of centralized information, making it difficult for businesses and entrepreneurs to access available resources. Participants also focused on successes other states experienced by attracting a large company, such as HP in Loveland, and Longmont, CO and Delaware's success in attracting financial companies. Participants suggested that



attracting one large company could increase opportunities across the sector as competitors and contractors will spring up around the larger business. Finally, participants noted the importance of working to create a more technology-friendly culture in Wyoming and stressed the need to follow through on Wyoming's tech initiatives. Specifically, participants repeatedly mentioned the importance of remote work opportunities which decrease commute burdens and increase access to community amenities in employees' places of residence. Participants noted that, where state legislation is the limiting factor for progress, the brevity of Wyoming's legislative session poses a significant hurdle as there is not sufficient time in session to focus on tech advancements. Participants are concerned that Wyoming is not able to capitalize on its firsts, such as blockchain-friendly legislation, before other states catch up.

### Recommendations

Increase and centralize communications between Wyoming's education facilities and Wyoming businesses to help foster mentorship as well as the development of, and employment options for, Wyoming's home-grown talent.

Continue focusing on solutions for fiber-optic and high speed internet access in Wyoming. Study ways small businesses can overcome the cost hurdle to access the fiber-optic pipeline, perhaps by pooling resources, etc.

Keep up the pressure for tech-positive initiatives in both the State Legislature and the private sector. The technology landscape changes quickly and Wyoming will fall behind without continued focus on optimizing technological opportunities.

Increase opportunities for seed and start-up funding, as well as support for small businesses. Where opportunities exist, centralize information to increase ease of access for entrepreneurs and businesses.

Attract large companies to increase opportunities, but couple growth with effective municipal planning to avoid the overcrowding/urban sprawl seen in Colorado's Front Range and similar developing communities in the West that inhibits access to and enjoyment of community amenities and outdoor opportunities.

### Healthcare

**Facilitator:** Andi Summerville

**Note taker:** Jaynie Welsh

### Findings

Participants voiced concerns about a cyclical barrier to the expansion of quality healthcare within Wyoming. Educational opportunities for healthcare are limited in-state, and graduates from the few healthcare training opportunities that exist often leave for higher paying employment, more plentiful employment for their spouses, other opportunities for their family, or pursuing a different quality of life. This exodus thereby leaves Wyomingites without the optimal medical care they need and the professionals capable of training upcoming generations to provide that healthcare.

Participant uptake of the Mentimeter questions were low, as only 22 or 23 participants responded to the three questions out of the four sessions. In spite of this, 9 of 22 respondents (41%) noted that significant obstacles to starting a new business and lack of available start-up capital for new businesses were barriers to entering or developing Healthcare in Wyoming. While 12 of 22 respondents (55%) note that education and training opportunities are available in Wyoming, 16 of 23 respondents (70%) found education and training opportunities are most vital to the development of healthcare in Wyoming.

Primarily, participants advocated for increased investment in healthcare, primarily preventative care, public health, and mental healthcare. Specifically, a participant wanted "longer term solutions that won't be upended every two to four years." Since "the state needs to think beyond the workforce side," improving support for public health would improve "quality of life, rather than just bringing in a new physician." Many participants lamented the lack of quality healthcare and the unaffordability or limited access to available care and wanted the Wyoming Legislature to "invest [in] and expand coverage." Investment facilitates innovation would allow Wyomingites to "be leaders in rural healthcare."



Next, participants discussed the need for connection. Whether it was driving long distances out of state for more specialized care or feeling disconnected within Wyoming, participants felt that improved networking would strengthen what healthcare resources Wyoming has to offer. Many suggested expanding telemedicine, as one participant noted that it is a “waste of money to drive all the way to Salt Lake.” Another noted that improved connection within communities may improve retention. For instance, one participant said, “The more we get [healthcare professionals] involved in the community, the more likely they are to stay.” Similarly, expanding training opportunities, such as residency programs for physicians and nurses, could improve retention by augmenting connections between current and upcoming healthcare professionals. Networking and strengthening healthcare system infrastructure were frequently discussed among participants as a method of improving healthcare in Wyoming.

### Recommendations

- Support public health/preventative care within Wyoming.
- Support mental and behavioral health in Wyoming.
- Connect and improve coordination between Wyoming’s healthcare systems and providers.
- Encourage support for the Wyoming Legislature to invest in insurance coverage to improve healthcare affordability and access.
- Expand training opportunities for healthcare professionals in-state, such as residency programs for physicians and nurses.
- Expand telemedicine in Wyoming.
- Incentivize medical entrepreneurship for graduates who participate in Wyoming’s medical education opportunities.
- Promote competition within Wyoming for healthcare and insurance companies.

### Workforce & Education

**Facilitator:** Mary Byrnes

**Note taker:** Bailee Harris

### Findings

Participants noted that it was difficult for Wyomingites to gain work experience, in jobs, but more particularly, in internships. This lack of internships was especially pertinent for students in rural areas where there are fewer businesses and job opportunities. Survey results supported participants’ views on the lack of internship opportunities, with 31 out of 37 respondents (84%) marking that there are few internship/apprenticeship opportunities in the state. In order to increase internship opportunities, participants discussed the importance for a central organization or office to create internships and house and disseminate information about internships around Wyoming.

In general, participants discussed the need for education to better prepare students for the workforce. Participants noted that this could be accomplished through providing more opportunities and support for students to gain an education outside of a traditional four-year education. For instance, discussion centered around the need for certificates, community college degrees, apprenticeships, non-accredited degrees, and career and technical education. Participants also specifically focused on the role of the Wyoming Hathaway Scholarship, which they hoped could finance educational opportunities outside of the University of Wyoming.

In addition, participants noted that communication should be furthered amongst varying education and workforce stakeholders. This includes: 1) educators connecting together to share resources and information, 2) government entities communicating more effectively with educators, 3) school districts communicating more effectively with teachers and students, and 4) education institutions distributing information about internships to students.





## Recommendations

Create and foster internship opportunities for Wyoming citizens to take advantage of, particularly those in rural areas.

Develop a central office or organization to create internships and disseminate internship information to Wyomingites.

Support additional higher education opportunities outside of a traditional four-year degree.

Increase communication amongst education and workforce entities to encourage resource and information sharing about education and work opportunities.

### Entrepreneurial Ecosystem

**Facilitator:** Jaymie Sheehan

**Note taker:** Emily Beagle

## Findings

The importance of supporting and cultivating this particular ecosystem was noted in every session at the ENDOW: ENGAGE Summit where it is seen as the most efficient and accessible way to diversify the economy. Participants widely agreed throughout the sessions on what could be done to help facilitate development of new businesses. These centered around developing a better connectedness between individuals and groups with resources including developing a mentorship network, increasing access to capital, and decreasing barriers in both entrepreneurs' personal and professional lives that keep them from starting businesses.

Participants stressed the importance of more connectedness to help improve the entrepreneurial ecosystem of Wyoming, both in discussions and in the Mentimeter survey (the second most common barrier to starting a new business at 20 of 43 responses or 47%). Suggestions to improve this came in many forms, including better networking between individuals that want to start a business or help grow their small business and groups or individuals with the resources (financial, legal, skilled workforce, patent lawyers, etc.). Ideally, there would be a central location or website where these resources could be found. Marketing of these resources

(and existing resources) would increase utilization of and knowledge to the people who need them. The creation of this network would include the development of a mentorship community in which young entrepreneurs could be mentored to foster their development of becoming successful entrepreneurs. This network can also help alleviate the difficulty of accessing capital to start their own business, the most common barrier to starting a new business in the Mentimeter Survey (31 of 43 responses or 72%).

An example of increasing connectedness could be a connection between engineering senior design projects at the University of Wyoming and business programs or entrepreneurs. This would connect young minds who have the skills and education to start a business and those with engineering backgrounds to help develop a product.

Developing the human capital to start a business lies not just in a skilled workforce, but in the educational programs available to those looking to start their own business. Such programs at the University of Wyoming are well respected, but participants want the option to take classes (or a series of classes) in entrepreneurship at community colleges. Participants also noted the need for programs that continue the education of the more experienced businessperson so that they can further advance their business.

There are a number of actions that could be taken to help support entrepreneurs get off the ground. These could include startup capital that helps with the cost of living (specifically affordable housing), help finding qualified employees, and more access to education. This could be relieved with marketing of resources available through the University of Wyoming or other state-funded programs. The state could also encourage large businesses in the state to do business with smaller in-state businesses, instead of going out-of-state for these partnerships. Participants also noted that significant support is given to those looking to start a business in energy or energy support sectors, and that expanding this support to all sectors would help diversify Wyoming's economy.



Other suggestions that could improve Wyoming's entrepreneurial ecosystem include increasing access to high-speed internet in all corners of the state, encouraging the startup of businesses in relation to tourism, and increasing the marketing that Wyoming is a very business-friendly environment – a high-tech environment that is supportive of new ideas.

### Recommendations

- Develop a network among individuals and groups with resources (financial, legal, workforce, etc.), including the development of a mentorship network.
- Increase access to capital, and market available startup funding available to entrepreneurs.
- Decrease barriers in both entrepreneurs' personal and professional lives that keep them from starting businesses through startup funding that helps with cost of living.
- Increase access to entrepreneurial classes and seminars around the state, specifically at community colleges.
- Market that Wyoming is a business-friendly environment.
- Increase access to high-speed internet across all corners of the state.
- Encourage the development of all businesses, and market the opportunities to start businesses in all sectors of the economy.

### Arts & Culture

**Facilitator:** Philip Moline

**Note taker:** Seth Jones

### Findings

Participants identified many barriers for arts and culture within Wyoming. One difficulty encountered is a perception that arts and culture in Wyoming are hobbies rather than careers, which has led to a difficulty to find professional artists in Wyoming. A participant commented, "We should legitimize art as an actual industry, and recruit people to be within these industries," and another stated that Wyoming should "change the perspective from a hobby to a career." Participants expressed

that these limited perceptions persist at the community level as parents, community members, and education systems discourage creative trades as careers. As one participant commented, "Laramie and Casper nurture art, but the state as a collective does not." The lack of appreciation for the arts and diversity incentivizes individuals to leave Wyoming for opportunities in careers or entertainment elsewhere. Participants described difficulties communicating between artists and artistic groups that continue to reside in Wyoming, and that financial resources for the arts in Wyoming are limited.

As seen in other Solution Sessions, participant uptake of Mentimeter was limited, with 29-30 respondents for the three Arts & Culture Mentimeter questions for all four sessions. Despite the limited generalizability of these results, some trends emerged. 19 of 30 respondents (63%) find education and training opportunities to be currently available in Wyoming while 18 of 30 respondents (60%) are unsure of what opportunities exist. For opportunities to develop the Arts and Culture in Wyoming, 19 of 30 respondents (63%) think that education and training opportunities, internship opportunities, opportunities to start a new business, and accessible startup capital for new businesses are most vital, as 19 of 29 (66%) considered few available mid-career positions to be a barrier to the development of Arts and Culture in Wyoming. Other barriers considered were few available entry level positions with 16 of 29 respondents (55%), and lack of available startup capital for new businesses with 16 of 29 respondents (55%).

Participants expressed appreciation for a need to grow beyond their Wyoming heritage. While participants value country culture and want to include historic places in Wyoming's narrative, many discussed how adhering too strongly to this heritage precludes inclusivity and diversity within Wyoming. For instance, one participant noted, "Musicians feel they can't be true to themselves to sustain their talent within the state." Another stated, "We aren't wanting to take away Western Culture, but rather broaden our horizons and give it a spin to bring [in] other art focuses." One participant summed up this sentiment by saying, "We're more than just the west." In order to address this, participants suggested supporting those not representative of Cowboy culture, such as nerd culture on display at the Cheyenne Comic-Con, all arts within



Wyoming's many communities, and other diverse voices.

Participants voiced interest in the state of Wyoming expanding creative professional opportunities, strengthening arts and culture infrastructure within and between communities, connecting existing individuals and agencies with each other, and educating creative professionals. Expanding creative professional opportunities could involve increasing the number of internships available in the arts and culture sector, supporting business practices that actively incorporate creative endeavors, and enhancing community infrastructure supportive of the arts. Among these strategies, participants wanted to stimulate community engagement with the arts in Wyoming.

### **Recommendations**

- Build from Wyoming's Western narrative to support a diverse arts and culture industry beyond cowboys to be "more than just the west."
- Connect higher education and K-12 education with currently established creative industries in Wyoming.
- Invest in arts education and Wyoming's arts and culture industry.
- Provide more internship opportunities to teach students and build connections with businesses in Wyoming.
- Connect, coordinate, and support existing art councils, organizations, and businesses within Wyoming.
- Support business practices that actively incorporate artistic and cultural components, such as blended industries and joint-business practices.
- Support the development of community makerspaces.

## **Discussion**

### **Themes**

#### *Connection*

The most salient theme from the Solution Sessions at the ENDOW: ENGAGE Summit was connection. In each session, across all sectors, participants repeatedly cited the need for a more robust communication network in the state of Wyoming. Wyoming's rising generation believes in Wyoming's value and potential, and knows that problems and their solutions often lie side by side, lacking only a bridge.

Participants in multiple sessions suggested building out networks and centralizing information among Wyoming's university, community colleges, trade schools, certificate programs, businesses, business development centers, students, apprentices, entrepreneurs, and government entities. Additionally, participants across the Summit noted the importance of building networking and mentoring relationships among those who can work with and assist younger generations Wyoming citizens. Wyomingites want to connect overall to increase opportunities for our home-grown talent within our own state.

#### *Inclusion*

The next main theme at the ENDOW: ENGAGE Summit was inclusion. Whether being excluded as a result of distance in geography, identity, career, or ideas, participants want a state that advocates for all of its populations. Participants in sessions across the sectors noted that Wyoming has a specific culture and that can be exclusive to those who do not adhere to that culture. While preservation of Wyoming's heritage is important, the Equality State can grow in to accommodate those who may not fit the traditionally stereotypical mold of a Western Wyomingite.



### **Investment**

The final predominant theme was investment. In no session did participants' feedback suggest that Wyoming provided too much. In fact, participants voiced a desire to live in a place that provides more services, more infrastructure, and more opportunities in employment and education. Participants want to live in a state that invests in its people, and invests plentifully. There is a widespread perception that the state of Wyoming has the resources to invest more in its people in many additional ways.

Also in the realm of investment, Wyoming's current and future investments were discussed at length. Participants noted that Wyoming has many resources, especially in agriculture, energy, tourism, and other key industries, and that those are to be respected and honored as important parts of our state's economy and culture. However, participants encouraged the state to invest further in these industries' application and pursue innovative strategies in using these, as well as acquire new and different resources. This balance among current and future investments will ensure that Wyoming does not lose sight of what makes it a great state, but continues to flourish in the modern world filled with younger generations of hard-working citizens.

### **Full Recommendation List**

#### **Advanced Manufacturing**

- Develop statewide networks between resources (workforce, businesses, education, etc.), including opportunities for education to join the advanced manufacturing workforce and entrepreneurial training.
- Market existing resources (such as existing maker-spaces and education) and new resources as they become available.
- Maintain and improve infrastructure to contribute to development of this sector.

#### **Agriculture**

- Market Wyoming products to those both inside and outside of the state, specifically focusing on what makes Wyoming-made products unique.
- Showcase the Wyoming agriculture lifestyle to encourage others to join the agriculture industry.
- Diversify forms of livestock and crop-based agriculture in Wyoming, while still capitalizing on current livestock and crops.
- Explore innovative and up-and-coming agricultural endeavors, such as less traditional forms of animals and plants, as well as new businesses like a meat packing plant and farmer's markets.
- Encourage and support younger generations of agriculturalists to engage in agricultural pursuits.
- Create mentoring programs for younger farming/ranching generations and incentive programs for older farming/ranching generations to foster supportive relationships among younger and older agriculturalists.
- Market current and create new startup capital programs for young agriculturalists to enter farming/ranching.
- Determine how to make land acquisition easier for both new and continuing agriculturalists.



**Energy & Natural Resources**

- Develop K-12 education curriculum about renewable/alternative forms of energy.
- Implement tech transition or training programs at community colleges (Ex: LCCC Wind Tech Program) to broaden skills of oil/gas industry workers who commonly leave the state during bust cycle but have transferable skills to other industries.
- Improve tax structure and other avenues (ex. net metering) to foster development of renewables and diverse energy options within the state.
- Fund research and development for non-traditional uses of Wyoming's natural resources (ex. carbon nanotubes, carbon sequestration, etc.).

**Tourism & Outdoor Recreation**

- Increase intra-state communication and education about and centralize information for Wyoming's state-wide recreational opportunities, noting more of the state than the popular destinations of Yellowstone and Jackson.
- Increase the focus on Wyoming's own people, in addition to out-of-state visitors, who enjoy visiting other parts of the state, as well as utilizing the opportunities available in their own local communities.
- Make use of social media tools available to tell and market Wyoming stories to a broader public.
- Maintain access and multiple use for public lands. Access includes space for all types of recreation, motorized and non-motorized.
- Where cellular and internet service are available, use technology to enhance experience. Visualize data, including interactive maps, about the parks, develop and deploy pay for parking/permit software applications, even virtual tours for those with limited mobility.
- Streamline park permits as much as possible to make it easier to understand and access different areas.

**Community Health & Quality of Life**

- Enact a statewide non-discrimination law and work to ensure the culture of Wyoming is inclusive to all.
- Implement projects and events, such as revitalization projects, that will improve communities and provide welcoming spaces for Wyoming's citizens.
- Increase communication and marketing of existing community projects.

**Technology & Financial Services**

- Increase and centralize communications between Wyoming's education facilities and Wyoming businesses to help foster mentorship as well as the development of, and employment options for, Wyoming's home-grown talent.
- Continue focusing on solutions for fiber-optic and high speed internet access in Wyoming. Study ways small businesses can overcome the cost hurdle to access the fiber-optic pipeline, perhaps by pooling resources, etc.
- Keep up the pressure for tech-positive initiatives in both the State Legislature and the private sector. The technology landscape changes quickly and Wyoming will fall behind without continued focus on optimizing technological opportunities.
- Increase opportunities for seed and start-up funding, as well as support for small businesses. Where opportunities exist, centralize information to increase ease of access for entrepreneurs and businesses.
- Attract large companies to increase opportunities, but couple growth with effective municipal planning to avoid the overcrowding/urban sprawl seen in Colorado's Front Range and similar developing communities in the West that inhibits access to and enjoyment of community amenities and outdoor opportunities.



**Healthcare**

- Support public health/preventative care within Wyoming.
- Support mental and behavioral health in Wyoming.
- Connect and improve coordination between Wyoming's healthcare systems and providers.
- Encourage support for The Wyoming Legislature to invest in insurance coverage to improve healthcare affordability and access.
- Expand training opportunities for healthcare professionals in-state, such as residency programs for physicians and nurses.
- Expand telemedicine in Wyoming.
- Incentivize medical entrepreneurship for graduates who participate in Wyoming's medical education opportunities.
- Promote competition within Wyoming for healthcare and insurance companies.

**Workforce & Education**

- Create and foster internship opportunities for Wyoming citizens to take advantage of, particularly those in rural areas.
- Develop a central office or organization to create internships and disseminate internship information to Wyomingites.
- Support additional higher education opportunities outside of a traditional four-year degree.
- Increase communication amongst education and workforce entities to encourage resource and information sharing about education and work opportunities.

**Entrepreneurial Ecosystem**

- Develop a network among individuals and groups with resources (financial, legal, workforce, etc.), including the development of a mentorship network.
- Increase access to capital, and market available start-up funding available to entrepreneurs.
- Decrease barriers in both entrepreneurs' personal and professional lives that keep them from starting businesses through start-up funding that helps with cost of living.



- Increase access to entrepreneurial classes and seminars around the state, specifically at community colleges.
- Market that Wyoming is a business-friendly environment.
- Increase access to high-speed internet across all corners of the state.
- Encourage the development of all businesses, and market the opportunities to start businesses in all sectors of the economy.

**Arts & Culture**

- Build from Wyoming's Western narrative to support a diverse arts and culture industry beyond cowboys to be "more than just the west."
- Connect higher education and K-12 education with currently established creative industries in Wyoming.
- Invest in arts education and Wyoming's arts and culture industry.
- Provide more internship opportunities to teach students and build connections with businesses in Wyoming.
- Connect, coordinate, and support existing art councils, organizations, and businesses within Wyoming.
- Support business practices that actively incorporate artistic and cultural components, such as blended industries and joint-business practices.
- Support the development of community makerspaces.



## Next Steps

### 1. Ongoing discussion with ENDOW for Final Recommendations Report (August 24th, 2018)

The newly formed ENDOW: ENGAGE Council is charged with continuing, and hopefully growing the dialogue with ENDOW that began with the ENDOW: ENGAGE Summit. Continual advocacy for the perspectives of the next generation included in this report and in subsequent discussions will be integral to the success of ENDOW: ENGAGE and ENDOW. As ENDOW prepares its Final Recommendations Report for August 24th, it is important that Wyoming's Next Generations have their perspectives included in this 20-year vision so that it can be brought to fruition, and we can inherit the future of Wyoming we want.

### 2. ENDOW: ENGAGE Four-Year Strategic Plan (November 1st, 2018)

As we look forward into the future of ENDOW: ENGAGE, having a definitive strategic plan will be key to the organization's success. By having a focused set of plans, subsequent ENDOW: ENGAGE Councils can work towards common goals of empowering our leaders in the state to engage in the leadership of the economy. This four-year strategic plan will be very different from any other report released by the ENDOW: ENGAGE Council. Rather than discussing specific recommendations for economic development, this document will serve to guide the ENDOW: ENGAGE Council as it develops alongside Wyoming's growth. This document will detail how ENDOW: ENGAGE will continue to network throughout all of Wyoming at in-person events, through social media, and other creative 21st century methods. By continuing to develop ENDOW: ENGAGE, we hope to provide more fleshed-out bylaws and organizational structure for a transparent and active organization. We also hope to see the development of an ENDOW: ENGAGE Advisory group that will allow former ENDOW: ENGAGE Council leaders the opportunity to stay involved, provide input, and be tapped as resources for knowledge and expertise. This strategic document will ultimately elaborate upon how to execute the mission and vision of ENDOW: ENGAGE in years to come.

### 3. Gubernatorial Transition Plan (November 15th, 2018)

Soon after the submission of the ENDOW: ENGAGE Four-Year Strategic Plan, the ENDOW: ENGAGE Council will be responsible for coordinating with the incoming gubernatorial administration. ENDOW: ENGAGE Leadership will be responsible for presenting how they plan to interface with the newly elected governor and their staff. Along with building relationships, this transition shall inform upcoming ENDOW: ENGAGE activities, economic diversification strategies within the state of Wyoming, and the Four-Year Strategic Plan to bring the new administration on board with the goals and objectives for the next four years.

## Additional Information About ENDOW: ENGAGE

### Mission

ENDOW: ENGAGE (Empowering the Next Generations to Advance and Grow the Economy) strives to:

1. Provide a single-day forum for 16-35 year-old, Wyoming-connected persons to give feedback to the ENDOW Executive Council so that they can help craft the strong, diverse, and robust economic future that they want to inherit.
2. Establish a continuous feedback system between Wyoming's Next Generations and the ENDOW Executive Council.
3. Demonstrate the state of Wyoming's respect for and attention to issues and perspectives important to Wyoming's Next Generations.

### Vision

ENDOW: ENGAGE is a one-day, annual summit that creates a basis for 16-35 year old Wyoming-connected persons to provide feedback directly, actively, and continuously with each other, the ENDOW Executive Council, and other Wyoming dignitaries. ENDOW: ENGAGE encourages dynamic and inclusive discussions from all of Wyoming's Next Generations to craft their thriving and diverse economic future through year-round in-person breakout sessions, global participation, comprehensive surveys, and Executive Council Representation.



**Goals**

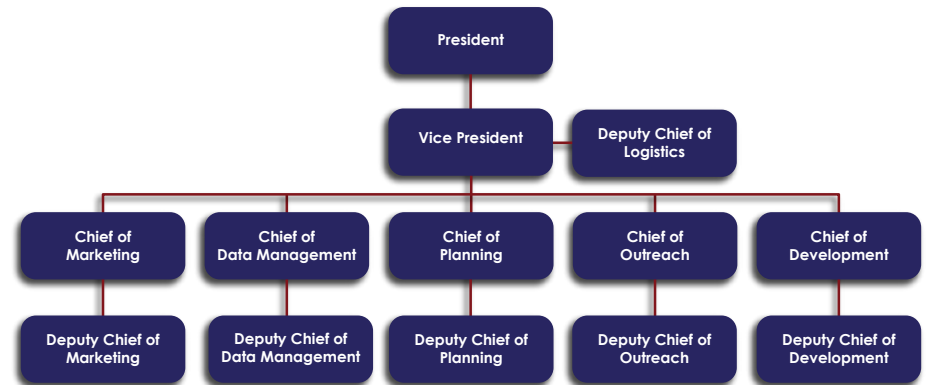
1. Participation: Feeling excited to voice concerns and suggest solutions.
2. Empowerment: Facilitating the courage to speak about issues.
3. Social Connectedness: Networking with peers, ENDOW Executive Council, Wyoming dignitaries, and all of Wyoming’s communities in the government, nonprofit, and private sectors.
4. Inclusivity: Creating an atmosphere where everyone in the ENDOW: ENGAGE Target Audience feels safe to participate in creating Wyoming’s future, regardless of age, race, color, ethnicity, religion, sex, gender expression, gender identity, sexual orientation, socioeconomic status, national origin, technological access, education level, disability, military status, marital status, or familial status.
5. Transparency: Processes and goals should be open, accountable, and honest.
6. Longitudinal Impact: Fostering stronger interaction between the state of Wyoming and its Next Generations for the duration of ENDOW’s 20 year plan and beyond.
7. Sustainability: Wyoming’s Next Generations’ influence extends beyond the event.

**Target Audience**

ENDOW: ENGAGE targets all 16-35 year old persons residing in or connected to the state of Wyoming, including high school juniors and seniors, community college students, University of Wyoming students, students and residents from other institutions, professionals, tradespeople, Wyoming migrants, and members of the Wind River Indian Reservation.

**General Organization Structure, Roles, Responsibilities, and Bylaws**

**General Organization Structure**





**Roles and Responsibilities**

Role	Responsibilities
President	Organize and facilitate communication and relationships between the ENDOW: ENGAGE Council, long-range strategic planning, facilitate ENDOW: ENGAGE Council elections, develop and execute ENDOW: ENGAGE policies, procedures, mission, vision, and goals
Vice President	Assist President in development and execution of long-range strategy, mission, vision, and goals, liaison with Governor's Office, general manager of event logistics, point person for ENDOW: ENGAGE
Deputy Chief of Logistics	Assist VP with logistics coordination
Chief of Outreach	Liaison between institutions, External communication (not marketing related)
Deputy Chief of Outreach	Assist Chief of Outreach as needed
Chief of Marketing	Branding, developing targeted marketing strategies, promotional materials, social media management, media management (print, radio, television, internet)
Deputy Chief of Marketing	Assist Chief of Marketing as needed
Chief of Data Management	Develop mechanisms of feedback before, during, and after ENDOW: ENGAGE, construct useful findings and recommendations from feedback
Deputy Chief of Data Management	Assist Chief of Data Management as needed
Chief of Planning	Organize personnel, develop and execute ENDOW: ENGAGE programming, manage registration
Deputy Chief of Planning	Assist Chief of Planning as needed
Chief of Development	Assist President with strategic planning efforts, develop and adhere to reporting deadlines to ENDOW, work with Chief of Marketing and Chief of Outreach to implement the continual engagement of participants globally
Deputy Chief of Development	Assist Chief of Development as needed



**Bylaws****Leadership**

- Positions:
  - President
  - Vice President
  - Chief of Marketing
  - Chief of Data Management
  - Chief of Planning
  - Chief of Outreach
  - Chief of Development
- Apply at Summit. Application includes: name, education, work experience, personal statement, residence/origin, and optional discussion of advantages/disadvantages.
- Between Chiefs and Deputy Chiefs, ENDOW: ENGAGE must strive for geographic diversity with at least one council member originating from or currently residing in each of the following categories:
  - Northwest Wyoming (Big Horn, Hot Springs, Park, Teton, Washakie Counties)
  - Southwest Wyoming (Carbon, Lincoln, Sublette, Sweetwater, Uinta Counties)
  - Southeast Wyoming (Albany, Goshen, Laramie, Platte Counties)
  - Northeast Wyoming (Campbell, Crook, Johnson, Niobrara, Sheridan, Weston Counties)
  - Central Wyoming (Casper, Converse, Fremont Counties)

**Deputy Chiefs**

- Positions:
  - Deputy Chief of Marketing
  - Deputy Chief of Data Management
  - Deputy Chief of Planning
  - Deputy Chief of Outreach
  - Deputy Chief of Development
  - Deputy Chief of Logistics
- Apply at Summit. Application includes: name, education, work experience,

personal statement, residence/origin, and optional discussion of advantages/disadvantages.

- Should help define geographic diversity
- Each Chief will receive priority in filling their Deputy Chief position(s)
- Deputy Chiefs are confirmed by 2/3rds vote of ENDOW: ENGAGE Leadership
- The number of Deputy Chiefs may expand beyond one per Chief as needs arise and are confirmed with 2/3rds vote of ENDOW: ENGAGE Leadership.

**Council member positions**

- Apply at Summit. Application includes: name, education, work experience, personal statement, residence/origin, and optional discussion of advantages/disadvantages.
- Council members are volunteers that may be recruited by a Chief or Deputy Chief of a particular division without confirmation by ENDOW: ENGAGE Leadership.
- Chiefs are responsible for discussing with individual Council members that Council member's role and responsibilities.
- Council members may be selected by a Chief for a Deputy Chief position, which would be confirmed with a 2/3rds vote of ENDOW: ENGAGE Leadership.

Due to the rapidity of ENDOW: ENGAGE's organizational development and volume of requested deliverables, many bylaws have not yet been formally constructed during the creation and growth of ENDOW: ENGAGE. Development of ENDOW: ENGAGE Bylaws will be a point of emphasis for its long-term strategic planning in order to optimize participation, empowerment, social connectedness, inclusivity, transparency, longitudinal impact, sustainability in conducting itself ethically and fairly.



## ENGAGE Report Appendices

A separate companion document to this report can be found at [www.endowyo.biz/engage](http://www.endowyo.biz/engage) and includes the following appendices:

### Appendix A: Advanced Manufacturing Solution Session

- 1.1.1. Notes
- 1.1.2. Mentimeter Results

### Appendix B: Agriculture Solution Session

- 1.2.1. Notes
- 1.2.2. Mentimeter Results

### Appendix C: Energy & Natural Resources Solution Session

- 1.3.1. Notes
- 1.3.2. Mentimeter Results

### Appendix D : Tourism & Outdoor Recreation Solution Session

- 1.4.1. Notes
- 1.4.2. Mentimeter Results

### Appendix E: Community Health and Quality of Life Solution Session

- 1.5.1. Notes
- 1.5.2. Mentimeter Results

### Appendix F: Technology & Financial Services Solution Session

- 1.6.1. Notes
- 1.6.2. Mentimeter Results

### Appendix G: Healthcare Solution Session

- 1.7.1. Notes
- 1.7.2. Mentimeter Results

### Appendix H : Workforce & Education Solution Session

- 1.8.1. Notes
- 1.8.2. Mentimeter Results

### Appendix I: Entrepreneurial Ecosystem Solution Session

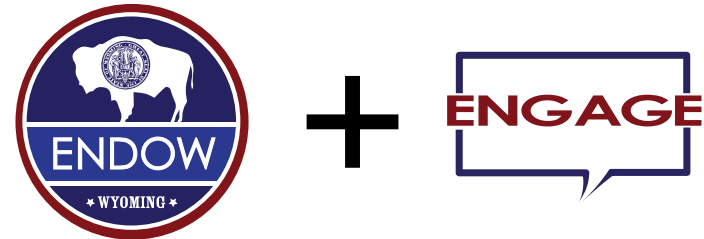
- 1.9.1. Notes
- 1.9.2. Mentimeter Results

### Appendix J: Arts & Culture Solution Session

- 1.10.1. Notes
- 1.10.2. Mentimeter Results

### Appendix K: Outreach Organizations

### Appendix L: Marketing Metrics



[www.endowyo.biz/engage](http://www.endowyo.biz/engage)

Prepared and Submitted by: Empowering the Next Generations to Advance and Grow the Economy (ENGAGE) Council

Submitted to:

Honorable Matt Mead, Governor of Wyoming  
Legislature of the State of Wyoming through the Joint Minerals, Business,  
and Economic Development Interim Committee  
ENDOW Executive Council

June 28, 2018



## Appendix D. Career and Technical Education - Gap Analysis Proposal

The ENDOW Executive Council is charged with:

*...reviewing existing career technical education programs and develop recommendations regarding opportunities to better coordinate existing public and private programs, and develop or acquire existing career technical education facilities to further technical education opportunities in the state.*  
W.S. 9-12-1402(a)(xii)

### Higher education recommendation:

Every ENDOW aspiration and set of recommendations identified higher education and the achievement of the state's higher education attainment goal as a critical building block for overall ENDOW success. In alignment with the ENDOW Priority Economic Sectors recommendations, review across industry sectors with specific focus on the Next Generation Engines would be most effective in supporting economic diversification and growth. It would likely have a greater impact on the alignment of higher education offerings if the analysis was broadened from simply programs that are only classified as career and technical education as specified in W.S. 9-12-1402(a)(xii) to those aligned with the Next Generation Engines coordinated across ENDOW Priority Economic Sectors.

In collaboration with the Wyoming Community College Commission, community colleges, the University of Wyoming, the Department of Education, Department of Workforce Services, and Wyoming Business Council, the Executive Council recommends a third-party industry specialist complete a comprehensive analysis to identify gaps between the availability of Next Generation Engines related programs inclusive of career technical education (CTE) programs in contrast to the priority economic sectors identified in this report.

More specifically, the ENDOW Higher Education Gap Analysis would focus on the following:

- 1. Current Production vs. Current Need** - It is important to understand what gaps exist in the current output of Next Generation Engine aligned programs including CTE programs and the existing demand for adaptable and skilled, trained employees in ENDOW Priority Economic Sectors. This component of the analysis would examine where production does not meet existing demand, and where there is demand without any production at all (e.g., no programs exist to provide the workforce).
- 2. Current Production vs. Projected Need** - Many of the industries ENDOW looks to grow do not exist or at least not at the thresholds desired. This component of the analysis would assess gaps in existing comprehensive programs and CTE offerings and workforce production as compared to the ENDOW Priority Economic Sectors assuming those sectors would grow to have location quotients at similar or greater levels than those of the nation.
- 3. Capacity to Deliver** - Comprehensive programs that specialize in specific industry sectors including CTE and other technology-rich programs often require specialized facilities and equipment. This component of the analysis would consider where those facilities exist, where there is capacity for growth in those facilities or compatible ones, and where new facilities may need to be built to accommodate the current and future needs of Wyoming.

**Funding necessary:** approximately \$250,000 for review of alignment and gaps across the ENDOW Priority Economic Sections; approximately \$150,000 for review of CTE only.



## Appendix E. Startup Wyoming Investment Proposal

### Introduction

Enrolled Act NO. 58, Original Senate File SF0118, 9-12-409 (2018) provides:

*The Wyoming business council in coordination with the economically needed diversity options for Wyoming (ENDOW) executive council, shall prepare a proposal under which the business council will invest in high growth startup business entities which provide opportunity to advance the entrepreneurial ecosystem in Wyoming in priority economic sectors identified in the approved twenty-year comprehensive economic diversification strategy under W.S. 9-12-1402(a)(iv). The proposal shall be directed to investments for seed stage development or growth stage funding of business entities.*

This report, prepared by representatives of the Wyoming Business Council and the ENDOW Executive Council, includes the referenced proposal. Together with other tools being used and developed by the Wyoming Business Council, ENDOW Executive Council and others, the mechanism for investments in high-growth startups proposed here strives to build a thriving environment for startups and entrepreneurs in Wyoming.

### History

The State of Wyoming currently invests in private equity and has implemented programs that aim to encourage investment in startups.

### State Private Equity Investments

According to the Wyoming State Treasurer Annual Report Wyoming State Total Fund Investment Performance, as of June 30, 2017, the State held \$417,723,851 Total Investment Value in private equity funds. (Funds include Cheyenne Capital Fund, L.P., Access Venture Partners II, Hamilton Lane Nowood Fund, L.P., Neuberger Berman Sauger Fund, L.P., Plus, Real Estate funds).

There are no criteria for the companies in which these funds may invest, including residency in Wyoming. Therefore, while these funds serve a purpose in the state's portfolio, they are limited in their ability to provide opportunity to advance the entrepreneurial ecosystem in Wyoming in priority economic sectors identified in the approved twenty (20) year comprehensive economic diversification strategy.

### Small Business Investment Credit Program

The Wyoming Small Business Investment Credit (SBIC) program provides alternative sources of capital to qualifying Wyoming businesses and entrepreneurs. In 2010, the Wyoming Legislature allocated \$30 million to the program in the form of tax credits. The funds are managed by private investment companies certified and regulated by the Wyoming Business Council (WBC) to make investments in Wyoming businesses. Insurance companies invest designated capital in amounts greater than required minimum investments into qualified businesses, either in the form of debt instrument or equity purchase and receive a tax credit equal to the amount of their investment.

To be considered for SBIC financing, a business must:

- Be headquartered and principally operated in Wyoming (at least 60 percent of the employees are employed in Wyoming or the business has committed in writing to move to Wyoming as a condition of the investment)
- Intend to remain in Wyoming after receipt of the qualified investment
- Have 250 employees or less
- Not be a franchise or an affiliate of an SBIC and not be predominantly engaged in:
  - o Professional services provided by accountants, doctors or lawyers
  - o Banking or lending
  - o Insurance
  - o Direct gambling activities

While the SBIC program is an effective finance option for some companies, its structure—which combines return-minded investors and minimum threshold investments—primarily incentivizes loans for low-risk companies. As many



high-growth startups prefer equity financing and are individually risky investments, a program that encourages higher risk tolerance and equity investment is needed to advance the entrepreneurial ecosystem in Wyoming.

### Analogues from Other States

Startup investment programs from 9 states (Alaska, Arkansas, Colorado, Hawaii, Maine, Nebraska, Oklahoma, South Dakota, Hawaii, Arkansas and Tennessee) were examined to understand benefits and risks of different investment mechanisms.

These programs are summarized below.

**Program:** Seed Capital Fund

**State:** Oklahoma

**Entities or Entity Who Oversees the Program:**

Innovation to Enterprise (i2E) - Private Non-Profit

**Description:**

Investments in the form of convertible debt or preferred equity. i2E also manages an SSBCI program and works with a group of accredited angel investors.

**Eligibility Requirements:**

Industry Sectors with high growth potential (aerospace, agri-business, communications, energy, medical devices, robotics, nanotechnology, etc.)

Small Business must be in Oklahoma

**Other Necessary Rules:**

Requires participating co-investors

**Individual Investment/Award Size:** \$100k-\$1M

**Funds Available:** Unknown

**Benefits:**

Access to capital for companies in the “pre-bank” phase of company

**Risks:**

High likelihood of failure

Marketability time and ROI could be lengthy

**Website:** <https://i2e.org/tag/oklahoma-seed-capital-fund/>

**Program:** Seed Investment Program

**State:** Nebraska

**Entities or Entity Who Oversees the Program:**

Nebraska Dept. of Economic Development

**Description:**

Investment, along with a private partner, in business for commercialization of a product/process

**Eligibility Requirements:**

High growth, early-stage companies involved in non-retail industries adding value to products/processes in Nebraska, fewer than 500 employees

**Other Necessary Rules:**

Applicants must provide 100% of matching funds equal to investment

**Individual Investment/Award Size:** Up to \$500k

**Funds Available:** Unknown

**Benefits:**

Commercialization of prototype or process

**Risks:**

High likelihood of failure

Marketability time and ROI could be lengthy

**Website:** <https://opportunity.nebraska.gov/program/nebraska-seed-investment-program/>

**Program:** Seed Grant Development, Loan and Equity Capital

**State:** Maine

**Entities or Entity Who Oversees the Program:**

Maine Technology Institute - Private Non-Profit

**Description:**

A graduated funding scheme that aims to support entrepreneurs/companies engaged in R&D activities leading to commercialization or follow-on capital

**Eligibility Requirements:**

Must be a State organization or have a core footprint in State

Potential for strong economic impact

Compelling innovation

**Other Necessary Rules:**

Minimum of 1:1 Matching Funds

**Individual Investment/Award Size:**

Up to \$25k for seed grant

Up to \$500k for Development Loan

Up to \$200k for Equity Capital

**Funds Available:** \$7M Annual appropriation

**Benefits:**

Develop innovation

Grow Business

Support ecosystem

Bring R&D

**Risks:**

Concentrated initiatives

Short Time Frames

Time to Market

**Website:** <https://www.mainetechnology.org/get-funded/find-a-funding-program/>



**Program:** Venture Capital Authority

**State:** Colorado

**Entities or Entity Who Oversees the Program:**

High Country Venture-independent fund manager

**Description:**

Venture capital funding to fill a gap in private capital markets and provide seed and early stage capital investments. Managing partner (High Country Venture) has final decision-making authority. Can fund businesses through debt, equity, or convertible debt.

**Eligibility Requirements:**

Must be headquartered or have principal business operations in Colorado.

Must meet small business regulations defined by SBA. Cannot be engaged in certain businesses (banking, real estate, oil and gas, gambling, etc.)

**Other Necessary Rules:** NA

**Individual Investment/Award Size:**

Minimum individual investment: \$250k

Maximum total investment: \$3.375M

Target individual investment: \$500k-\$3M

**Funds Available:** Original 2004 allocation of \$50M in premium tax credits

**Benefits:**

Provides access to capital that may not be available in traditional financing models.

Develop diversity in economy.

**Risks:**

Like existing Wyoming SBIC program (tax credits).

Time to Market.

**Website:** <https://choosecolorado.com/doing-business/incentives-financing/venture-capital-authority-vca/>

**Program:** Advanced Industry Early Stage Capital and Retention Grant Program

**State:** Colorado

**Entities or Entity Who Oversees the Program:**

Colorado Office of Economic Development and International Trade

**Description:**

Grants for companies using technologies developed in proof of concept grants and other early stage startups that have created viable products, meet a market need, and can be created or manufactured in Colorado and exported globally.

**Eligibility Requirements:**

Operate within the advanced industries.

Have headquarters located in Colorado or have at least 50% of its employees based in Colorado.

Have received less than \$20 million from grants and third-party investors, since inception.

Have annual revenues of less than \$10 million.

Demonstrate that the technology is adequately through the Proof of Concept Phase.

**Other Necessary Rules:**

Required Matching funds of 1:2.

**Individual Investment/Award Size:** Up to \$250K funds.

**Funds Available:** Biannual appropriation for FY16-17 was \$15M.

**Benefits:**

Encourage innovation.

Encourage global exports.

Encourage development of advanced industries.

**Risks:**

High likelihood of failure.

Marketability time and ROI could be lengthy.

Requires match.

**Website:** <https://choosecolorado.com/doing-business/incentives-financing/advanced-industries/early-stage-capital-retention-grant/>

**Program:** 49th State Angel Fund

**State:** Alaska

**Entities or Entity Who Oversees the Program:**

Municipality of Anchorage

**Description:**

Investment capital to create and grow startup and early-stage businesses.

Operates as a "Fund of Funds" (does not invest directly into businesses).

**Eligibility Requirements:**

Must be in Anchorage municipality.

Fewer than 750 employees.

Less than \$20M in transaction size.

Must be a "high-growth" company.

**Other Necessary Rules:**

Federal money is matched 1:1 with private money/investment.

**Individual Investment/Award Size:** Unconstrained-guidance for minimum is \$100k.

**Funds Available:** Federal allocation of \$13.2M from State Small Business Credit Initiative.

**Benefits:**

Typically an equity investment.

Provides diversity in economy.

**Risks:**

Time to market.



The information was silent on capital calls?

Companies must meet cash flow performance requirements within certain periods of time

**Website:** <http://www.49saf.com/about/faq>

**Program:** Launch Tennessee Impact Fund

**State:** Tennessee

**Entities or Entity Who Oversees the Program:**

High Country Venture-independent fund manager

**Description:**

Invest in Tennessee-based startups with a mission to solve fundamental social, environmental and economic challenges.

**Eligibility Requirements:**

Must meet high-growth criteria

Tennessee-based

for-profit

Generating less than \$1M in revenue

Must have MVP

Must be in the areas of agriculture, healthcare, sustainable living, education, clean energy and financial services

Less than 20 employees

**Other Necessary Rules:**

Investments match private dollars and 25% rate.

LaunchTN will not take board seats or set deal terms but will provide ongoing support and access to a variety of resources

Companies located anywhere may apply for funding; however, they must be willing to build the majority of their company in Tennessee

**Individual Investment/Award Size:** 20 seed-stage investments over a three-year period ranging from

\$50k-\$150k

**Funds Available:** \$1.71 M

**Benefits:**

Provide Tennessee companies access to early-stage venture capital, in part by attracting and leveraging significant private capital investment  
Support companies solving social and environmental challenges in industry sectors that are core to Tennessee's economy.

Ensure promising early-stage companies have the capital they need to grow their business in Tennessee.

**Risks:**

Requires private dollars for investment.

**Website:** <https://launchtn.org/entrepreneur-programs/capital-programs/impact-fund/>

**Program:** HI Growth and Hawai'i Targeted Investment Program

("HiTIP")

**State:** Hawaii

**Entities or Entity Who Oversees the Program:**

Hawaii Strategic

Development Corporation (HSDC)

**Description:**

State invests in venture capital funds, which subsequently invest in Hawaii-based companies.

**Eligibility Requirements:** Hawaii Based Business

**Other Necessary Rules:** minimum 1:1 match from private funding.

**Individual Investment/Award Size:** Unconstrained, at Venture Capital Fund discretion. Range from \$250k to \$1M.

**Funds Available:**

\$13M from SSBCI Credits

Additional \$8M State Appropriation

\$60M+ investment from Employees' Retirement System of the State of Hawaii

**Benefits:**

Provide Hawaii companies access to early-stage venture capital, in part by attracting and leveraging significant private capital investment

Ensure promising early-stage companies have the capital they need to grow their business in Hawaii.

**Risks:** NA

**Website:** <http://hsdc.hawaii.gov/hi-growth-initiative/>

**Program:** Arkansas Institutional Fund

**State:** Arkansas

**Entities or Entity Who Oversees the Program:**

Arkansas Development Finance Authority

**Description:**

"fund of funds" venture capital investment program

**Eligibility Requirements:**

Companies are chosen by fund managers, must be Arkansas company

**Other Necessary Rules:** NA

**Individual Investment/Award Size:** Unconstrained – generally >\$1M

**Funds Available:** \$70M Commitment

**Benefits:**

Designed to produce a surplus, contributes to state revenue

Creates access to capital

**Risks:** NA

**Website:** <https://adfa.arkansas.gov/program/arkansas-institutional-fund/#programs-content>





In general, the purpose of each of these programs is to encourage innovation and the growth of startups, rather than to make a significant return for the organization or the state. Except for the programs in South Dakota and Nebraska, which are managed by state representatives, the programs are managed by a nonprofit or independent investment manager. They require varying degrees of match and provide varying levels of investment. All include some level of requirement of in-state residency for companies to qualify for investment.

### Recommendations for State Investment in Startups

The ENDOW Executive Council and the Wyoming Business Council propose that state equity investment in high-growth business entities be combined with other tools—including, but not limited to Kickstart Grants, Business Development and Innovation Zones, a statewide network of entrepreneurs and mentors, professional services, business coaching and statewide entrepreneurship branding—to create an environment that provides tools and funding for entrepreneurs at every stage of growth.

Recommended guidelines for state investment in startups follow. As a mechanism for funding less than \$50,000 is provided through Kickstart grants, the following guidelines are intended for larger investments.

### Individual Investment Size

The ENDOW Executive Council and the Wyoming Business Council recommend that the state participate in two levels of investment:

- Angel investment: Up to \$500,000
- Venture investment: \$500,000-\$2,000,000

### Management

An independent fund manager residing in Wyoming will manage angel and venture investments. The WBC, in consultation with any advisors it requires, will interface with the fund manager.

### Matching funds

For angel investment (up to \$500,000), a 10% match by non-state funds is required.

For venture investments (\$500,000-\$2,000,000), no match is required. It is recommended that the independent fund manager use his/her discretion for these large investments.

### Types of Investments

The fund will take equity or convertible debt investments.

### State Involvement in Companies

No board seat or other intervention will be taken by the

fund or State.

### Requirements of Companies

To qualify for investment under this program, companies must meet the following criteria:

- The company must be headquartered in Wyoming with a majority of its employees working in Wyoming.
- The company must have less than 50 employees.
- The company must be a high-growth startup, guided by the following language.

*Different in nature from a lifestyle business, wherein the entrepreneur may intend to conservatively grow a business to support herself or himself and a family, a high-growth startup is a company with a business model that is designed to be repeatable and scalable. A high-growth company has:*

- o Unique, differentiated product or service
- o Clear, compelling value proposition
- o Scalable product and business model
- o Large target addressable market
- o Knowledgeable, coachable founding team
- o Exit potential
- The company must be in one of the ENDOW target industries:
  - o Natural Resources
  - o Tourism and Recreation
  - o Agriculture
  - o Advanced Manufacturing
  - o Knowledge and Creative



**Risk and Intent of Investments**

Returns on a portfolio of startup investments can be expected, but individual investments are inherently risky. Recent studies showed that among angel-funded ventures, approximately:

- 30% fail completely;
- 50% return less than the initial investment;  
(Source: Federal Reserve Bank, Atlanta)
- 7% of the ventures create 75% of the gains in a portfolio. (Source: Kauffman Foundation)

Investments in this program should be regarded primarily as a tool to help grow Wyoming businesses and create an entrepreneurial ecosystem, rather than as a means for earning returns for the state.

**Reporting and Compliance**

The independent fund manager is responsible for reporting to the ENDOW Executive Council and Wyoming Business Council on an annual basis. Categorized by the five focus industries identified by ENDOW (not by individual companies), the report will include:

- Investment dates and amounts
- Employees
- Follow-on capital

The State Auditor will ensure that the fund is managed within any rules provided, including all Wyoming and U.S. statutes.

**Additional Statutory or Other Rules Required**

The Wyoming Business Council, in consultation with the Wyoming Attorney General's Office, has determined that, aside from appropriation of funds, statutory authority is sufficient to implement the program as drafted, barring any future changes to the program.



## Appendix F. Wyoming Business Council Permits Report

### Introduction

Enrolled Act NO. 58, Original Senate File SF0118, 9-12-108 (2018) provides:

*The Wyoming business council shall prepare and present to the economically needed diversity options for Wyoming (ENDOW) executive council a proposal under which the business council, by exercising the duties and authority provided in this section, will assist businesses within the state in priority economic sectors identified in the approved twenty (20) year comprehensive economic diversification strategy under W.S. 9 12 1402(a)(iv) in obtaining necessary state, local and federal permits and licenses. The business council shall consult with businesses within Wyoming to identify specific federal, state and local regulations which unduly impede or delay permitting and licensing in the state and shall identify those regulations recommended for review by the entity with jurisdiction to eliminate unnecessary provisions.*

This report, prepared by the Wyoming Business Council, includes the referenced proposal. Together with other tools being used and developed by the Wyoming Business Council and others, the ideas for continuous improvement of permitting and licensing processes presented here strive to build a thriving environment for startups and entrepreneurs in Wyoming.

The Wyoming Business Council currently helps new businesses obtain the licenses and permits they need by being the liaison between the potential business owner and the state entities involved in the licensing and permitting process.

### Methodology

To understand how to better serve new companies, the Wyoming Business Council surveyed businesses to identify barriers to permitting and licensing in priority economic sectors. The agency also drew from ENDOW economic engine subcommittee discussions on permitting and licensing, and examined the current process for licensing and permitting for new businesses in Wyoming.

### Findings

While the survey yielded valuable high-level anecdotal evidence, more engagement from industry is needed to make actionable conclusions. Uncertainty and redundancy in permitting and regulation are thematic in the ENDOW work to date.

The Wyoming Business Council's critical examination of the current licensing and permitting process shows a general lack of coordination among processes and entities. Businesses must negotiate multiple agencies, there is no central resource for the timeline of permits, the process involves referrals to different agencies, the responsibilities of different agencies are not well defined and companies often do not know where to start the process.

### Recommendations

The Wyoming Business Council proposes implementing some or all the following actions to help make licensing and permitting simpler and faster for new businesses:

- Increase engagement and feedback from industry to foster continuous improvement
  - To better understand the specific barriers licensing and permitting currently present to industry, and to continuously improve businesses' experiences, the Business Council will increase engagement and feedback via:
    - Next Generation Sector Partnerships
      - *Industry-led, community supported partnerships that identify and solve problems for industry; Next Generation Sector Partnerships are currently being implemented by the Wyoming Workforce Development Council in partnership with the Wyoming Business Council, Department of Workforce Services, and others. This type of collaboration is about listening to business to better understand how communities can help them succeed.*
    - Further ENDOW subcommittee work
      - *ENDOW subcommittees are identifying mechanisms to grow each of the five economic engines. The Wyoming Business Council will continue to work with subcommittees to help develop and implement solutions related to permitting*



*and licensing.*

- o Soliciting feedback from companies applying for permits and licensing

*No one knows the challenges better than companies who are currently in the process of obtaining permits and licenses. The Wyoming Business Council will gather feedback from these companies to identify ways to improve the process.*

Innovation Zones—will help them know where to start.

- Create an integrated, one-stop-shop website for startups and new businesses seeking permits and licenses to operate in Wyoming  
An examination of the current process revealed that new businesses are spending too much time being referred to different people and agencies. A single website that provides the information needed for every agency may decrease the time it takes to receive permits and licenses and decrease uncertainty for those preparing to obtain licenses and permits This website should include:
  - o Links to each application
  - o Contact information and expertise of key people
  - o Links to local permitting sites
  - o Approximate process timelines
- Improve and streamline coordination among state entities  
The current process involves extra time spent jumping from one agency to another. Streamlining data sharing and coordination among state agencies would overcome this barrier. Some agencies involved are:
  - o Secretary of State
  - o Wyoming Business Council
  - o Department of Revenue
  - o Department of Workforce Services
  - o Business Resource Network
- Integrate permit information with other tools for startups in Wyoming  
Often, companies do not know where to start or know what permits or licenses they may need. Collocating this information with material on programs from which startups may benefit—like Kickstart and Business Development and



## Appendix G. Business Development and Innovation Zones

As defined in Senate Enrolled Act Number 64, passed by the Wyoming Legislature in the 2017 General Session, Business Development and Innovation Zones are:

*“Defined geographic areas within the state in which local, state and federal permitting and other regulatory requirements will be met for all or significant segments of industry located in the zone or in which industries or businesses would be benefitted substantially as a result of being located in proximity to each other.”*

The ENDOW Executive Council provides the following recommendations to implement Business Development and Innovation Zones.

### Three-Zone-Type Model

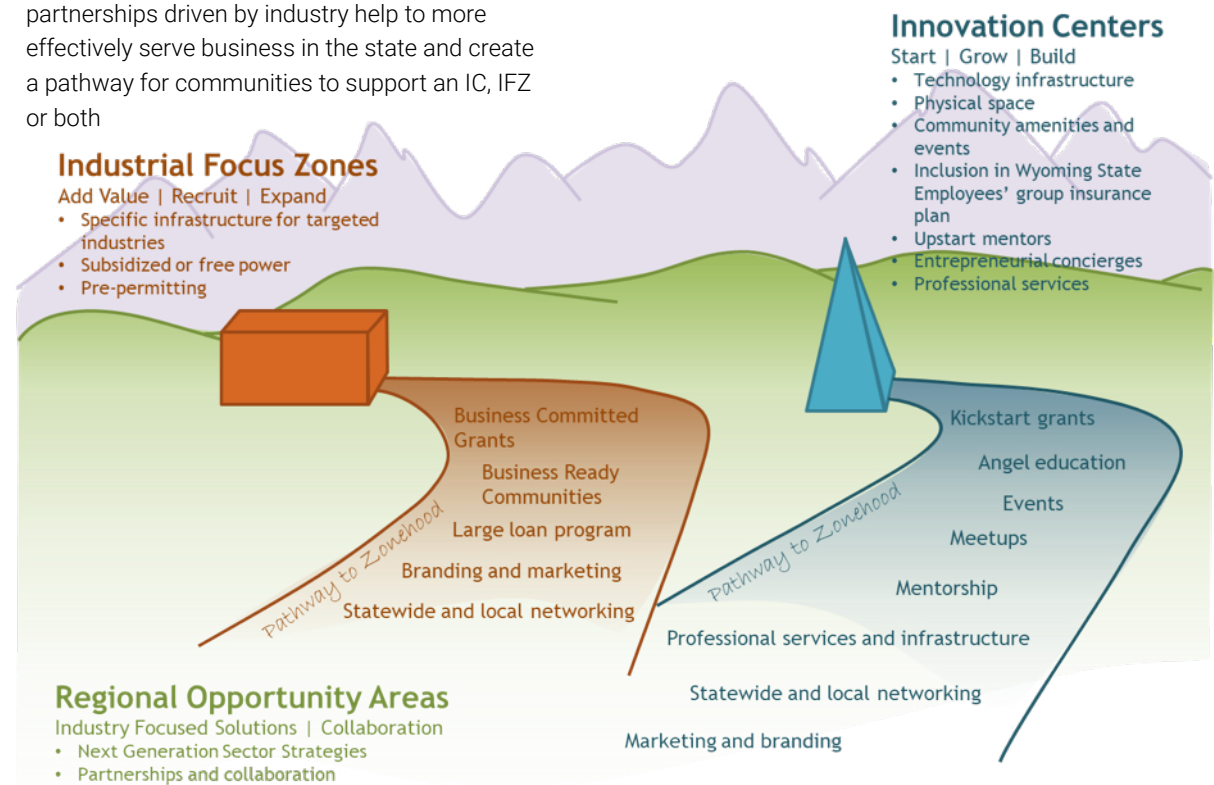
The ENDOW Executive Council recommends using a three-zone-type model that meets the requirements above and creates fit-for-purpose tools that help implement the vision and aspirations of ENDOW.

The Executive Council appreciates that much has been done by other organizations—including individual communities, UW, the Wyoming Workforce Development Council, and others—to create places that promote economic development. The model presented here strives to add to those efforts and to create ways to move the needle toward economic diversification.

The three-zone-type model includes:

- Innovation Centers (ICs), which focus on accelerating development of an entrepreneurial ecosystem
- Industrial Focus Zones (IFZs), whose purpose is to encourage value-added and other industrial development by creating places where infrastructure and other policies that encourage that activity are implemented
- Regional Opportunity Areas (ROAs), where partnerships driven by industry help to more effectively serve business in the state and create a pathway for communities to support an IC, IFZ or both

Figure 1. The Three-Zone-Type Model.



Informed by successes and failures of other states and countries the three-zone-type model is custom-built for Wyoming. Each of the zone types are designed to be attractive to potential zone residents—whether those are entrepreneurs, Wyoming companies, or potential recruits from outside the state.

ENDOW is supportive of building entrepreneurial and industrial ecosystems and partnerships throughout the state. To that end, pathways to zonehood have been outlined for each zone. Grounded in industry-led partnerships in ROAs, these pathways provide tools that help communities fulfill the criteria required to host a zone, and to show that their community will benefit from and support an IC or IFZ. The tools provided on pathways are useful tools in themselves and may be adequate—independent of an IC or IFZ—for achieving the goals of an industry or community.

Criteria for each of the zone types ensure that locations and assets in Wyoming are being leveraged to achieve the purpose for each type. ICs and IFZs will be designated only in communities that show they meet critical criteria and that a zone in that community would have a greater benefit to Wyoming than a zone in another location.

The ENDOW Executive Council recommends that state agencies develop an action plan for each zone type including staffing, resources, funding and statutory changes needed to implement the zones, along with an application process to determine locations. This will be a coordinated effort, led by the Wyoming Business Council, and in partnership with other state agencies and organizations including the Department of Environmental Quality, the Department of Workforce Services, Department of Administration and Information and others. Applications and the application process will be reviewed and approved by the ENDOW Executive Council. Data collected as part of the Regional Assessment will be used in the application process.

## Innovation Centers

### **Why**

Accelerating development of an entrepreneurial ecosystem has been identified as a key component of growing each of the economic engines. ICs were created to help develop this ecosystem by recruiting entrepreneurs and investors, growing startups to be successful contributors to Wyoming's economy, and retaining those businesses once they are on their own.

### **Who**

#### ***Beneficiaries/Residents***

Wyoming entrepreneurs across ENDOW economic engines, including recipients of Startup:Wyoming grants, current WTBC residents, and other entrepreneurs.

#### ***Applicants for Zonehood***

Regional partnerships between at least two of the following: private company, non-profit, government, educational institute.

#### ***Administration***

The Wyoming Business Council and other agencies and advisors

### **What**

ICs are physical places that are hubs for the services and infrastructure that help entrepreneurs succeed in Wyoming. They include at least one building that houses state-incubated services and infrastructure for entrepreneurs and are neighbored by space where graduates and other entrepreneurs may set up shop permanently.

While they work closely with academic institutions, their independence from the University of Wyoming and others allows for more flexible solutions for all entrepreneurs.



**Investments and Policies in Zones**

Residents of ICs will benefit from physical necessities and amenities including:

- Physical workspace
- Critical technologic infrastructure, like computing capabilities and telepresence
- Community amenities and events in the zones—leveraging current assets to create a place that is attractive to entrepreneurs and innovators
- Other industry-specific critical physical infrastructure, informed by specific industry needs

The people, services and education that entrepreneurs and startups need to succeed will be housed in ICs. They will be accessible to all Wyoming entrepreneurs, with priority given to Startup:Wyoming funding recipients and residents of the ICs. These include:

- Upstart mentors  
*Experienced entrepreneurs who have had real success (and failure) in starting companies, upstart mentors are residents in innovation centers and can offer guidance and coaching to entrepreneurs who are looking for similar success.*
- Entrepreneurial concierges  
*Able to connect entrepreneurs with the services and experts they need, entrepreneurial concierges know the people to go to, and understand what it takes to be successful in Wyoming.*
- Attorneys (patent, business, etc.), accountants, marketing professionals and other professional services
- Twice-yearly “Wyoming Startup Weekend” Accelerator
- Sponsorship for attendance at world-class Acceleration Programs (e.g., Techstars, Y-Combinator, etc.)

Policies in ICs are meant to break down the barriers to becoming an entrepreneur in Wyoming. They include:

- Inclusion of IC residents and residents’ families in the Wyoming State Employees’ Group Insurance plan  
*Lack of healthcare insurance has been identified as a barrier for growing startups in Wyoming. By allowing residents of ICs to benefit from the Wyoming State*

*Employees’ Group Health Insurance Plan, Wyoming may be able to increase entrepreneurship in the state.*

- Risk and Intent of Investment  
*While returns on a portfolio of investments in high-growth startups may be expected, startups are individually risky. According to the Federal Reserve Bank in Atlanta, 30% fail completely and 50% return less than the initial investment. The Kauffman Foundation has asserted that about 7% of startups create 75% of the gains in a portfolio. As such, a high rate of failure with several great Wyoming successes should be expected.*

Metrics for success for ICs are intermediate waypoints to the aspirations put forth by ENDOW related to entrepreneurship and new business.

**Where**

ICs are meant to attract innovators and entrepreneurs. As such, the Executive Council recommends that they are in places that have worked to create a community of entrepreneurs, mentors and investors. These places will leverage existing community amenities and investments to create attractive environments that inspire involvement in entrepreneurialism.

ICs will focus on entrepreneurs and startups within ENDOW’s five economic engines. While pilots (see below) will be somewhat sector-agnostic, in general, ICs will cluster residents by discipline to foster collaborative innovation. Industry-led partnerships in Regional Opportunity Areas (see “Regional Opportunity Areas” below), along with data collected in the Regional Assessment, can help inform where clusters will be located.

The following criteria will guide the designation of ICs. Pilot locations will be used to test the Innovation Center model, and others will be designated via a specific application process defined by the Wyoming Business Council. To help communities meet the criteria for becoming a zone, a path to zonehood has been outlined.



**Critical Criteria for Zones**

- Clear community support
- Demonstrated community of entrepreneurs who could benefit from a physical IC in one of the five economic engines defined by ENDOW.
- Defined vision
- Demonstrated commitment to one or more of the five economic engines defined by ENDOW.
- Competitive advantage over other areas. This could include existing industry and mentors, an environment that is attractive to entrepreneurs and/or investors, or other assets that promote entrepreneurship.
- One site that can provide physical office space for entrepreneurs and service providers. At least 5 sites available within walking distance (.5 miles) where related businesses may be able to form a cluster or graduates may be able to expand to after residency in the IC.
- Sites that leverage previous state investment in infrastructure are preferred but not required.
- Demonstrated benefit to Wyoming, beyond the community where the IC is located.

**Path to Zonehood**

ENDOW is supportive of building the entrepreneurial ecosystem throughout the state. The Executive Council recommends developing the following tools to help communities meet the criteria for becoming an IC. Regardless of whether a community qualifies completely for an IC, these steps will help foster an entrepreneurial ecosystem there. One hypothetical way a community might take this path:

- Participation in industry-led partnerships in ROAs  
*Participation in ROA partnerships can help communities define a vision for the types of entrepreneurship that fit their community. Placing current businesses at the center of the table will help a region understand exactly what industries are conducive with a region, where the gaps are, and where entrepreneurship and innovation can fit in to the economy.*
- Angel education program

*An angel education program will help educate investors in Wyoming communities on the benefits, risks, and steps involved in making angel investments. This is meant to help investors consider the option of making such investments, thereby growing opportunities for entrepreneurs who need this kind of funding.*

- Statewide networking  
*An online platform for statewide networking among entrepreneurs, mentors and investors. This will connect people statewide, and will focus on creating local relationships.*
- Entrepreneur Meetups and Educational Events  
*There is nothing that can replace a face-to-face correspondence between like-minded innovators. The meetup program will help facilitate these encounters by organizing and funding local meetups throughout the state, and some organic networking sessions: some will have speakers. While these will focus on bringing people together on a local level, a statewide calendar will be maintained, and entrepreneurs will be able to attend meetups in towns and cities across the state.*
- Mentorship for entrepreneurs  
*Mentorship programs that will help connect entrepreneurs to mentors locally and statewide. Participation in and promotion of this program in communities will help to develop the entrepreneurial muscles in a community.*
- Access to professional services (remote or in person) for local entrepreneurs  
*The professional services that are available at ICs will be available to Kickstart Grant recipients and other entrepreneurs statewide.*
- State marketing and branding  
*A state brand that communicates Wyoming's entrepreneur-friendly environment, directed toward potential entrepreneurs and investors in and outside the state.*
- Annual 307 Entrepreneurship Festival  
*A celebration of entrepreneurs and entrepreneurship in Wyoming, this event includes an invite-only pitch-event for Accredited Investors.*

**Pilots**

The Executive Council recommends that pilot ICs be used to test the IC model, as determined by metrics for success, before permanent ICs are designated. To leverage the state's previous investment, the Executive Council recommends that the UW





Innovation Technology Business Centers in Casper and Sheridan be converted to ICs.

The tested model, incorporating learnings from pilots, will be applied in permanent Innovation Centers, which will be designated based on the above criteria.

### How

The ENDOW Executive Council recommends that the Wyoming Business Council and other state agencies develop an action plan including staffing, resources, funding and statutory changes needed to implement ICs, along with an application process to determine locations of ICs. The application process will ensure that the locations fulfill the criteria above. The ENDOW Executive Council will make location decisions based on those applications.

## Industrial Focus Zones

### Why

The Advanced Manufacturing and Natural Resources subcommittees have identified creating and adding to industrial complexes near critical assets such as mines and workforce as a way to help grow the subsectors they have identified. IFZs aim to address this recommendation.

### Who

#### *Beneficiaries/Residents*

Industrial companies within the economic engines identified by ENDOW from Wyoming and recruited from outside the state.

#### *Applicants for Zonehood*

Partnerships made up of (at least) a non-profit or government entity, a private or public company established in the zone, and at least one other entity.

### **Administration**

Wyoming Business Council, in partnership with other state agencies including the Department of Environmental Quality and Department of Workforce Services.

### **What**

IFZs are large areas that are pre-permitted for anticipated industrial uses and provide infrastructure that enables industry success. The Executive Council recommends that the zones provide for the following investments and policies in the zones, and that IFZs are tailored to the specific subsectors identified by the Executive Council.

### **Investments and Policies in Zones**

- Pre-permitting  
*Acceptable levels of pollutants for air quality, water quality and other considerations will be pre-determined by the Wyoming Department of Environmental Quality in Industrial Focus Zones, thereby reducing uncertainty for incoming residents, and DEQ permit processes will be streamlined in the zones. Local and state permits for infrastructure and buildings will be obtained for the entire zone. The state will examine any federal requirements to understand where inefficiencies and barriers exist, and will advocate for improvements statewide, with special focus on IFZs.*
- Basic infrastructure and Services  
*Basic infrastructure and services such as roads, utilities, fire stations and law enforcement will be provided to meet the needs of anticipated activity in IFZs.*
- Specific infrastructure for targeted industries  
*Specific infrastructure critical for growth of subsectors identified by the Executive Council will be provided in IFZs. Leaders from specified subsectors will be consulted to ensure infrastructure is fit-for-purpose. Specific examples may include:*
  - Expansion of the Integrated Test Center and associated office space to encourage CO<sub>2</sub> to value development
  - Office space to house innovators
- Connection to leading researchers and experts



*A concerted effort will be made to retain and attract the academic and industry leaders in each of the identified subsectors to IFZs or educational institutes in Wyoming.*

- Connection with ICs  
*Each IFZ will have an associated IC. Preferably, that IC will be in or proximal to the IFZ, but the partnership may be facilitated via technology in cases where it makes most sense for the IFZ and IC to be in separate places.*

## Where

Leveraging current assets is critical for *IFZs* to be successful. As such, the Executive Council recommends that IFZs are located in places where current assets exist. Critical criteria and a path to zonehood for locations with leverageable assets are put forth below.

### Critical Criteria for Zones

- Industry focus that leverages local assets and is in line with ENDOW identified subsectors.
- Well-defined plans for attracting major anchor tenants.
- Clear community support (can be shown with town halls, petitions, etc.).
- Documented market feasibility for industry in the long term from a third party.
- Area must encompass or have access to significant resources or industrial assets that are a competitive advantage over other areas and states (informed by asset maps, based on public data and the Regional Assessment).
- Zoning must accommodate anticipated industry focus.
- At least one shovel-ready site appropriate for focus industry, with potential for 10 more.
- Current infrastructure (e.g., power, gas, fiber, water, wastewater, reclaimed water, transmission, natural resources, and pipelines) minimizes required investment.
- Land ownership minimizes regulatory and leasing barriers.
- Demonstrated benefit to Wyoming, beyond the community where the IC is located.

### Path to Zonehood

The Executive Council recommends the following tools to help communities strive toward meeting the criteria outlined above.

- Participation in industry-led partnerships in ROAs  
*Participation in ROA partnerships can help communities define a vision for the types of industrial development that fit their community. Placing current businesses at the center of the table will help a region understand exactly what industries are conducive with a region, where the gaps are, and how an IFZ may fit in to the economy.*
- Current programs and grants  
*To help build leverageable infrastructure and cultivate competitive advantage, the Executive Council encourages communities to use current programs like Business Ready Communities and Business Committed grants and the Large Loan Program.*
- Industrial networking  
*An online platform that helps connect industrial partners, including developers, contractors, subcontractors, manufacturers and others, this new tool will be built by the Wyoming Business Council with the purpose of connecting partners statewide and encouraging local relationships.*
- Statewide marketing and branding  
*A brand that communicates Wyoming's industrial readiness, especially as it relates to ENDOW's five economic engines, will be created by the Wyoming Business Council.*
- Local marketing and branding  
*Resources available for creating industrial brands at the community level. These will be coordinated with the state brand to maximize the effectiveness of both.*

### Example Locations

Any area in Wyoming is encouraged to take advantage of the tools provided in the pathway above and strive toward meeting the criteria required to become an IFZ. For illustrative purposes, examples of areas in Wyoming that may fit the criteria include:

- Northeast Wyoming



*Northeast Wyoming has participated in successful partnerships in the past, has many options for industry focus that leverages world-class resource bases, and has undertaken efforts to zone areas with available sites appropriately for industrial uses in line with those in line with ENDOW's economic engines. Current infrastructure is significant, including state assets.*

- **South Central Wyoming**  
*South Central Wyoming has strong partnerships among community industry, with clear community support. In addition to having a current manufacturing base, South-Central Wyoming has significant globally unparalleled resources, and has undertaken efforts to identify land that may be suitable for large industrial uses, leveraging existing transportation and other infrastructure.*
- **Central Wyoming**  
*With a solid base of industry, clear vision, community readiness and proximity to abundant natural resources, central Wyoming may also be well-positioned to host an IFZ.*

## How

The Executive Council recommends that the Wyoming Business Council, in partnership with the Department of Environmental Quality, Department of Workforce Services and other state agencies, develop an action plan including staffing, resources, funding and statutory changes needed to implement IFZs, along with an application process to determine locations of IFZs. The application process will ensure that the locations fulfill the criteria above. The Executive Council will make location decisions based on those applications.

## Regional Opportunity Areas

### Why

The need for stronger communication and greater engagement with industry around the state has been identified in the Executive Council's discussions within each economic engine. ROAs work to overcome these barriers by focusing on businesses

and the people they need. Partnerships in ROAs form the foundation to help facilitate a pathway to IC and IFZs.

### Who

#### ***Beneficiaries/Residents***

Businesses and communities in Wyoming

#### ***Applicants for Zonehood***

Partnerships among industry and community leaders

#### ***Administration***

Wyoming Workforce Development Council in partnership with the Wyoming Business Council and Department of Workforce Services

### What

Regional opportunity areas are places that focus on businesses and the people they need by building meaningful productive collaborations. They are where Next Generation Sector Partnerships—industry-led, community supported partnerships that work to identify and solve problems for industry in the area—are implemented. By letting industry drive the effort, these partnerships provide the right workforce and other solutions for business in the area.

In certain cases, these partnerships may identify an IC or an IFZ as a solution to industry barriers in the area. By helping communities define a vision and industry focus, bring partners together, and gather community support, ROAs help provide a pathway for communities to show they can support an IC, IFZ, or both.

#### ***Investments and Policies in Regional Opportunity Areas***

To ensure partnerships have the resources they need to collaborate and enact industry solutions, various investments and policies based on industry-identified gaps may be needed. The Executive Council recommends the following resources



be made available to ROAs and businesses who participate in them to help reach the industry goals of the area:

- Technical, personnel and funds for managing ROA
- Increased workforce training funds up to \$16,000/person
- Payroll tax exemption for internships and apprenticeships
- Hiring and screening assistance
- Funding for facilitation of events and studies to improve supply chain connectedness
- Funding for studies to define industry needs and opportunities
- Funding for implementing industry opportunities, projects and infrastructure
- Grants and/or scholarships for adults to enter or continue higher education tuition-free
- 3-month pre-hire housing stipends
- Funding for development of industry-focused K-12 programming and curriculum
- Funding for community marketing

### Where

ROAs must be driven by business and supported by government. As such, they must be designated according to business needs. At the Next Generation Sector Partnerships Academy, a lunch event for the program, groups were initially organized by county clusters. As they coalesce, these areas will change and grow to be defined by industry components.

#### **Critical Criteria for Zones**

To be considered a regional opportunity area, stakeholders must include the following:

- Business members from a target industry
- Education (K-12, community colleges, universities, adult basic education, etc.)
- Workforce development
- Economic development, and other community-based organizations

Additionally, an ROA must have a boundary defined by one or more industry components such as:

- Labor shed
- Resource base
- Supply chain
- Transportation and logistics

### **Path to Zonehood**

Working in industry-led partnerships is a new way of thinking and doing for many communities. As such, partnerships will be supported every step of the way.

- The Next Generation Sector Partnerships Academy  
*The Next Generation Sector Partnerships Academy was hosted by the Wyoming Workforce Development Council on May 30-31, 2018 in Lander, WY. At this Academy, teams of community and industry partners from every region of Wyoming gathered to learn how to launch a Next Generation Sector Partnership, and how to ensure their partnerships are successful and sustainable. This model will enable teams to forge a unified approach to working with an industry sector.*
- Ongoing Support  
*Each ROA will receive ongoing technical assistance customized to each region's needs and requests, including help on recruiting industry champions, building and sustaining regional partnerships, future visioning and strategic planning.*

### How

The Wyoming Workforce Development Council has begun work on implementing Next Generation Sector Partnerships. At their May 2018 meeting, they created a Next Generation Sector Partnerships and Career Pathways Committee. In coordination with these efforts, the Executive Council recommends that the Wyoming Business Council, in partnership with Department of Workforce Services and other state agencies, develop an action plan including staffing, resources, funding and statutory changes needed to implement ROAs, along with an application process to determine locations of ROAs. The application process will ensure that the locations fulfill the criteria above. The Executive Council will make location decisions based on those applications.



Appendix #3: Educational  
Attainment Initiative

**Post-secondary Educational Attainment**

**5- and 10-Year STRATEGIC PLAN**

ADOPTED May 19, 2020



Created by: Wyoming’s Educational Attainment Executive Council<sup>1</sup> and Western Interstate Commission for Higher Education Attainment Task Force<sup>2</sup>

Co-Chairs Dr. Stefani Hicswa, President Northwest College, and Dr. Neil Theobald, Acting President University of Wyoming (*UW President Designee, Dr. Kent Drummond, University of Wyoming*)



<sup>1</sup> 2019 Session Laws Ch. 149 “Educational Attainment Executive Council”

<sup>2</sup> W.S. 21-16-201

# EXECUTIVE SUMMARY

## INTRODUCTION

Post-secondary educational attainment refers to people obtaining credentialed education after high school. Higher education plays a critical role in diversifying the economy and ensuring a vibrant future for the state. Wyoming has identified five economic engines/economic pillars to ensure long-term economic vitality: Advanced Manufacturing, Agriculture, Knowledge & Creative, Natural Resources, and Tourism & Recreation. In order to increase the level of higher education in our state's workforce, Wyoming leaders have worked together to establish statewide goals for increasing the number of degrees, certificates, and certifications, also called education credentials, held by Wyoming citizens. This document sets forth Wyoming's statewide goals with specificity and explains the actions various state entities will take over the next ten years to achieve them.

## GOALS

Collaborative efforts by Wyoming governors, legislators, state and local agencies, business and industry, and education leaders have resulted in numerous laws and policies laying the groundwork for this plan.<sup>3,4</sup> The primary goal of the attainment work was formally set forth as follows:

### **Educational Attainment Joint Resolution 2017**

#### **Wyoming Community College Commission and University of Wyoming Board of Trustees**

*Wyoming's higher education attainment goal is to increase the working population of 25-64 year olds that possess a valuable post-secondary credential (degree or certificate) to 60% by 2025 and 75% by 2040.*

*Further, a significant focus must be to reduce disparities and achievement gaps among underserved student populations including first generation, low income, minority, and adult students. Hereinafter referred to as the economic-level goals.*

### **Educational Attainment Executive Council 2018 Executive Orders and 2019 SEA61**

*Develop the 5- and 10-year Education Master Plans (EMP) to achieve the educational attainment goals of 67% by 2025 and 82% by 2040 as outlined in the Executive Orders. The goals specifically address, "achievement gaps focusing on underserved populations, including first-generation, low-income, minority, and adult students" with emphasis on women, Native Americans, and the growing Hispanic sub-populations. Hereinafter referred to as the aspirational-level goals.*

### **Collaboration by Design**

Achieving these goals will be a collaborative effort in which each element will have multiple entities and areas of implementation. Progression or lack of progression for any one goal does not establish progress or success, but it is the cumulative effect over time and accelerating progression that will result in successful outcomes. Monitoring and progress as well as revisions will be managed as reported in the Implementation Action Plan on p. 8. The Attainment Council also recognizes that each percentage toward closing the attainment gap is a success. As such, the focus on the plan is not as much on the absolute calculations, but progress toward meeting the goals.

## FOCUS AREAS AND METRICS THAT MATTER

### *Focus Areas*

Primary areas of focus of the 5-year and 10-year Wyoming Statewide Educational Master Plans to achieve the attainment goals of 60-67% by 2025 and 75-82% by 2040 are:

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<sup>3</sup> <https://communitycolleges.wy.edu/initiatives/attainment/>

<sup>4</sup> 2017 Session Law Ch. 120, Section 67, Footnote 11-recruitment and retention plan

- I. Alignment of Workforce, Workplace, and Post-Secondary Programs
- II. Access and Infrastructure for Recruitment, Retention, and Completion
- III. Funding and Affordability
- IV. College-Going Culture K-12, Adults, and Business/Industry

*Metrics That Matter*

The Metrics that Matter reflect the end metrics after the 10-year plan ends in 2030. Data based on 2018 baseline listed in parentheses.

1. Third grade reading level should increase by 10% in alignment with W.S. 21-3-410 (c) in which 85% of all third grade students should meet or exceed proficiency levels *{Current combined English Language Arts test: 54.8%}*
2. High school graduation of entering 9<sup>th</sup> grade students should increase by 10% *{Current: 81.7}*
3. High school to post-secondary credential program matriculation within one year of high school completion should increase by 20% *{Current: 42.7}*
4. Credential productivity rates (per 100 FTE) at the community colleges will increase by 100%; and university should increase by 70% *{Current: 30.3 community colleges; 25.1 university}*
5. Adult participation and completion of higher education will increase 300% *{Current: 17.8}*

*Credential Defined*

A certificate offered for credit or a degree at the associate or baccalaureate level OR non-credit credential that leads to state licensure or industry-recognized credential that earns a minimum living wage and has career progression capacity.

*Regional and Statewide Attainment Goals (Regions are the same as the Wyoming Workforce Development Council and Community College service areas to ensure alignment across efforts.)*

<b>Region/Counties</b>	<b>60% by 2025</b>	<b>67% by 2025</b>	<b>72% by 2030</b>
Northwest Park, Washakie, Big Horn	59.6%	66.5	71.2
West Fremont, Teton, Hot Springs	66	73	78
Southwest Carbon, Sweetwater, Sublette, Unita, Lincoln	52.5	59.3	63.7
Central Natrona	53.9	60.8	64.4
Northeast Sheridan, Johnson, Campbell	56.2	63.1	67.8
East Goshen, Platte, Converse, Niobrara, Weston, Crook	55.3	62.1	66.9
Southeast Laramie, Albany	70.5	77.9	84
<b>State of Wyoming</b>	<b>60</b>	<b>67</b>	<b>72</b>

# EDUCATIONAL MASTER PLAN

## WHAT IS EDUCATIONAL ATTAINMENT AND WHY DOES IT MATTER?

*The #1 indicator of economic and social mobility is higher education attainment*

The purpose of the state attainment effort is to better prepare our citizens for the jobs of today and tomorrow. The urgency was recognized across the state as an economic issue. The current post-secondary attainment stands at only 46% of the adult population having a post-secondary credential above a high school diploma. When the state goals were initially set in 2017 by Joint Resolution of WCCC and UW BOT, the goals were established as the working population of 25-64 year olds as 60% by 2025 and 75% by 2040, hereafter referred to as the economic-level goals. Through the economic diversification initiative through Governor Mead, Executive Orders set aspirational goals at 67% by 2025 and 82% by 2040. The 2019 Legislature codified in legislative action and was subsequently signed into law by newly elected Governor Mark Gordon, who stated, “*We are stronger together.*”

Attainment has measurable economic impact at the personal and state level. For example, individuals with a bachelor’s degree typically make about \$1.5 million more than high school graduates over their lifetimes and experience higher levels of employment, even through economic downturns. Associate’s degree holders also receive positive returns on their college investments, generally earning about \$400,000-\$800,000 more than high school graduates over the course of their lives<sup>5</sup>. Increasing post-secondary attainment through the baccalaureate degree is correlated with increased industry and job creation in local communities. Additionally, the baccalaureate-level attainment is correlated with entrepreneurship and new industry<sup>5</sup>.

Researchers have found that the financial benefits of a college degree are greatest for students who are least likely to enroll, such as students of color and individuals from low-income families. Empowered by their improved financial circumstances, college graduates make significant contributions to their local economies. As the share of college-educated workers in a community rises, employment levels and wages increase for non-college graduates as well. This generates more economic activity and greater tax revenue. In fact, researchers have found that for every \$1 a state invests in higher education, it receives up to \$4.50 in return<sup>6</sup>.

### FOCUS AREA I

**Alignment of Workforce, Workplace, and Post-secondary Programs:** Wyoming’s public institutions will produce graduates with the necessary college credentials and will engage in research through the University of Wyoming to meet the high demand/high priority workforce needs of the state’s employers.

**Objective 1. Gap Analysis.** Conduct comprehensive gap analysis of projected job openings, potential skills profiles for future jobs, and post-secondary program credential generation (ENDOW report page 137). Include analysis of access/capacity for public institutions to deliver aligned programs with projected skills profile.

#### Metric

Number of projected job openings (demand) in high priority/high demand occupations/skills profiles (as identified by the Department of Workforce, WBC, and ENDOW) minus the number of credential/degrees (supply) that prepare individuals for either entry into these occupations or with the necessary skills profiles.

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<sup>5</sup> Center for Education and the Workforce. Georgetown University. 2018.

<sup>6</sup> EMSI. Wyoming Higher Education Return on Investment. 2014.



### Targets

The gap between demand and supply of employees in high demand/high priority occupations or skills will be reduced by 40% by 2025, 53% by 2030, and by 80% by 2040. Occupations or skills identified as high priority/high demand may change over this period of time.\*

*\*These targets will be updated to reflect the information obtained from the gap analysis.*

**Objective 2. Credentialed employees.** Increase the number of incumbent workers with a post-secondary credential.

### Metric

The number of 25-64 year olds employed in the state who have a post-secondary credential (ACS).

## **FOCUS AREA II**

**Access and Infrastructure for Recruitment, Retention, and Completion:** Wyoming will develop a credentialed workforce to support the expansion and diversification of its economy in ways that make it more competitive in a 21<sup>st</sup> century global economy. The mix of credentials will be appropriate to the needs of Wyoming's economy.

### Targets

- Of the 60%, 27% will have a baccalaureate degree or higher and 33% an associate degree or certificate by 2025 {Current: 46% postsecondary credential above high school diploma; 21% certificate/associate degree; 17% baccalaureate; 8% graduate}
- Of the 67%, 30% will have a baccalaureate degree or higher and 37% an associate degree or certificate by 2025
- Of the 72%, 32% will have baccalaureate degrees and 40% an associate degree or certificate by 2030.

**Objective 1. Economic Impact and ROI.** Wyoming will conduct an economic impact study and ROI for post-secondary education by region based on achieving the economic-level of 60% and aspirant-level 67% by 2025 and cumulative impact by 2030.

**Objective 2. Out-of-state student imports.** Wyoming public institutions will enroll 10% more out-of-state students by 2025, 15% more by 2030, and 30% more by 2040.

**Objective 3. Credentialed state in-migration.** Wyoming will become a net importer of working-age adults 25-44 years old with postsecondary credentials by 2025 to achieve the balance of the attainment goals.

**Objective 4. Post-secondary credential completion.** By 2025 the six-year graduation rate at the University of WY will be 63%, 65% by 2030, and 70% by 2040.

By 2025, the three-year graduation rates at the WY Community Colleges (collectively) will be 43% by 2025, 46% by 2030, and 50% by 2040.

Graduation rates will be as reported to IPEDS initially. Once fully implemented, Wyoming's SLEDS will track this for adults, part-time students, etc. and will begin monitoring these data immediately.

**Objective 5. Post-secondary credential time-to-completion.** By 2025, 60% of the graduates of the University of Wyoming will have completed bachelor's degrees within 6 years. The rate will be 63% by 2030.

By 2025, 25% of graduates with associate's degrees will have completed at Wyoming's Community Colleges (collectively) within 3 years. The rate will be 27% by 2030.

**Objective 6. Workplace Learning:** By 2025, Wyoming post-secondary institutions will provide access to credential programs through distributed and/or workplace learning for incumbent workers for 50% of high demand/high priority programs. Distributed and workplace learning will incorporate mentorships, internships, apprenticeships, cohort groups, and/or asynchronous on-line delivery. By 2030, this amount will increase to 60%.

### **FOCUS AREA III**

**Funding and Affordability:** Wyoming higher education will be affordable to both students and taxpayers.

**Objective 1. Higher Education as nearly free as possible.** Students of all income levels should be able to complete a community college education without incurring unreasonable debt. Students of all income levels should be able to complete a baccalaureate degree program at the University of Wyoming without incurring a median cumulative debt of more than \$10,000 and at the community colleges with no more than \$2,500 debt.

#### Metric

Median unmet need as defined by total cost of attendance minus state, federal, and institutional grant aid minus earnings from reasonable work (e.g., 15 hrs/week for 48 weeks) minus estimated family contribution (EFC).

#### Targets

Community College resident students: median unmet need should be no more than \$2,000 per year by 2025, \$1400 by 2030, and \$0 by 2040.

University of Wyoming resident students: median unmet need should be no more than \$4,000 per year by 2025, \$3500 by 2030, and \$2,500 per year by 2040.

### **Objective 2. Increased productivity**

#### Metric

Credentials produced (weighted by level) per 100 FTE.

#### Targets

The University of Wyoming and the Community Colleges collectively will increase the number of credentials such that credential production per 100 FTE increases by 10% by 2025 and by 25% by 2030.

\*Credential weights suggested are 0.25 for certificates, 0.5 for associates, 1.0 for baccalaureate, 1.5 for masters, and 3.0 for Ph.D. and first professional.

**Objective 3.** Wyoming will establish a need-based state aid program and a scholarship program for adults including working adults.

#### Metric

Proportion of enrollees (both traditional students and adults) in programs identified as high priority who receive scholarships from a program that is funded by integrating an innovative funding mechanism such as, but not limited to public/private partnership.

### Targets

Wyoming will develop a Hathaway-like program for low-income and/or working Wyoming adults.

By 2025, Wyoming will have established a structure for an adult scholarship program that incorporates public/private participation or other innovative funding mechanisms, and 5% of traditional-aged students enrolled in high-priority programs, and 10% of adults (aged 25+) will be funded by the scholarship program. By 2030, Wyoming will be a national leader in combining public and private funding to support grants and scholarships for traditional and adult learners aligned with long-term economic priorities, and 10% of traditional-aged students and 15% of adults enrolled in high-priority programs will receive funds from the scholarship program.

## **FOCUS AREA IV**

**College-going Culture:** In order to ensure that its citizens are prepared to meet the challenges of an increasingly complex world and that they have the knowledge and skills needed to succeed in a 21<sup>st</sup> century global economy, Wyoming's adult population (ages 25-64) will have post-secondary education attainment levels among the top 5 states in the nation.

### Metric

No. of individuals aged 25-64 holding Credit Certificates, Associates, Baccalaureates, Masters, Doctoral degrees, or first professional degrees (from the American Community Survey) plus an estimate of the number of credential holders using the Georgetown Center's methodology and identified Wyoming credentials, divided by the total population aged 25-64 as provided by Wyoming's credential definition.

### Targets

- 60% of the 25-64 population will have a post-secondary credential of value by 2025 to meet minimum economic-level need. 67% for aspirant-level need. By 2030, this will be 65% economic-level and 72% for aspirant-level.
- 75% will have such a credential by 2040 to meet minimum economic-level need. 82% for aspirant-level need.
- Special populations of adults, women, minorities, first generation, and low income will complete within 5% of peer group by 2025, 3% by 2030, and at the same rate by 2040.

**Objective 1. High School Graduation Rate.** By 2025, Wyoming's high school graduation rate based on entering 9<sup>th</sup> graders will 85%, 87% by 2030, and 92% by 2040.

**Objective 2. College Matriculation Rate.** By 2025, the college participation rate of recent WY high school graduates will be 60%, 63% by 2030, and 70% by 2040.

**Objective 3. College Adult Participation Rate.** By 2025, the college participation rates of first-time attending adults (20-49 years old) will be 53.5 (for every 10,000 adults without a credential), 60 by 2030, and 72 by 2040.

# IMPLEMENTATION AND ACCOUNTABILITY

## ENSURING THE STATE'S NEEDS ARE MET

The Educational Attainment Executive Council and its WICHE Attainment Taskforce and Support Staff did not wait for the plan to be completed before beginning implementation of elements of the plan. Additionally, the body received significant feedback and public comment that there must be assurances that the plan would be implemented and that a structure was in place to monitor efforts and ensure accountability. Listed below are three separate lists that outline: efforts accomplished during 2018-2020; priorities established for 2020-2021; and, partner/entity implementation and accountability planned for 2021-2023. Included in the last component regarding partner/entity implementation and accountability is the specific requirement that agencies and institutions/entities incorporate appropriate activities and develop strategic plans that will support Wyoming State Educational Attainment Strategic Plan implementation. These efforts vary from establishing tracking mechanisms such as the DWS credential tracking and integrating existing efforts such as WDE ESSA assessments to inclusion in organizational strategic plans such as the WCCC Statewide College System Strategic Plan or the community college and university institutional strategic plans.

Progress on the Focus Areas, Goals, Metrics, and Targets of this plan as well as the implementation strategies and accountability listed below will be monitored and tracked with progress reported annually beginning in 2020 by the WCCC as required in Wyoming Statutes. Updates and revisions to the plan based on current efforts, data, and economic changes will be reported as well.

### ACCOMPLISHMENTS 2018-2020

1. Statewide focus groups for feedback on the big areas and draft metrics the week of September 16, 2019 in Cheyenne, Laramie, Torrington, Sheridan, Casper, Riverton, Rock Springs, and Powell.
2. Rules process and implementation for Wyoming Works and Bachelors of Applied Science degrees were completed and implemented. Revised Wyoming Works statutes per 2020 Legislative Session removed barrier to returning students.
3. Implementation of BAS and new General Studies BA at the community colleges and UW have resulted in the UW General Studies BA producing graduates in December 2019 with more anticipated May 2020. Five of the community colleges have been granted authorization by the WCCC to proceed with developing BAS degrees. Four have been given BAS program approval by the WCCC. Two colleges have already conducted their accreditation site focus visits with Higher Learning Commission (HLC). One college has already received HLC approval to offer the BAS beginning Fall 2020.
4. Articulation Summit October 2019 Launching Graduate Wyoming Articulation was conducted in October 2019 with a focus on post-secondary educational attainment and the launch of Graduate Wyoming.
5. Common Transcript/Transfer Process development and implementation including reverse transfer has resulted in the selection of a software vendor to articulate across higher education institutions. The process through which the WCCC will receive the UW data for the state-level submission per the statute is in development.
6. First Quarter 2020, statewide public comment on draft plan, modify based on public comment, and final plan adoption has resulted in the modifications to the draft plan and adoption on May 19, 2020.
7. Conduct Gap Analysis to include a Skills Profile and Program Skills Gap and Economic Impact Study/ROI and subsequent inclusion in a revised plan has resulted in the EMSI being hired to complete the Skills Profile and Program Skills Gap studies. The remaining aspect needed is the Economic Impact Study/ROI.
8. SLEDS continue to develop the data governance structure and become operational and NGA Grant Metrics that Matter implementation. The state was successful in competitive SLDS national grant for \$3.2 million to move the SLEDS effort forward.

### Priorities Established for 2020-2021: IMPLEMENT STRATEGIES ACROSS ENTITIES

1. Completion of the Gap Analysis via Economic Impact/ROI Study.
2. Wyoming's Tomorrow Task Force will continue to meet throughout the next biennium to monitor, update, and recommend legislation to the JEIC on educational attainment in Wyoming with particular focus on adult learners.
3. Develop opportunities to increase apprenticeships, internships, and externships integration statewide across post-secondary credential programs utilizing the expanded IRAP rules for apprenticeships.
4. Implement Adult Readiness Assessment at the university and community colleges including Prior Learning Assessment that incorporates testing such as CLEP, work experience, specialized expertise, micro-credentials, competency-based, or industry-recognized credentials
5. Develop partner entities including the education entities and state agencies Strategic Plans or other appropriate entity agency document aligned with attainment plans
6. Systematic study/audit of public policy on the barriers to implementation and success of the educational attainment goals
7. Communicate plan with Wyoming citizens, business leaders and other interested parties

**Priorities Planned for 2021-23: Agencies, Entities, and Institutions Implementation and Accountability**  
*Development of Partner Strategic Plans, Assessment Plans, and Credential Tracking*

1. Pursuant to W.S. 21-18-202 and 9-12-1402, the Wyoming Community College Commission shall develop and implement a new statewide community college system strategic plan that, in part, integrates the appropriate aspects of this Educational Attainment Plan. The status of the plan development and implementation shall be required in advance of biennial and supplemental budget requests.

2. Pursuant to W.S. 21-18-202 and 9-12-105 and 9-12-1402, the seven community colleges shall develop their next college strategic plans, in part, in alignment with the statewide community college system strategic plan. Each college shall identify how it will create action plans and implement the attainment goals at the local and regional level consistent with this Educational Attainment Plan. Status updates shall be reported to the WCCC on a biennial basis in advance of the WCCC biennial and supplemental budget requests.

3. Pursuant to W.S. 21-17-108 and 9-12-105 and 9-12-1402, the University of Wyoming shall develop its next university strategic plan, in part, in alignment with this Educational Attainment Plan. The University shall identify how it will create action plans and implement the attainment goals. Status updates shall be reported to the WCCC on a biennial basis in advance of the UW biennium budget request.

4. The Wyoming Department of Education (WDE) and State Board of Education (SBE) shall develop a monitoring structure that integrates the ESSA or other state required accountability measures that, in part, align with this Educational Attainment Plan. The WDE shall develop a mechanism to involve the K12 districts in developing the monitoring process.

5. The Department of Workforce Services (DWS) shall develop a monitoring structure for state licensure and credentials earned outside the community college and university systems in alignment with the attainment plans at the regional and statewide levels. Status updates shall be reported to the WCCC on a biennial basis in advance of the DWS and WCCC biennium budget request. Wage data will be tracked for those with each level of credential and those without a credential by region.

6. As the coordinating agency, the WCCC shall monitor progress and provide status updates to the Governor's Office, and all collaborating entities, annually through 2023. All information will be publicly available on the WCCC website.