ECONOMICALLY NEEDED DIVERSITY OPTIONS FOR WYOMING





CHANGE IS INEVITABLE. GROWTH IS OPTIONAL.

-JOHN C. MAXWELL

TRANSFORMING WYOMING



- We must move beyond the boom-and-bust cycles that have driven our collective fate for too long.
- Support of Wyoming's natural resource, tourism and recreation, and agriculture industries.
- Grow additional sectors <u>alongside, not in lieu of them</u>, including <u>advanced</u> <u>manufacturing and the knowledge and creative sector</u> (healthcare, financial and professional services, digital technology, and arts and culture).

TRANSFORMING WYOMING (CONT.)

- We want to remove the perception that government will be responsible for achieving ENDOW's objectives.
 - We start from the premise that it is the 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 foster, and where possible, accelerate it, including education, workforce training, infrastructure, and research and development.
- We have better clarity about the near-term and less about the distant future.
- This report does not contain every answer, nor will every recommendation succeed or be the right solution for Wyoming.
- 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.



THE GOOD AND THE BAD...

• The good...

- $_{\rm O}$ 100% of our classrooms are connected via a 100-gigabit, redundant network
- $_{\rm O}$ Wyoming ranks in the top ten nationally in annual K-12 spending per student
- More than 92% of Wyomingite 25 and older have earned at least a high school diploma, the highest percentage in the country

• The bad...

- $_{\odot}$ Of all workers 18 years old, only 40% are still working in Wyoming ten years later
- Wyoming lost 5,595 residents between July 2016 and July 2017, the largest decline since 1989
- On a percentage basis, we graduate fewer students with bachelor's degrees (ranked 38th nationally).
- Wyoming ranks 46th in the United States with an average speed of 17 Mbps.

BLOCKBUSTER OR NETFLIX

- In 2004, Blockbuster had 9,000 stores and Netflix had 2.6 million subscribers.
- Today, Blockbuster has one store and Netflix has 130 million subscribers.

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?

REMEMBER, at their core, Blockbuster and Netflix offer the same service.





77)



THE PRIMARY, LONG-TERM (2038) OBJECTIVES OF OUR PLAN

53M123180M3

OUR OBJECTIVES AND ECONOMIC TARGETS

Aspiration: 100,000 new jobs (at least 35% in rural communities) in Wyoming by 2038

Employment Comparison of Base Case and ENDOW Case

Division of Economic Analysis, State of Wyoming, using REMI model and BEA data

Table 1:

Employment

104K new jobs

2016 Actual	2038 Base	2038 ENDOW
396,589	407,700	511,500

Gain s over 2016	Gains over 2038 Base
114,911 (29%)	103,800 (25%)

OUR OBJECTIVES AND ECONOMIC TARGETS (CONT.)

Personal Income

79% income growth

*20% higher than the base case

Table 2: Personal Income Comparison in Millions of 20216 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%)

OUR OBJECTIVES AND ECONOMIC TARGETS (CONT.)

Gross Domestic Product

79% income growth

*22% higher than the base case

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%)

OUR OBJECTIVES AND ECONOMIC TARGETS (CONT.)

Population

Table 4:

108,000 population growth

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

communities of greater

than 100,000 people

Gains over 2016	Gains over 2038 Base
134 <mark>,499 (23</mark> %)	108,200 (18%)

ECONOMIC CHANGE REQUIRES TAX CHANGE

- Economic diversification is about <u>eliminating</u> over-reliance on one industry segment (minerals) for employment and revenue to provide public services.
- Inaction ensures (and exacerbates) ongoing revenue problems and results in even fewer jobs and less talent.
- While ENDOW is absolutely necessary, it will not be sufficient to solve the ultimate revenue problem.
- The fiscal stability of the state and local governments requires improvement in our state tax policies. 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 and maintains Wyoming's business-friendly competitive edge.

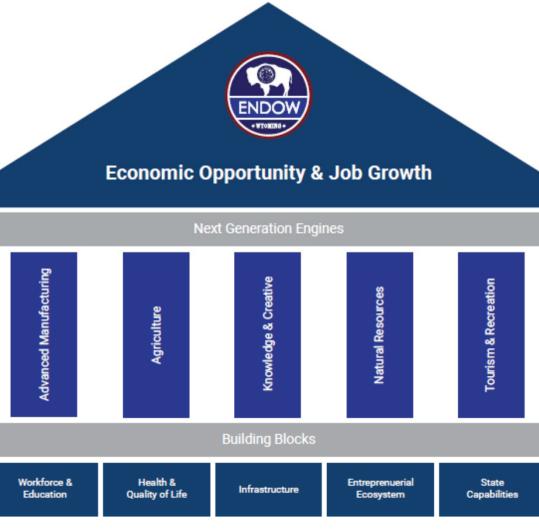


ENDOW Structure and timeline of *activities*



Advanced Manufacturing

Transforming Wyoming

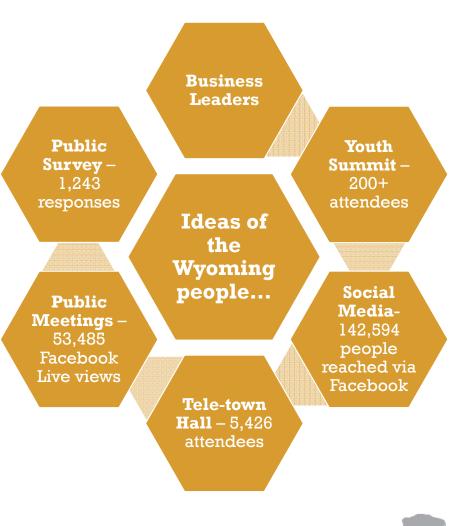


ENDOW TIMELINE

2017

- March ENDOW initiative signed into law (Senate File #0132)
- April Governor Mead appoints Executive Council and announces formation of a Rural Council
- August Socioeconomic Assessment of Wyoming report released
- December Preliminary Findings and Recommendations report released

Meetings were held in Casper, Cheyenne, Cody, Jackson, Laramie, Pinedale, and Sheridan.



ENDOW TIMELINE (CONT.)

2018

- January Governor Mead signs two executive orders (educational attainment and state tech contracts)
- March Six ENDOW bills pass and are signed into law (\$40 + million in appropriations)
- June ENGAGE Summit
- August 23, 2018 20-year Economic Diversification Strategy released and Governor Mead signs an executive order (educational attainment)

Meetings were held in Cheyenne, Jackson, Laramie, Riverton, and Rock Springs.



NEXT STEPS

2018

- August through December Development of 4-year action plans (see W.S. 9-12-1402(a)(v)), complete with policy recommendations and budget requests, <u>if</u> necessary, to implement the ENDOW vision
- **December** Leadership transition initial meeting (legislative and gubernatorial)

2019

• April – Post-legislative session strategy session and report review



HOW

THE ASPIRATIONS AND ACTIONS THAT WILL HELP US MEET OUR OBJECTIVES





It is in this space that we see the greatest opportunity to distinguish Wyoming from other states, rather than replicate their actions. See our recommendations on page 22.

Bolstering our Building Blocks Workforce and Education

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.

Bolstering our Building Blocks Workforce and Education (cont.)

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 –EO 2018-01 Educational Attainment and EO 2018-3 Educational Attainment Executive Council
- 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.
- See our additional recommendations on pages 25 and 26 of the ENDOW report..

Bolstering our Building Blocks Healthcare and Quality of life

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 of 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 tele-health delivery tools such as virtual and augmented reality.
- See our recommendations on page 28 of the ENDOW report.

Bolstering our Building Blocks Infrastructure

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).



Bolstering our Building Blocks Infrastructure (cont.)

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.
- 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.
- See our additional recommendations on page 30 of the ENDOW report.

Bolstering our Building Blocks Entrepreneurial Ecosystem

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.

Bolstering our Building Blocks Entrepreneurial Ecosystem (cont.)

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 SF118, Kickstart Wyoming (\$6 million)
- See our additional recommendations on pages 32 and 33 of the ENDOW report.

Bolstering our Building Blocks State Capabilities

Aspirations

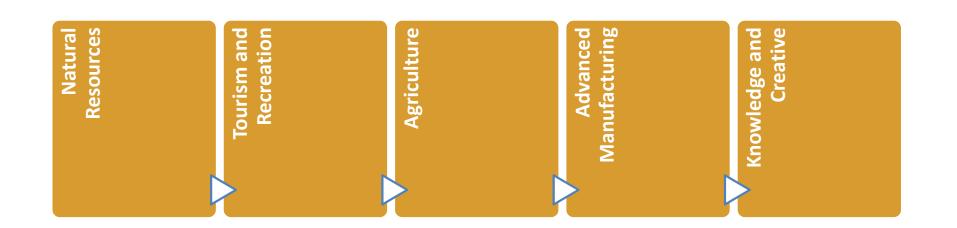
- To align state agencies and others in order to execute ENDOW's vision for economic diversification.
- For Wyoming to attract \$500 million annually in federal science and engineering funding by the year 2028. We further aspire to attract \$1 billion annually by the year 2038.
- To significantly improve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

Bolstering our Building Blocks State Capabilities (cont.)

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
- See our additional recommendations on pages 35 and 36 of the ENDOW report.

Fueling Next Generation Engines



Natural Resources

Wyoming's Natural Resource Base Presents Clear Pathways to Diversification

Leverage Natural Resources to Diversify Capture and Benefit From Untapped Resources Increase Production of Stronghold Resources

Natural Resources

Leverage Natural Resources to Diversify: Advanced Manufacturing

Why

- Wyoming's natural resource wealth can be used to produce tremendous amounts of power
- Very low-cost power and reductions in power have been shown to help attract manufacturers

Aspirations by 2038

• At least 10 additional manufacturing facilities that use or add value to Wyoming resources are located in Wyoming

- Develop policies and strategies to achieve the lowest cost power in the nation
 - Use our power to attract new industries and companies

Natural Resources Leverage Natural Resources to Diversify: Knowledge and Creative Economies

Opportunity

- About 70% of UW grads in the energy industry are employed out of state
- By keeping those grads here, Wyoming can create a core of knowledge workers, which is an advantage in attracting and growing other knowledge industries
- Energy activity is increasing rapidly in Wyoming, driven by the PRB
 - Rig count has increased about 10x in the past two years
 - Presents an opportunity to incentivize producers to hire UW grads and other energy knowledge workers

Aspirations by 2038

• At least 70% of energy workers in Wyoming have post-secondary credentials

- Retain and attract the energy knowledge sector
 - Develop severance tax reductions for hiring workers with advanced credentials
 - Leverage the energy knowledge sector to diversify to other knowledge industries

Natural Resources Capture and Benefit From Untapped Resources

Why

- 8 gigawatts of proposed but undeveloped wind energy in Wyoming, 472 GW of technologically possible capacity
- We rank **11**th in the country for solar potential but **49**th in installed generation (NREL)and **43**rd in per capita solar jobs (SEIA)
- Northeast Wyoming is home to one of the highest-grade rare earths deposits in North America

Aspirations by 2038

- 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 (NREL)
- Realize 2-3 additional vibrant mineral industries in the state
- At least 2 wind or solar energy component manufacturers are in Wyoming

- More certain and business-friendly renewable policy
- Develop pre-permitted corridors for transmission lines
- Encourage investment in Wyoming resources
- Work with federal delegation to pursue a domestic (USA) sourced priority on rare earth elements

Natural Resources Retain Production of Stronghold Resources

Why

- Wyoming leads the nation in production and quality of many of the resources on which the world depends
- Mining, quarrying and oil and gas represented about 25% of Wyoming's GDP in 2016
- Innovation in materials and technology can help diversify end uses of Wyoming resources

Aspirations by 2038

- Increase production levels of coal, oil, gas, trona, bentonite, and uranium
- Establish UW as a globally preeminent energy research university by encouraging more
- UW currently ranks 70th for institution productivity in earth and environmental science, according the Nature Index

- 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
- Currently rank 48th in the nation DOE funding (NSF)
- Create and support Industrial Focus Zones and Innovation Centers near natural resource assets
- Improve technology transfer procedures and culture at UW
- Make and develop products that add value to natural resources
- Leverage state and UW facilities and innovation such as the flow through porous media lab, integrated test center and EORI to drive production
- Develop off-take infrastructure pre-permit corridors for pipelines to decrease transportation differentials
- Continue work to develop ports on the west coast of North America, and importer relationships with Asian countries



Tourism and Recreation

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

Tourism and Recreation (cont.)

Recommendations (highlights)

- 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.

Tourism and Recreation (cont.)

- 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

Aspirations

- Rural connectivity and accessibility are fundamental necessities for the future success of next generation farmers and ranchers living in sparsely populated areas for utilizing advanced technologies to compete globally in a digital economy.
- Maximizing the University of Wyoming's College of Agriculture for becoming a premier center of agricultural innovation and research while enabling the seven community colleges for becoming high-tech vocational ag training centers.
- Elevating and enriching a Wyoming brand to symbolize a recognizable trademark of excellence and superior quality for establishing a relationship between Wyoming producers and retail consumers throughout the world.

Sustainable Harvest (cont.)

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 smallto-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.

Sustainable Harvest (cont.)

- 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

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.

Advanced Manufacturing (cont.)

- 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

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.

Recommendations (highlights)

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

Recommendations (highlights)

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.

Recommendations (highlights)

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.

Recommendations (highlights)

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.

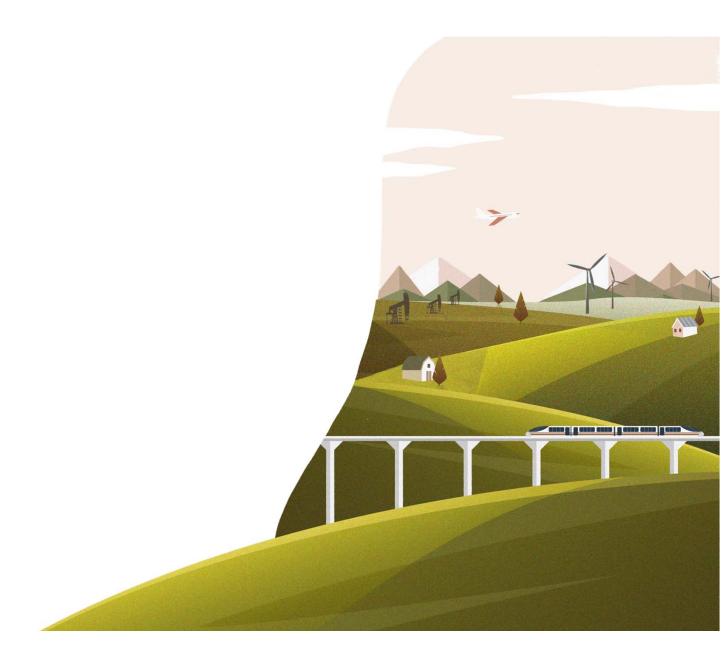


- **Business Development and Innovation Zones** see pages 51 through 53 and Appendix G, pages 146 through 153, of the ENDOW report for additional information
- Career and Technical Education Programs Gap Analysis Proposal see Appendix D, page 137, of the ENDOW report for additional information
- Startup:Wyoming Investment Proposal see Appendix E, pages 138 through 143, of the ENDOW report for additional information
- WBC Permits Report see Appendix F, pages 144 and 145, of the ENDOW report for additional information

Transforming Wyoming

When

It is time now



Transforming Wyoming

Our request today...

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 request today... (cont.)

- Appointment of a Chief Economic Diversification Officer and a Commission for Economic Diversification – see pages 35 and 37 and 38 of the ENDOW report for additional information
- Immediate implementation of the actions listed in the building blocks section of the report – see pages 23 through 38 of the ENDOW report for additional information
- Develop action plans for business development and innovation zones see pages 51 through 53 and Appendix G, pages 146 through 153, of the ENDOW report for additional information

Transforming Wyoming



Questions?

