Vision. The Bold North BioInnovation Cluster unites existing industry, government, academic, non-profit, and community partners with new companies and talent. The cluster will be fueled by three new regional assets: a) place-based, regionally accessible innovation and acceleration capabilities, b) a dynamic education and training platform, and c) firm creation (i.e., startup) capability. The cluster will improve the health and well-being of people, living organisms, and our shared natural resources. We will create an economic ecosystem where equity in knowledge access, opportunities, and outcomes overcomes historic disparities and the uneven COVID recovery to holistically develop talent, new ventures, and our economy to build wealth and job creation for our underrepresented populations. The cluster will focus on two bio-innovation domains in which the Bold North has existing assets—health and agriculture—with growth opportunities in adjacent domains, including manufacturing, energy & sustainability and data & computing. We recognize that there are common capabilities between these domains which support robust bio-innovation, including talent and infrastructure. Building these common capabilities across industries and domains will result in a larger and stronger ecosystem and greater shared prosperity and resiliency to prepare for future economic shocks.

Our region has a competitive advantage in becoming globally dominant in bio-innovation because we are already home to some of the world’s leading companies in health and agriculture, which were built to solve the world’s challenge of caring for and nourishing a growing global population. Our advantage in bio-health innovation is the region’s strength in advanced cell and gene therapy R&D and biomanufacturing technologies. The University of Minnesota, Mayo Clinic, and the National Marrow Donor Program are R&D leaders, while an expanding group of companies in manufacturing technology have chosen to grow in Minnesota (including Takeda, Wilson Wolf, and Bio-Techne). Our advantage in bio-agriculture innovation is the region’s strength in the development of sustainably produced plant, animal, and novel proteins, which are core to Minneapolis-based Cargill Inc.’s effort to nourish the world sustainably, while fueling bioindustrial growth through regenerative feedstocks. The University of Minnesota’s Plant Protein Innovation Center is the first of its kind in the nation while Minneapolis-based PURIS, the largest pea protein producer in America, was named one of Fast Company’s most innovative companies in 2021. We have proven that globally leading innovations in biology can happen away from the coasts, and there are advantages to U.S. competitiveness by doing it here where the knowledge, proximity to feedstocks, and major bioindustrial companies exist.

Historical economic distress and projected economic opportunity. The Greater MSP region and state of Minnesota experienced significant job loss in 2020 as a result of the COVID-19 pandemic. While many jobs have returned, employment is still 4.9% below 2019 levels in the region and 4.3% below 2019 levels in the state. Analysis by McKinsey & Co. found it will take 6-8 years to return to pre-COVID employment in the Greater MSP region. The region and state are challenged with some of the deepest racial disparities in the country in employment, wages, education, and wealth, with disproportionate impacts to BIPOC workers exacerbating these disparities during the pandemic. Forty-percent of BIPOC workers in the Greater MSP region were employed in the hardest hit industries, including healthcare and social assistance, accommodations and food service, and retail. Unemployment insurance claims filed by BIPOC
workers in the region have increased to 42% of claims, a proportion that dwarfs the share of workers of color in the labor force (24%). The racial wage gap for workers in the region was 32.7% in 2019, with white workers earning $17,312 more in median wages than workers of color. Disparities persist in other areas of the economy, including entrepreneurship and access to capital for new business creation. Less than 1% of startups are founded or led by people of color, and venture capital deals with BIPOC-owned or led companies represented less than 6% of all deals in 2020.

The BioInnovation cluster will be an engine of inclusive economic growth for the region and state. Today, 21% of workers in cluster industries are BIPOC in the metro (24% statewide), but the share is much lower for Black workers (5% metro and statewide). Increasing access to bio-innovation jobs for historically underrepresented populations is at the core of our vision and growing racial diversity a primary metric of success. By implementing strategies to increase access to quality bio-innovation jobs, we expect median wages to increase for BIPOC workers who are entering occupations employed in bio-innovation industries at a rate faster than wage growth of the overall labor force. We project that to have the most inclusive bio-innovation cluster, the share of jobs represented by BIPOC workers must grow to 30% (10% Black), but that it will take longer than the 5-year implementation period to see this impact of our efforts.

Investing in the Bold North BioInnovation Cluster provides an avenue to accelerate the rate of job growth and economic output overall. Industries included in the cluster employed 44,000 in the Greater MSP region and 119,000 throughout Minnesota in 2019. Earnings per job are 13% higher in the cluster ($90,384) than overall in the region ($79,863). In the five-year period leading up to 2020, the industry cluster added approximately 5,000 jobs (+13%) in the region and 6,700 jobs statewide (+6%). We project that the cluster could double the pace of growth from 2022 to 2027 from 13% to 26% in the region, adding 11,000 more jobs and making bio-innovation the third largest cluster in the Greater MSP region. The GDP growth impact of these investments in bio-innovation could grow economic output from $17.9 billion in Minnesota in 2019 to over $22 billion by 2027, a doubling of the growth rate.

**Equity.** Our focus on inclusive economic growth is a response to the tragic murder of George Floyd in our community and a recognition that future prosperity depends on transformational progress on racial equity. We will achieve our vision by implementing these strategies:

- Center racial equity in planning and development of all component projects by engaging the Center for Economic Inclusion to work one-on-one with project teams.
- Create equitable access to innovation spaces through the location of physical spaces and the geographic reach of education and training development programs.
- Build bridges to bio-innovation careers with existing employer-driven initiatives to recruit, hire, and support BIPOC professionals and ensure that workplaces are inclusive.
- Incorporate shared accountability mechanisms to drive outcomes, including incorporating data into the planning and decision-making process and intentionally centering the voices of the people we seek to include and benefit from the bio-innovation cluster.

**Capacity.** In the role of lead institution, GREATER MSP has the financial and management capacity to support the growth of the cluster. GREATER MSP has experience and capacity in
managing federal grants, including a U.S. EDA CARES Act award in 2020. In collaboration with coalition members and partners, we have the infrastructure and expertise to manage this award.

**Coalition members.** The Bold North BioInnovation Cluster coalition is large, with a depth of knowledge and expertise that positions us for success in building a globally competitive cluster.

<table>
<thead>
<tr>
<th>Coalition Member</th>
<th>Role</th>
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<tbody>
<tr>
<td>GREATER MSP</td>
<td>Lead institution; executing component project</td>
</tr>
<tr>
<td>Univ. of Minnesota Foundation, Fairview Health Services, University Enterprise Labs, Pillsbury United Communities, Univ. of Minnesota and Minnesota State</td>
<td>Executing component projects (see details below under Projects)</td>
</tr>
<tr>
<td>MBOLD; Agricultural Utilization Research Institute; Forever Green</td>
<td>Consortium executing Agricultural Innovation Scaling &amp; Market Development project</td>
</tr>
<tr>
<td>Genesys Works, Summit OIC, Counties, Cities</td>
<td>Consortium participating in the Bio Innovation Talent Pipeline Development project</td>
</tr>
<tr>
<td>Cargill, Ecolab, Mayo Clinic, Medtronic, Land O’Lakes, General Mills, Upsher-Smith, Medical Alley Association</td>
<td>Industry leaders supporting execution of component projects and driving strategy</td>
</tr>
<tr>
<td>State of Minnesota, Hennepin County, Ramsey County, Cities of Minneapolis, St. Paul, Edina, Burnsville, Eagan, Minnetonka</td>
<td>Governments supporting executions, including building a favorable public policy environment and contributing to workforce development</td>
</tr>
<tr>
<td>Center for Economic Inclusion</td>
<td>Centering racial equity and driving accountability across component projects</td>
</tr>
<tr>
<td>Chambers of commerce, foundations, innovation districts</td>
<td>Partnering to drive sustained growth of the cluster by aligning programming and networks</td>
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**Projects.** Our projects aim to change the trajectory of our underrepresented communities by building an ecosystem resulting in inclusive wealth and job creation.\(^1\) With talent development at our foundation, three projects create early exposure and socialization, education, and skill development opportunities in bio-innovation and related fields (e.g., data science) for our youth. Our innovation and accelerator projects provide the infrastructure to support entrepreneurship with access to the necessary physical spaces, equipment, and support. The industry scaling and market development project emphasize the critical work to turn R&D into companies, thereby building wealth and job creation. The Center for BioInnovation project creates the organizational infrastructure to sustain the cluster. Collectively our projects create a functional and sustainable ecosystem that starts with talent development and has the venture development elements to grow a bio-innovation ecosystem. Our 8-project portfolio includes:

**Bold North Center for BioInnovation.** The Center will include staffing to sustain the growth of the cluster, including alignment of existing regional-scale initiatives in innovation, talent, foreign direct investment, and sector development, and engagement of corporate and community leaders across the region and state.

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Bio Maker Space and Training Center. This project will be a lab space in the Cedar-Riverside neighborhood of Minneapolis, open to students from around the state. The curriculum will be designed specifically to interest K-12 students in biotechnology, including medical, industrial, and agricultural disciplines.

Bio Talent Pipeline Development Partnership. This project will design, develop, scale, and implement training for occupations demanded by bio-innovation employers and focused on BIPOC learners. The venture will be designed to support quick scale and expansion to include a variety of training providers and partnerships with counties and cities.

Higher Education Bio Curricula Alignment and Development. This project will build and strengthen the bio-innovation enterprise from certificate programs through graduate education. With over 30 Colleges, 13 Universities, and 59 campuses, the University of Minnesota and Minnesota State will partner to build education capacity and strengthen the bio-innovation workforce across the state. This program will involve students and professionals from multiple academic disciplines in a hybrid of curricular, experiential, and skill-development activities.

University of Minnesota Foundation Innovation and Acceleration Building. This project will construct a new innovation and acceleration building in a master-planned district on the eastern edge of the University of Minnesota Twin Cities. It is the first building within a mixed-use innovation district development that will create an integrated community of partners in research, discovery, and entrepreneurship.

Fairview Bio Innovation Hub. This project is the renovation and transformation of a hospital campus into a bio-innovation hub leveraging Fairview Health Services’ unique resources as a healthcare provider: medical laboratories, nation-leading pharmaceutical operations, and cutting-edge care. The space is in downtown Saint Paul and will be co-located with a health and wellness hub serving the surrounding communities.

University Enterprise Laboratories (UEL) Expansion. This project will expand an existing wet and dry lab innovation and testing space for life science startup-up companies, operated by UEL, a Biomedical Advanced Research and Development Authority (BARDGA)-affiliated incubator and accelerator. Existing labs are fully leased with a waiting list.

Agriculture Innovation Scaling & Market Development. This project will develop the support infrastructure and commercialization pathways needed to drive innovation in sustainably produced proteins. The initiative will include development of new cropping systems with specific environmental benefits, collaborative development of value chains, scaling support, and data-driven analytics and decision support. Investments will be used to build a strategic mix of facilities, equipment, services, and technical expertise.

Metrics for success. Preliminary metrics for success include:

- GDP growth (overall and in bio-innovation industries)
- Job growth in bio-innovation occupations and industries
- Share of jobs in bio-innovation industries that are filled by Black and Indigenous talent
- Wage growth amongst Black and Indigenous talent in bio-innovation occupations
- Enrollment of Black and Indigenous in bio-innovation related postsecondary programs
- Number of Black and Indigenous people completing bio-innovation training
• Number of Black and Indigenous K-12 students participating in bio maker training
• Amount of venture capital going to BIPOC-owned bio-innovation startups
• Number of BIPOC-owned bio-innovation startups supported in innovation spaces

**Regional investments and matching funds.** Sources of match funding have been considered by each coalition member, including internal resources, private and public or philanthropic investment. Entities commit they meet EDA’s requirements as eligible entities and understand requirement for local match. Early estimates show that GREATER MSP, the University of Minnesota Foundation, and Fairview Health Services will use primarily internal resources for local match sourcing; Pillsbury United Communities has private, public, and philanthropic donations; University Enterprise Labs will use a mix of New Markets Tax Credits financing and fundraising; and education and training projects and the agricultural innovation scaling project will use a mix of internal resources and fundraising.

**Barriers and mitigation.** Proposed projects have a high likelihood to be completed on time and within budget because lead applicants have identified that they have proven experience funding and executing projects of this scale. There are still potential barriers and we have considered mitigation strategies. One potential barrier for coalition members is staffing capacity and hiring speed. We plan to use EDA technical assistance funding to staff key positions but finding and hiring qualified candidates may take longer than normal during a challenging labor market. We will use existing staff and contractors to fill needs in interim phases. A potential barrier to construction projects is contractor availability, material lead times, and variable labor costs or shortages. We will consider project concept adjustments to account for these challenges. A barrier to implementation at-large are the uncertainties associated with COVID, including variants which limit our ability to implement projects that require in-person gathering. We will prepare for these uncertainties by creating avenues for communication and execution that can be done safely for all participants involved.

**Timeline.** In **year 1** the BioInnovation Cluster project implementation will kick off, including hiring of key staff members. Advisory and decision-making structures will be in place for all projects and implementation will be underway. Early-win implementations will emerge, including unveiling of public, private, and nonprofit sector partnership and funding commitments. By **year 2** construction projects will have been initiated and, depending on site, will have set physical space needs, begin purchasing equipment, and hiring personnel. Where approved, projects will have secured contractors and will begin to see physical construction activity. Non-construction projects will begin implementation. In **years 3 and 4** construction projects will be in development while training and curriculum development will be in pilot and implementation phases. By **year 5**, construction projects will be completed and the Bold North Center for Bio Innovation will be operating fully with sustainable funding in place. Curriculum development and alignments will have been completed and training will be offered. Wrap-around services will commence operations in newly built and renovated innovation spaces and university and corporate innovators, along with entrepreneurs and newly created companies, will begin to utilize spaces.