

Analytics Report

on Duluth and the Arrowhead
Region of Northern Minnesota

COMMUNITY ACCELERATOR



Intelligent Community Forum

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for the



Blandin Foundation™
STRENGTHENING RURAL MINNESOTA

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Introduction

This report presents an analysis of the performance of the Arrowhead Region of northern Minnesota on the six Factors that make up the ICF Method. It is based on 41 data points, both quantitative and qualitative, provided in questionnaires from four representative communities in the region as well as a region-wide questionnaire capturing the leading examples of progress. ICF analyzed the data and is providing this report detailing the Region's strengths, weaknesses, opportunities and obstacles, as well as identifying areas where the communities can most effectively focus its efforts to make sustainable progress.

The ICF Method

ICF evaluates communities using the ICF Method: a framework consisting of six categories of community performance that, together, provide cities, metro areas and counties with a durable advantage in building inclusive prosperity, achieving social health and enriching local culture in the disruptive digital economy of the 21st Century.

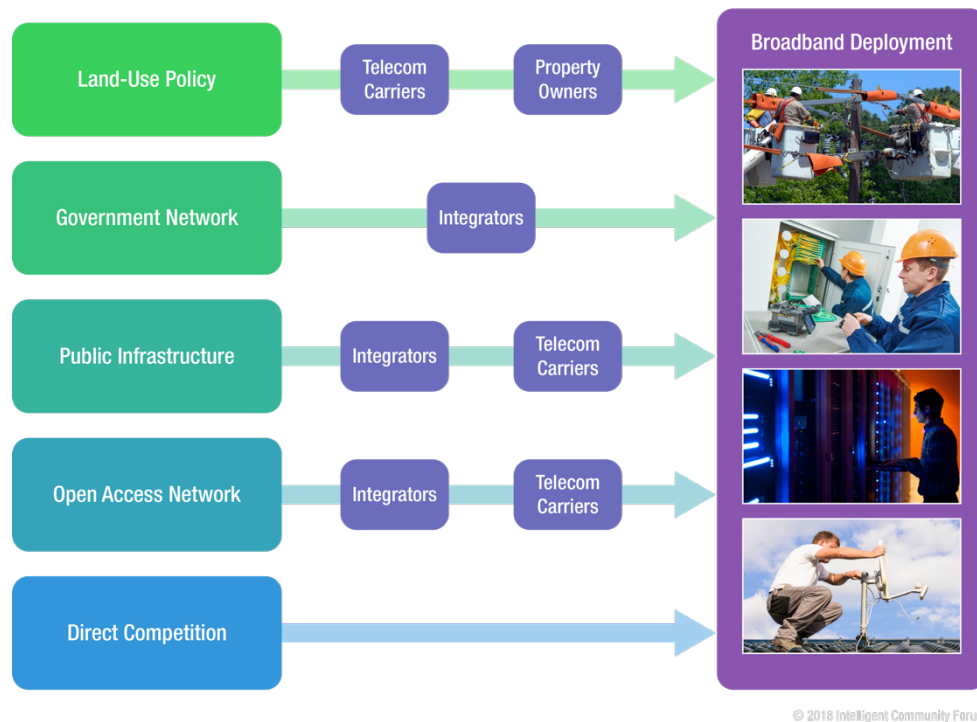


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Connect

High-speed connections for computers and mobile devices are the infrastructure no community can do without. Through those connections come employment opportunity, education, commerce, information, entertainment and community participation. Businesses depend on them to manage their operations, reach customers and attract employees. Governments and nonprofits use them to deliver better services for less money to more people. Communications is not a traditional policy matter for local government. But local gov-

ernments today cannot afford to ignore it. Broadband connections are as vital as the quality of roads, water, electricity and the other essentials of modern life.



Creative governments can direct the accepted tools of **land-use policy** to encourage broadband deployment, including mapping existing coverage, improving access policies for poles and conduct, requiring installation of conduit during street excavations and updating building codes.

In most jurisdictions, **governments can build and operate networks** to serve their own facilities. This investment is easy to justify, because it replaces monthly telecom bills and typically pays off in less than five years. Using the network, government can deploy free Wi-Fi in public locations and develop online constituent services that increase user demand for broadband.

Building infrastructure is the traditional business of government. Some local governments build **public communications infrastructure**: conduit networks, optical fibre networks and wireless towers. They market this infrastructure to carriers and organizations with major communications needs. Those buyers install equipment, activate circuits and deliver services. Lease payments from these users cover the capital, maintenance and upgrade costs of the network. This approach steers clear of concerns about government competing with the private sector while creating greater competition in the market.

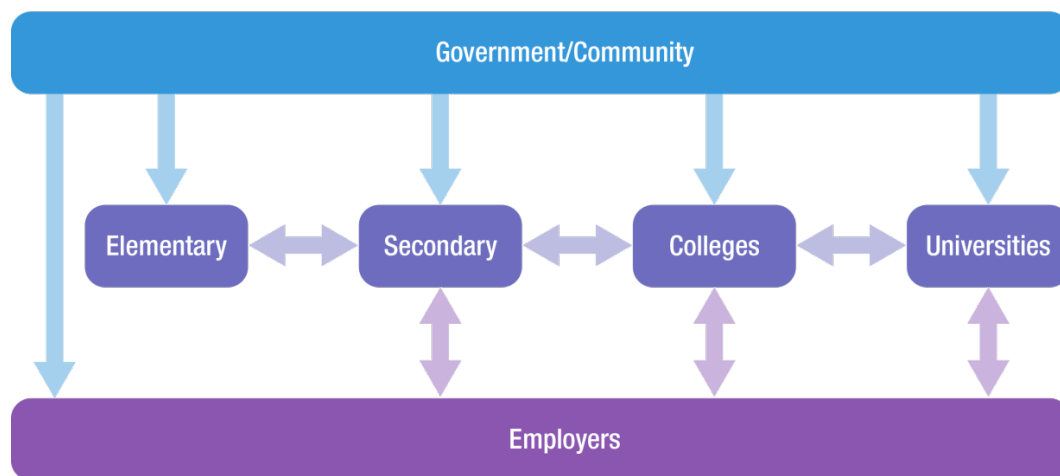
Some communities go beyond this “dark” infrastructure to create **open access networks**. They build, activate and manage a government-owned or public-private network. It provides the “transport layer” – the foundation level of digital connection between physical locations. On this foundation, companies and carriers operate the services that meet the

needs of their users. By further reducing the costs and risks for the private sector, open access networks have proven their ability in many different markets to produce a sharp increase in competition.

The most extreme step communities can take is to **compete directly** with the private sector. This typically happens when private telephone and cable incumbents oppose all efforts at collaboration, most often in rural communities where not even the construction of dark or open access networks can make the market attractive to outside competitors. It may take advantage of municipally-owned utilities whose existing infrastructure reduces the capital needs of network construction.

Work

Management consultant Peter Drucker coined the term “knowledge work” in the Fifties, when he predicted that it would soon become impossible to live in the middle class if manual work was your only skill. His prediction has come dramatically true, as all opportunity for meaningful, well-paying employment has shifted to those with skills, from the construction trades and automated factories to technology, finance and business management. Intelligent Communities create a knowledge workforce through strong and continuing collaboration among local government, employers and schools. Together, they turn education into a ladder of opportunity that teaches skills that are in demand and connects young people with opportunities in the region to strengthen the community’s economic and social foundation. They also create avenues for lifelong learning to ensure that the skills of their people continuously evolve to equip them for new job opportunities.



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Local, regional and state/provincial **governments** play a leadership role in this ecosystem. Where elementary and secondary schools are involved, government determines what can be taught and how programs can be funded. For all levels of education, government can play the crucial role of convening: bringing together educational leaders through com-

missions, advisory boards and other structures that create a permanent platform for collaboration.

Intelligent Communities build a knowledge workforce through collaboration between government, employers, and schools. Knowledge Workforce programs seek to balance the supply of skilled employees with employer labor demand.

- **Universities** interconnect with career-focused **colleges** to share research programs and career courses, and provide college students with access to 4-year degrees
- Universities and colleges interconnect with **secondary schools** to provide students with advanced learning opportunities.
- Secondary schools send students and programs into **elementary schools** to make an early introduction to content on future local careers and excite younger children about education.

At each of these levels, institutions interconnect with **employers**, bringing real-world career content, business mentors, work-study programs, internship and other programs into education. These programs expand students' awareness of their local career opportunities and create hope for the future.

Innovate

Economist Robert Solow won the Nobel Prize in 1987 for proving that 80% of all economic growth comes from developing and using new technology. That's a stunning number. It means that if the employers, institutions and government of your city or county are not creating new opportunities or putting new technology to work, you are missing out on 80% of the potential growth in today's economy. That's why every place needs an innovation strategy. Intelligent Communities pursue innovation through a relationship between business, government and such institutions as universities and hospitals. The Innovation Triangle or "Triple Helix" helps keep the economic benefits of innovation local and creates an innovation ecosystem that engages the entire community in positive change. Investments in innovative technology by government contribute to that culture and improve service to citizens while reducing operating costs.

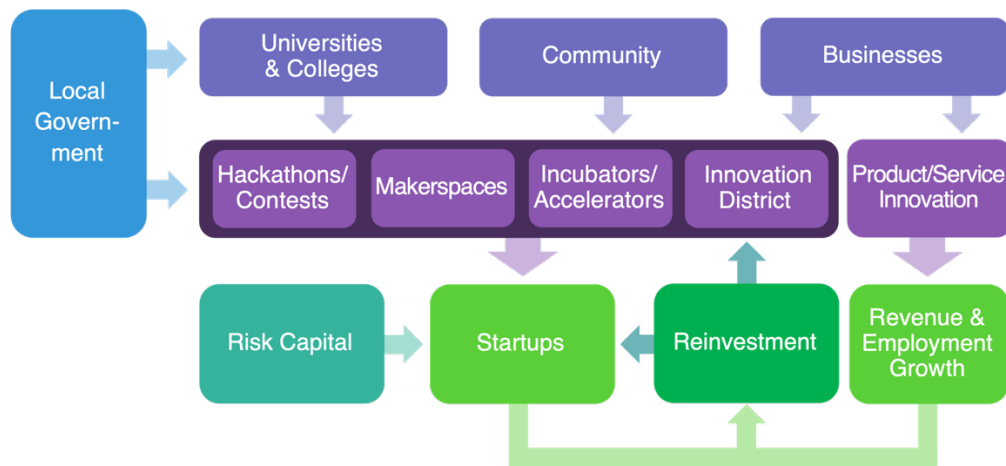
The chart below displays a thriving local ecosystem of innovation, which draws on **vocational schools, two-year colleges, four-year universities** and **citizens** of the community who have a passion for making something new. To turn those assets into a continuing cycle of innovation, local government and institutions create programs and facilities that encourage and challenge talented people to innovate.

These range from public **hackathons, apps contests** and other STEM events to **makerspaces** where anyone can bring an idea and make it real (and potentially profitable) with the informal support of other innovators. They include **incubators** – typically academic-business or academic-government partnerships – where potential entrepreneurs go through a disciplined process to turn concepts into saleable products and services, then find their initial



customers. **Accelerators** take the survivors of incubation and help them mature into sustainable enterprises with growth potential.

Makerspaces, incubators and accelerators breed **startups** that bring innovation to market. The most successful attract **risk capital** from angels, grants, venture funds and private equity that permit them to scale the business significantly. At the end of the road for the most successful entrepreneurs is an **exit**: a transaction that transfers some or all of their ownership to investors or acquiring companies in exchange for a payout.



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The end of the road, however, is also the beginning of the next journey. Successful entrepreneurs tend to want to play the game again and, specifically, to **invest** in the innovation ecosystem from which they have benefited. That investment may go into R&D by colleges and universities. It may go to create the next makerspace, incubator or accelerator. It is succeeding generations of innovators who ultimately come to drive the innovation ecosystem that has been so carefully constructed and nurtured by leadership in local government, educators, nonprofits and businesses working in close collaboration with each other.

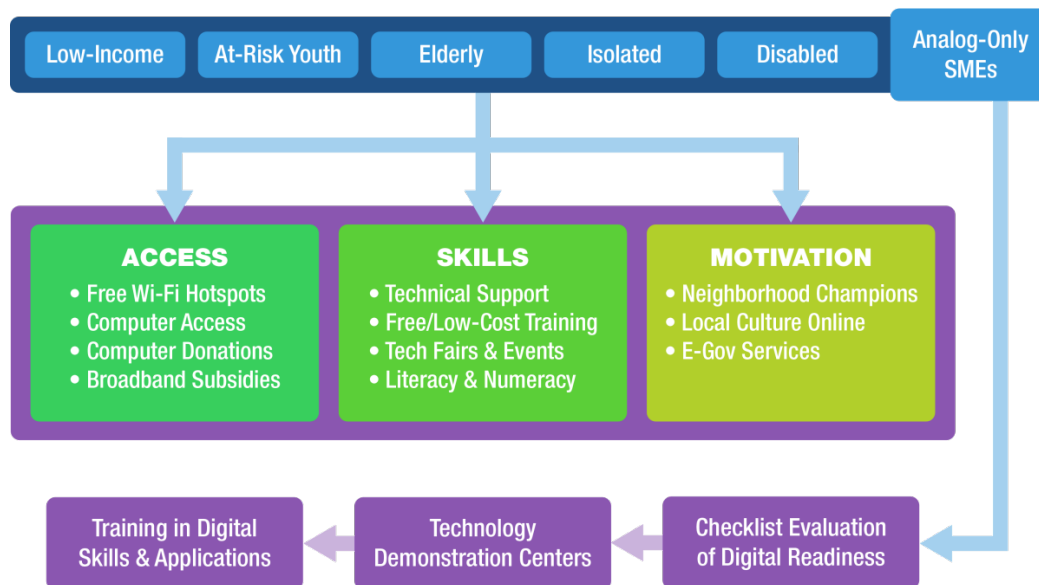
Include

The explosive advance of the digital economy has worsened the exclusion of people who already play a peripheral role in the economy and society, whether due to poverty, lack of education, prejudice, age, disability, or simply where they live. It has also disrupted industries from manufacturing to retail services, enlarging the number of people for whom the digital revolution is a burden rather than a blessing. Helping these people find a place in the digital economy is a practical as well as moral imperative. Effective digital inclusion programs target three aspects of exclusion: affordable access to digital technology and connectivity, the skills to put the technology and connectivity to work, and motivation for the unconnected to adopt digital habits.

Intelligent Communities pursue digital inclusion for reasons both moral and practical. The moral imperative is to provide equal opportunity for all citizens to benefit from the digital

economy. The practical motive is to reduce demand for social services, criminal justice and emergency healthcare, as well as the intangible contagion of social injustice.

Intelligent Communities identify their populations most in need of intervention, as well as employers that are missing the economic opportunities of going digital. They focus their efforts on providing **access** to broadband and information technology and on **equipping individuals and organizations with the ability to use them**. The most common access points are public libraries, but communities also bring technology to such meeting places as community centres, retirement homes and technology demonstration centres for business. Skills training takes place in any of these locations and may involve library staff, students or the staff of local colleges and universities.



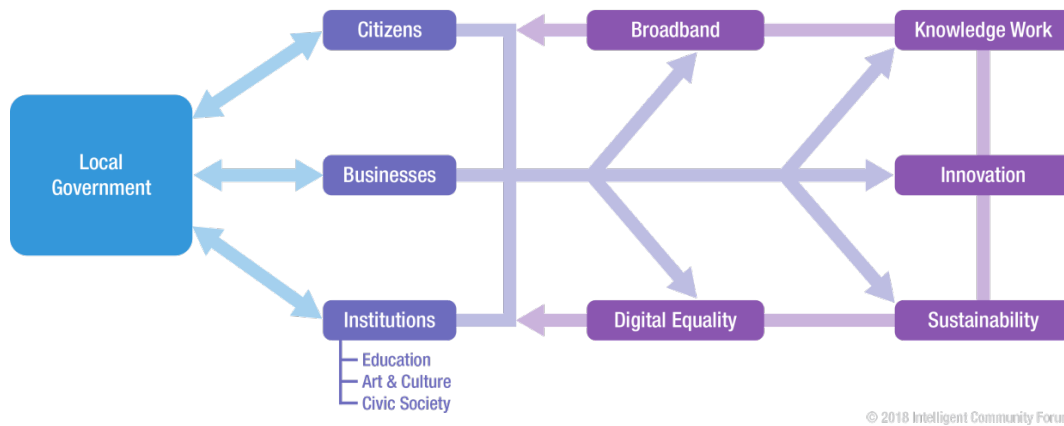
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Just as important as access and skills is the **attitude** needed to acquire them. Intelligent communities create programs that give people and organizations motives to adopt unfamiliar technology and use it to improve their lives.

Engage

More than ever before, citizens and organizations in the community have digital tools at their disposal for communicating, developing coalitions, coordinating action and turning the fears or enthusiasms of a few people into a community-wide movement. Engagement today means using the traditional tools of community development and the new generation of digital tools to educate citizens and organizations and to seek their real involvement in decision-making. It is about giving them a framework for understanding, listening to them and letting them know they have been heard. Engagement is the glue that binds Intelligent Communities to a better future. It is the deliberate effort through civic leadership to engage

citizens, business, institutions and community leaders in understanding the need for change, identifying opportunities and becoming champions of that change.



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Local government connects with **citizens**, **businesses** and **institutions** through events, discussion forums and brainstorming that educate them on the challenges and opportunities facing the community. They combine physical meetings with digital interaction that ensures broad participation. They target recognized leaders of the community, who can serve as champions for their followers and convincingly explain the emerging vision and its benefits.

It is in close collaboration with these constituents that Intelligent Communities develop an **action plan** based on the framework of the Intelligent Community Indicators. Government plays its essential role at convening, turning ideas into specific strategies and plans, and marshalling resources to carry them forward. Citizens, business people and nonprofit leaders, however, provide the energy and commitment that make change possible. Taking energy from early successes, the community continuously raises its expectations and revises its vision, daring to do things that once seemed impossible.

Successful engagement provides the foundation for the community's public identity in its outreach to the world. It energizes economic development, investment attraction and business generation, because the community has built a unique vision of its character and its future. In their own eyes, its people are no longer just living in one community among hundreds of thousands like it. They are in the best place to live, work, start a business, raise a family and pass their heritage to the next generation.

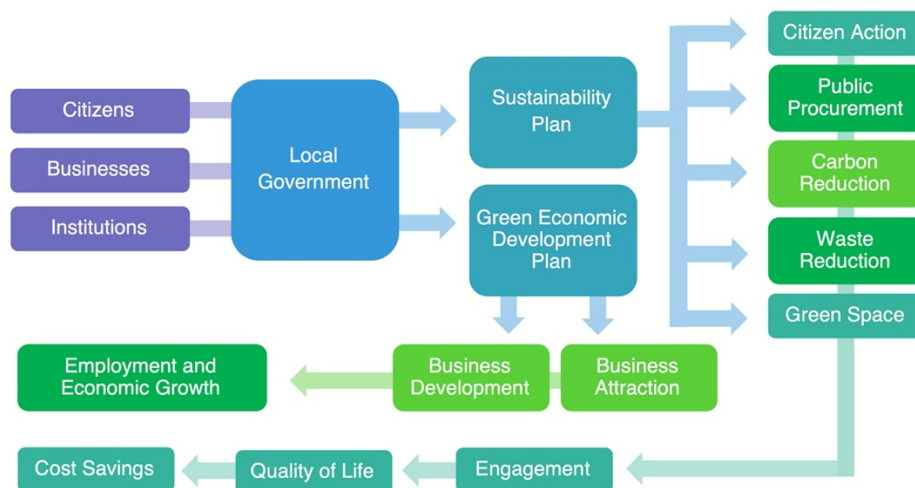
Sustain

Environmental sustainability is a global concern with local impact. A community's people experience the environment at the local level, from air quality to water pollution. When communities make sustainability a goal, they energize community groups, neighborhoods and community leaders with the promise of making a difference. The work of these groups meets sustainability goals – but just as important, it strengthens the community's identity and creates civic pride that powers more positive change. Sustainability is also good for the economy. As the world is turning its attention to reining in human impact on the planet,

sustainability is generating substantial new opportunities for technology advance, business growth and employment in green industries.

Local government engages **citizens, businesses** and **institutions** to learn their concerns and collaborate in setting priorities. The issues are environmental – but also about quality of life, property values, government budgets and the cost of living and doing business.

The vision and priorities guide the creation of a **Sustainability Plan** that sets goals and identifies specific actions. These range from citizen action groups to changes in public procurement and land-use, and from waste reduction and recycling to energy conservation. They address water quality, air quality, alternative energy, and the resilience of the community to climate change. Smart City technologies ranging from Internet of Things devices and platforms to cameras, drones and measuring devices play an important part.



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Intelligent Communities set out on the sustainability path expecting results. The Sustainability Plan documents specific objectives for cost savings, lower emissions, reduced consumption and improved quality of life. Government measures and reports on results, and works with **citizens, businesses** and **institutions** to make course corrections as needed and re-energize community participation.

What We Measure

ICF evaluates a community's performance and readiness for action along the six indicators of the ICF Method using select data provided by the community. The analysis in the following pages is based on:

Connect

- Percentage of all premises that have access to broadband (availability).

- Percentage of all premises that subscribe to and use broadband (adoption).
- Number of competitive broadband service providers
- Gaps in broadband coverage affecting a percentage of premises.
- Quality of projects to promote deployment, access or use of broadband.

The broadband metric does not measure the overall quality of service or the broadband capacity available in the community.

Work

- Educational attainment of the population today.
- Adoption of technology in elementary and secondary schools.
- Access to higher education in the community or within commuting distance.
- Quality of projects that use technology to improve educational outcomes, equip students with digital skills, and/or connect students to local employment or entrepreneurial opportunity.

The knowledge workforce metric is not able to assess the quality of educational services provided or educational policy in the community.

Innovate

- Existence of an innovation policy.
- Presence of growth industries with offices or facilities in the community.
- Public/private innovation programs available in the community.
- Online services provided by local government.
- Quality of innovation projects that involve collaboration among business, institutions and government.

The innovation metric is not able to measure outcomes of innovation in terms of business start-us, company growth or job creation.

Engage

- Programs for educating and engaging citizens and leaders in positive change.
- Programs for communicating the economic development story to the outside world.
- Existence of an Intelligent Community strategy.
- Existence of task force or administrative unit charged with carrying out Intelligent Community initiatives.

The engagement metric is not able to measure the level of community engagement created by programs or the outcome of economic development strategies.

Include

- Percentage of premises with internet access at any speed including dial-up.
- The monthly cost of a minimum, median and maximum-speed broadband connection.
- Facilities and services offered to residents to promote digital adoption.
- Facilities and services offered to organizations to promote digital adoption.
- Qualify of projects to increase digital inclusion for residents or organizations.

The digital inclusion metric is not able to measure the quality of programs or the impact in terms of citizen participation and business growth.

Sustain

- Metrics for air quality, indoor water use, recycling of municipal waste, non-auto trips and green space.
- Level of local government support for sustainability initiatives.
- Quality of projects that engage citizens, businesses and institutions in sustainability and produce meaningful results.

The sustainability metric is not able to measure the outcome of projects engaging the community in sustainability.

The Arrowhead Region

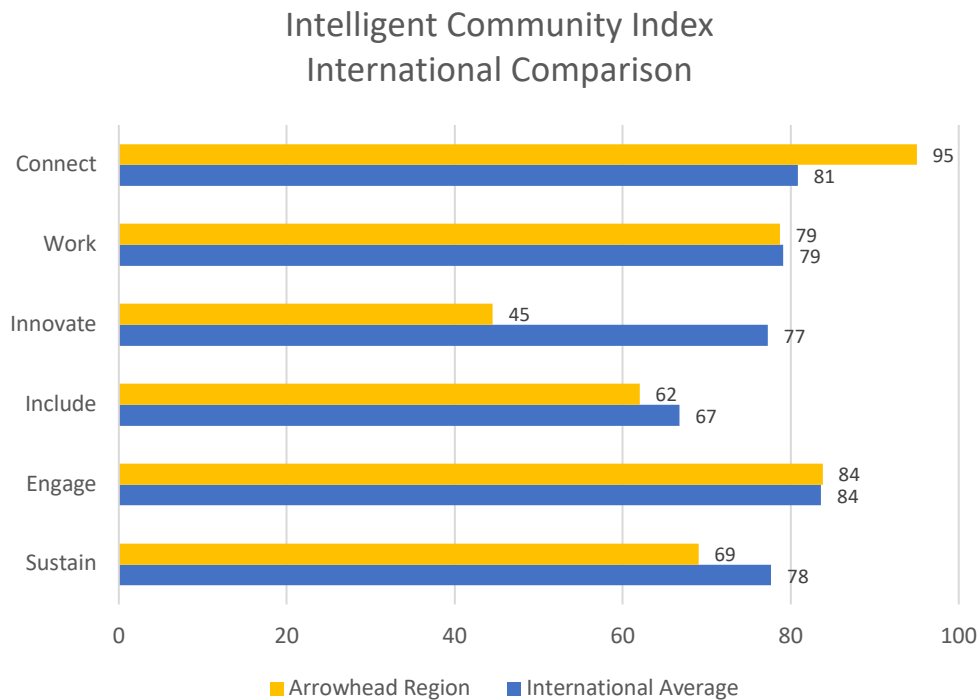


The Arrowhead Region of Minnesota, named for its shape on the map, consists of seven counties in the northeastern part of the state. The region stretches across the Boundary Waters Canoe Area Wilderness and Voyageurs National Park in the north to Lake Superior in the south, and it extends westward into counties in the heart of Minnesota's Northwoods. It is home to more than 325,000 residents spread across 18,200 square miles.

Major industries include aviation and aerospace, mining, back office, wood and paper products, shipping/transportation, health care, metal fabrication, utilities, and hospitality and tourism. The region offers convenient access to air through three commercial airports, four Class I railways, and highway transportation. This network, plus an inland seaport, offer border to border and global shipment of goods. It features excellent K-12 education and 13 higher education campuses and successful medical campuses. The four largest communities are Duluth (86,238), the Quad Cities (17,000) and Hibbing (16,300) in St. Louis County and Cloquet (12,000) in Carlton County.

Comparing the Region to ICF's Global Data Set

The following are a set of charts that compare the region to ICF's global data set of Intelligent Communities. The regional data comes from a questionnaire submitted by the Blandin Foundation that aggregates the best examples of development practice and assets across the region. It therefore represents a somewhat idealized picture of the region's performance.



As represented by the assets and examples in the “best of the region” questionnaire, the Region’s greatest strengths are in connectivity (95% of available points) engagement (84%) and knowledge workforce (79%). Sustainability (69%), digital inclusion (62%) and innovation (45%) are not as strong.

In comparison to ICF’s global data set, the Arrowhead Region outscored the average in connectivity, while matching it in knowledge workforce development, inclusion and engagement. The Region underperformed the average in sustainability (by 9 points) and innovation (by 32 points). Too much should not be read into the high Connect, Work, Include and Engage scores, however: it means that the best of the Region is competitive with Intelligent Communities around the world but does not suggest that this high level of performance is evenly distributed across the Arrowhead.

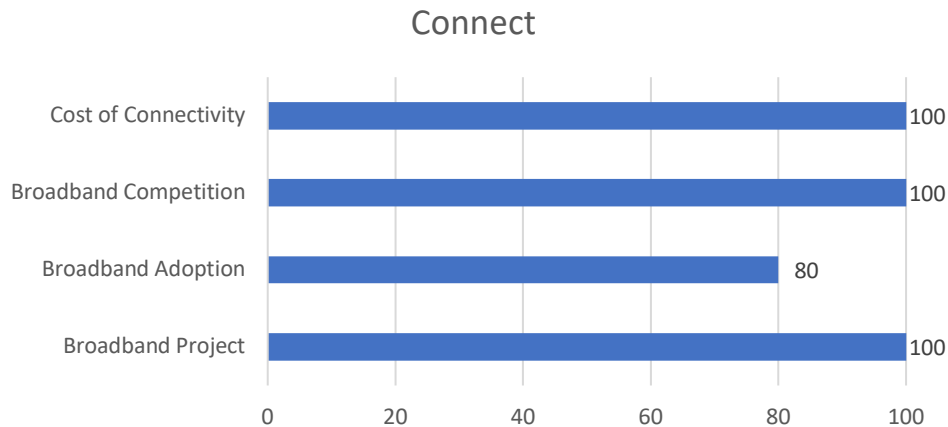
Connect

On a best-of-the-region basis, the Region received top scores on the cost of connectivity, the number of competitors in the region, and projects including:

- Northeast Service Cooperative Fiber Project, which spans eight counties to connect 332 critical site services for anchor institutions for high-speed middle-mile service.
- The broadband projects of Cook and Lake Counties, which brought fiber internet services to residents, overcoming serious barriers.
- The Blandin-IRRRB Broadband Communities program, using the ICF Method, which has led to \$35 million in connectivity investments reaching 10,000 homes, half directly

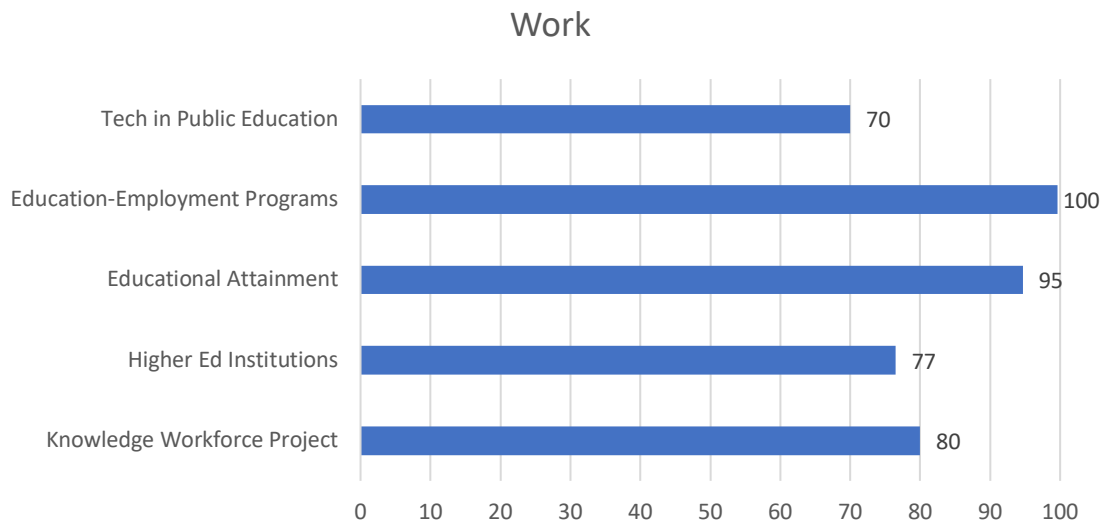
funded by the program and the other half through carrier investment and grant-funded projects. .

Adoption, at 75%, scored lower, reflecting the Region's variances in broadband availability.



Work

In the development of a knowledge workforce, the Region scored highest in the number of education-to-employment programs it reported and the educational attainment of the population. Scoring somewhat lower were the number of technology offerings in schools and access to higher-education institutions in the large and predominantly rural area.



The projects received a strong 80% score based on evaluation of:

- Northforce community-based talent retention and attraction, which has over 4,400 registered candidates (25% from outside the Region), 1,000 employers and has distributed nearly 20,000 job opportunities.

- Iron Range Engineering programs for high school students, which unites state government, schools and employers to graduate students ready for employment, with 60% finding jobs within 6 months of graduation.
- Multiple workforce development programs across the Region: a total of 14 community-based and state-funded programs helping improve skills, attract talent and ease the school-to-work transition.

Innovate

Innovation was a relatively weak point for the Region. The projects reported in the questionnaire that aim to stimulate and support innovation scored significantly higher, at 75% of available points, than the current reality as reflected in the other questions. They included:

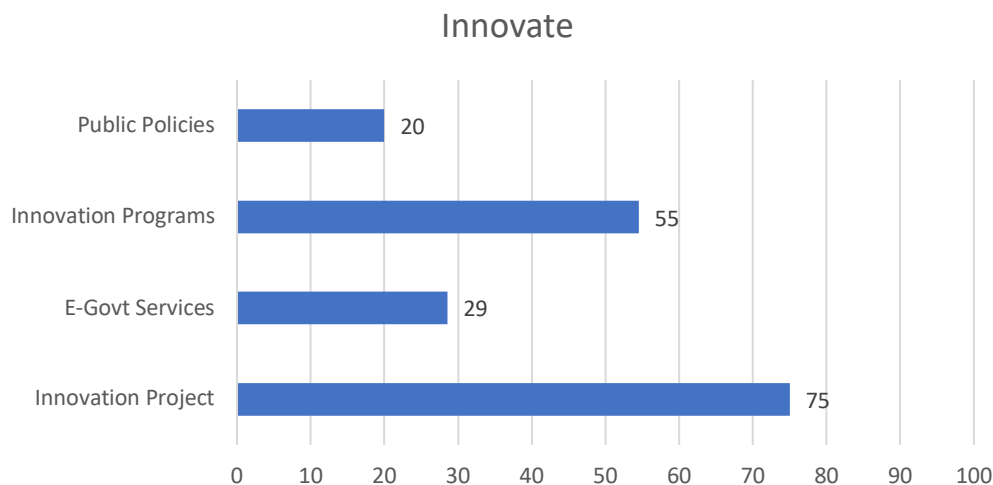
- SBDC Small Business Technology Assessment and Consulting Program, funded by Blandin Foundation and IRRRB, brings training from Northland and the Northeast MN Small Business Development Center to community-led programs across the region.
- MN Department of Iron Range Resources and Rehabilitation, a regional development agency funded by a portion of a taconite production tax, works to foster growth and economic prosperity in the Region.
- Natural Resources Research Institute, a partnership of the University of Minnesota and DIRRR, researches and identifies innovation opportunities taking advantage of regional resources and skills.
- St Louis River Estuary Cleanup project unities the work of multiple agencies and organizations engaged in remediating significant environmental damage to the river, and has overseen investment over more than \$900 million, with estimated economic impact of \$5-14 billion.
- Minnesota Natural Resources Atlas, developed by state government, provides GIS mapping of the natural resources of the Region.
- Regional Broadband Feasibility Studies in 2018-19 and 2019-20 identified specific areas for broadband deployment, which educated and engaged community leaders in the issue of availability and opened the eyes of broadband providers to opportunities to expand their networks with the help of grants.

The ICF Method puts a strong emphasis on collaboration among business, government and institutions to generate an innovation ecosystem. Relevant to that goal is the work of the Small Business Technology Assessment program, DIRRR, and the Natural Resources Research Institute. Regarding the other projects:

- The Estuary Cleanup project describe did not make any connection to innovation clear and would have been better used in the Sustainability section.

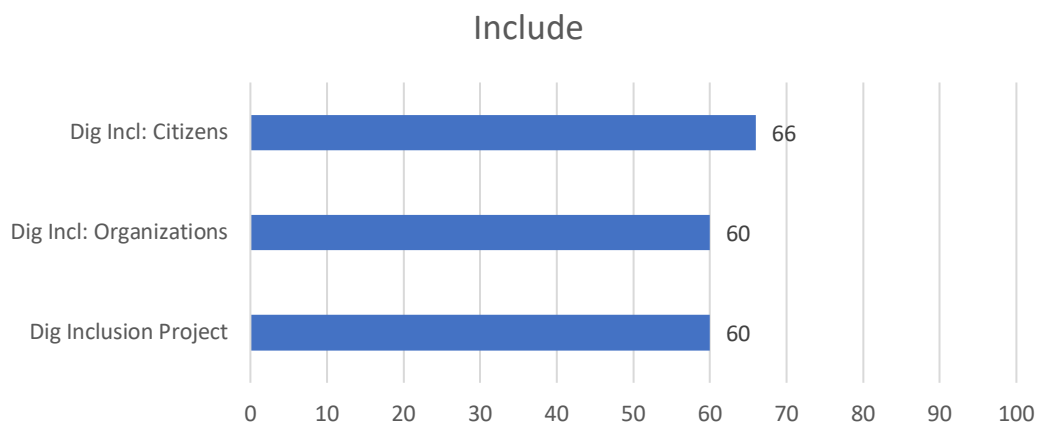
- The Natural Resources Atlas is principally a governmental planning tool, with little impact beyond such purposes, though it does relate to the overall goal of economic development.
- The Broadband Feasibility Studies are of high value in terms of broadband deployment but of limited application the creation of an innovation economy.

The Region does have a reasonable number of innovation programs taking place, earning 55% of available points. E-government services, however, are significantly underdeveloped and there are no public policies on innovation topics.



Include

Digital inclusion efforts in the Region received about 2/3 of available points across the Board. There are an adequate if not stellar number of inclusion facilities and services for citizens, and a somewhat lower number of facilities and services for organizations. (The availability of an evaluation checklist backed by general classes and customized training, however, are of high value in equipping business for online competition.).



The projects effectively target access and skills for individuals and organizations:

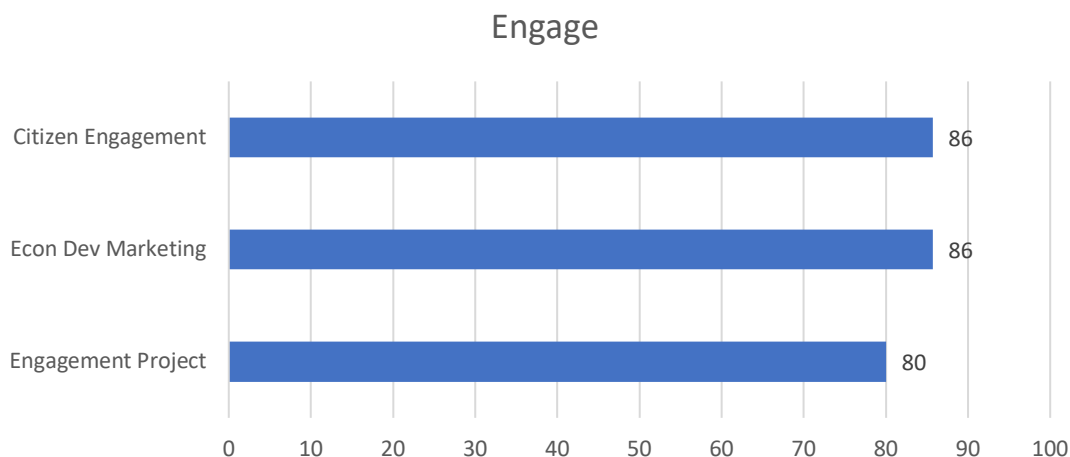
- PCs for People distributes refurbished computers to community organizations that work with low-income households, which offer technology, support and training.
- Duluth Digital Inclusion Initiative, a community-wide initiative, provides free computers and Wi-Fi hotspots to job seekers, low-income households, older adults and schools, and has funded train-the-trainer courses to build competency among educators.
- Arrowhead Libraries offer free Wi-Fi, mobile hotspots and educational support over the summer months.

All three are of value – but also represent fairly “standard issue” inclusion programs, which entitled them to 60% of available points.

Engage

The Region scored well on engagement activities, with documented strategies and task forces dedicated to carrying them out, and a large number of education and communication activities aimed both inside the Region and outside. The projects were also impressive, including:

- Iron Range Broadband Communities, bringing the ICF Method to communities across the Range
- Recharge the Range, a short-term citizen, leader and business engagement about the future of the region, and the Laurentian Vision Partnership for envisioning new purposes for abandoned mines.
- Blandin Community Leadership Program, building capacity for community leadership at the local level.



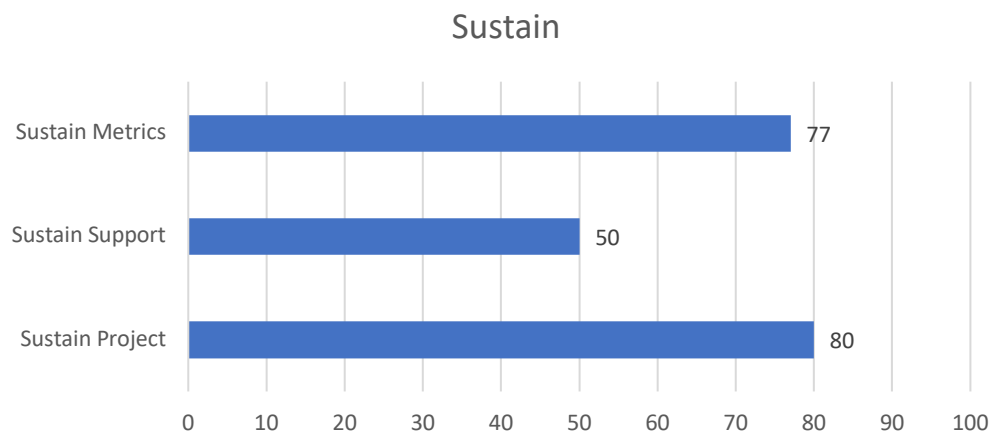
Sustain

The Region’s sustainability metrics were relatively strong, with excellent air quality and relatively low diversion of waste to landfills. Public policy at 50% of available points, has

not kept pace with the metrics, due to lack of guidelines, policies or laws approved by authorities. The projects were also relatively strong:

- Northeast MN Sustainable Partnership, a joint project of community group and the University of Minnesota, to develop projects across the region on local foods, healthy homes, peer-to-peer learning and public environmental awareness.
- IRRRB Business Energy Retrofit Program provides grants covering up to 33% of project costs for lighting, storefront improvements, roofing, insulation, HVAC and renewable energy projects.
- Reclamation of Mine Waste Dumps for Recreation and Redevelopment has engaged mining companies, local governments, IRRRB and community groups to convert abandoned mining areas into recreational and renewable energy facilities.

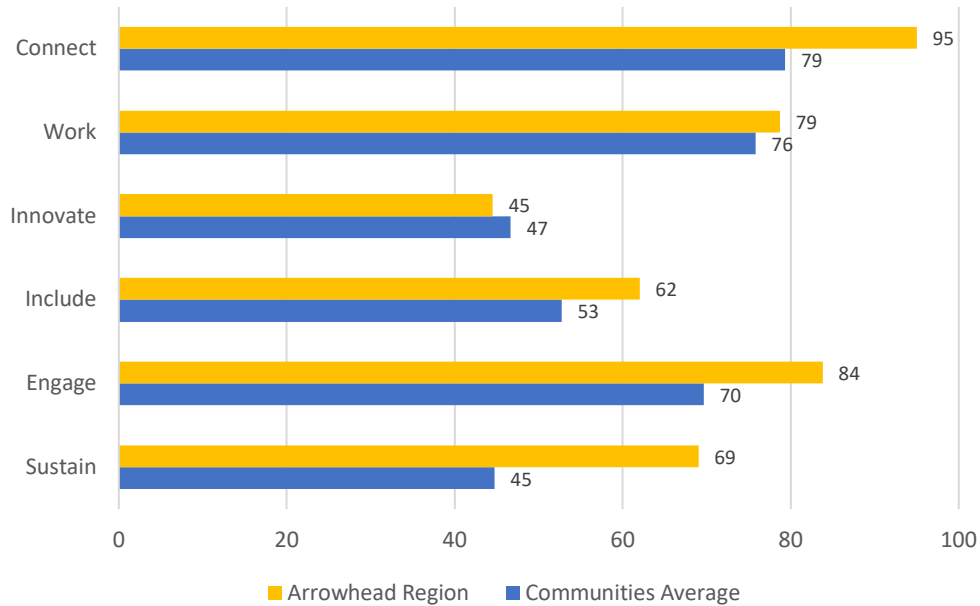
Two of the three make a major commitment to engaging the community and stakeholder organization in environmental transformation, which generates energy for other forms of engagement that powers positive change. The Energy Retrofit is presented as a principally financial program. If it includes education and engagement, there is no mention of it.



Comparison to Communities

Five communities and counties engaged in the Arrowhead Region initiative submitted ICF questionnaires, which provide the opportunity to evaluate a more representative sample of cities and counties. The following charts aggregate their results and compare them with the best-of-the-region scores.

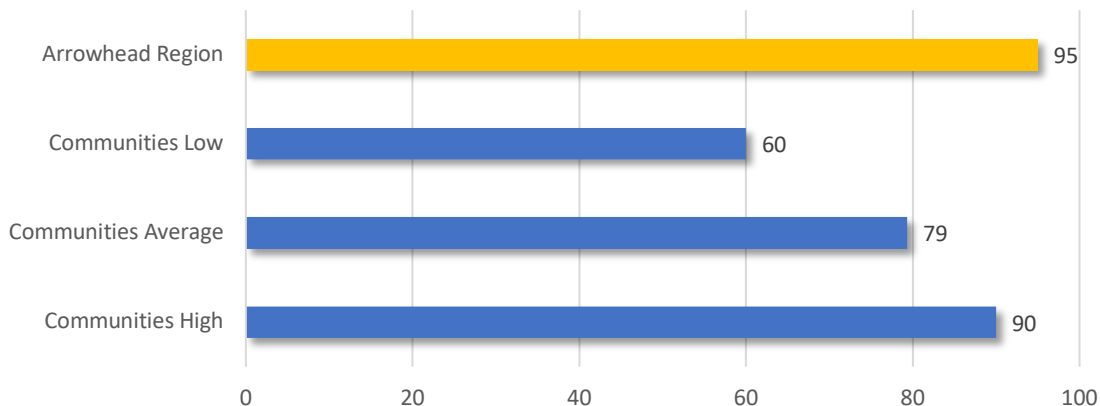
Intelligent Community Index Regional vs. Individual Communities



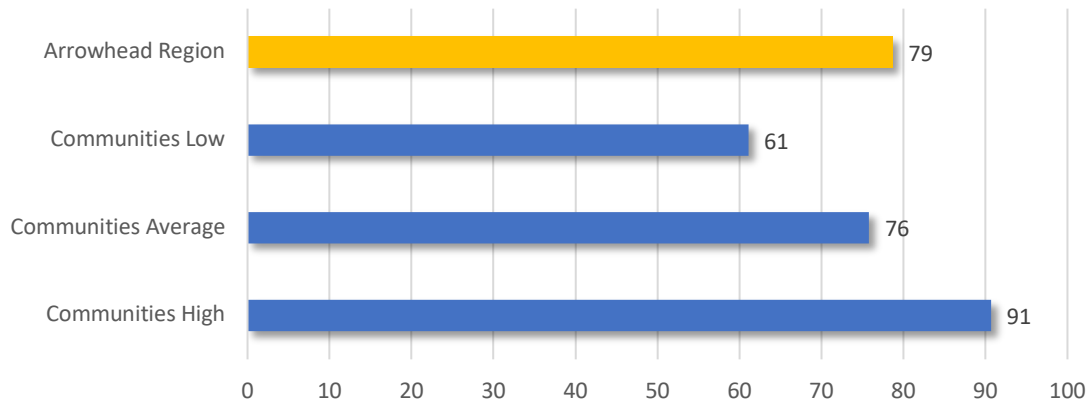
The overall pattern of relative strength and weakness is the same: both the aggregated communities and the best-of-the-Region data show strength in connectivity (where communities have concentrated most of their efforts to date), engagement and workforce development. The biggest divergence is in sustainability, where the aggregated communities scored at only 65% of the best-of-the-region level. As we will see later in the report, some of this divergence is due to submitting incomplete data, which is penalized in the analysis.

The following charts break down these comparisons in more detail. For each Factor, they present the best-of-the-region score and the low, average and high scores among the four regions submitting data.

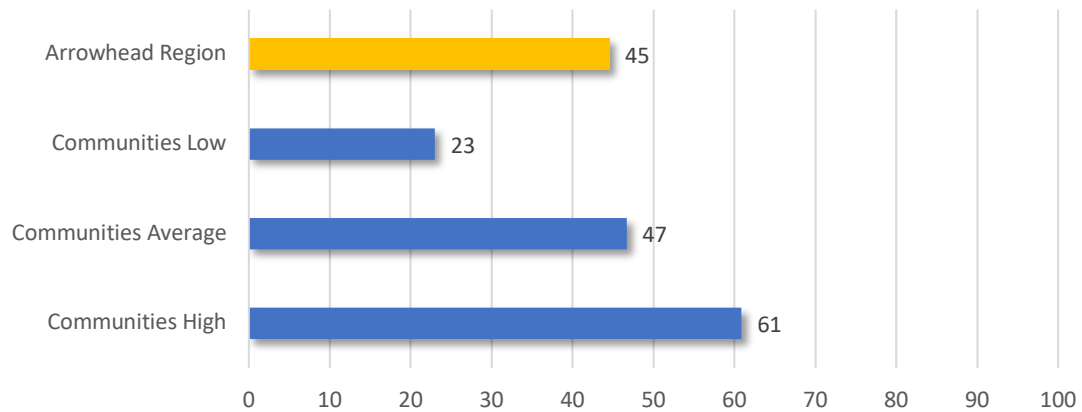
Connectivity Score



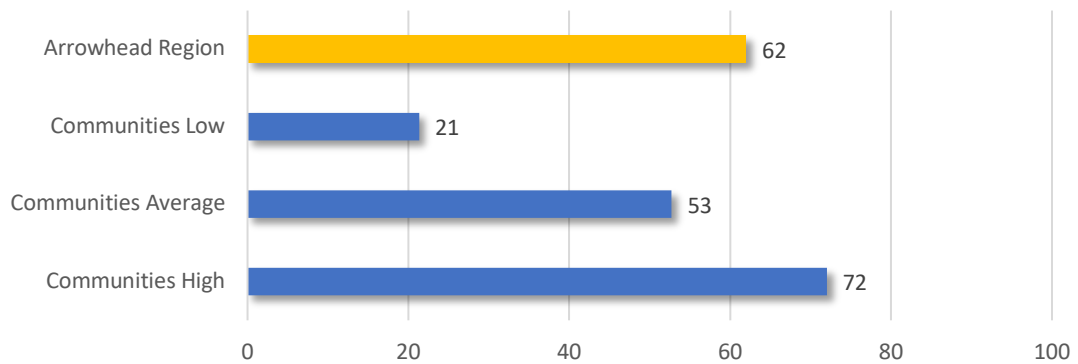
Knowledge Workforce Score

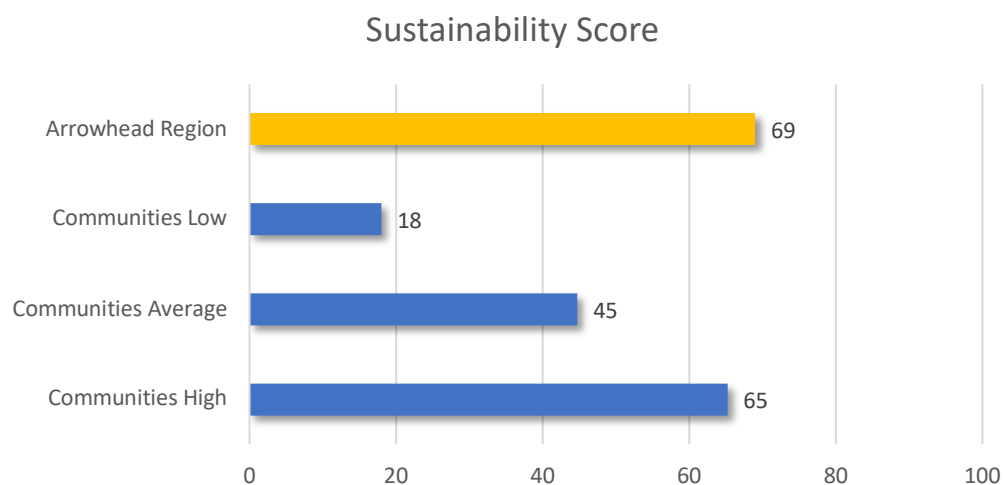
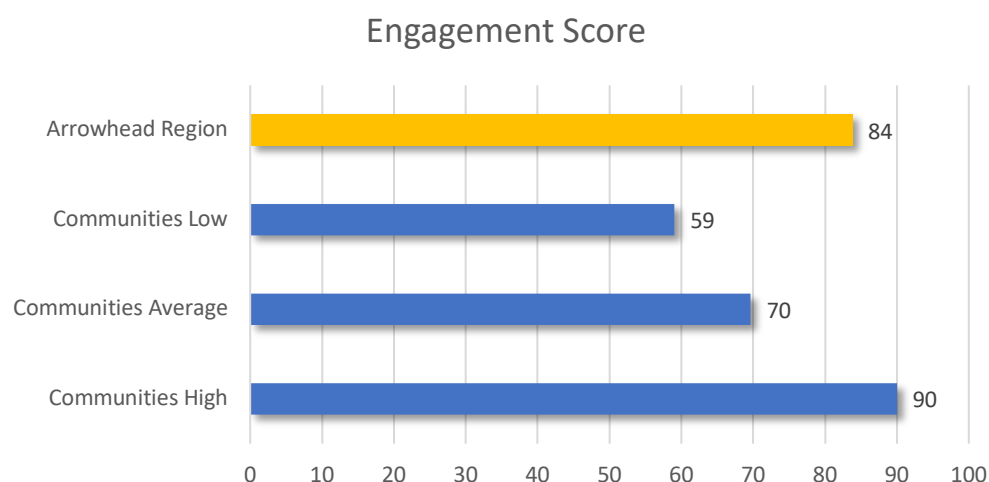


Innovation Score



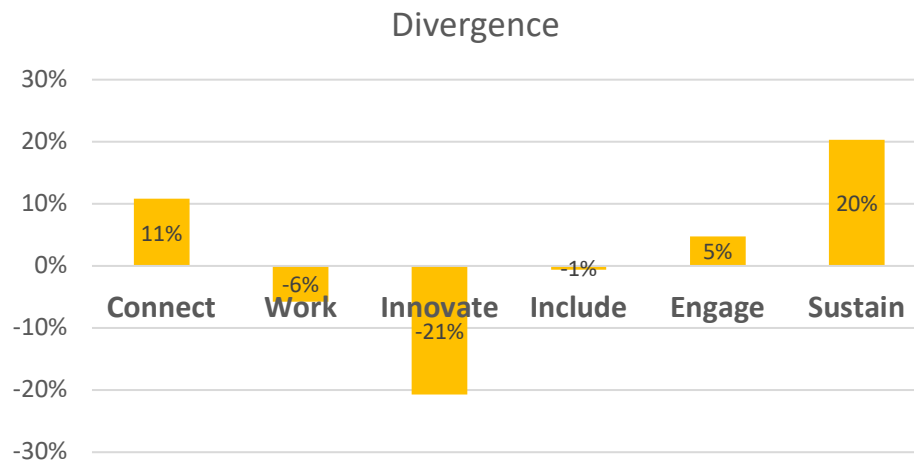
Digital Inclusion Score





One question raised by the available data is how representative the best-of-the-Region scores really are. We can gain some insight by measuring how they diverge from those of the five communities providing more granular data. To create a meaningful comparison, the chart below shows how much the best-of-the-region score for each factor diverged from the combined high and average scores of the communities. The high-average combination was selected as likely to be closer to the best-of scoring than would be the average of the communities.

For the Work, Include and Engage Factors, the best-of-the-Region and combination of the high-average scores for the four communities were in reasonably close alignment, which suggests that the data and projects included in the best-of-the-Region questionnaire were reasonably representative.



For the Connect, Innovate and Sustain Factors, however, there was a large divergence. Positive divergencies mean that the best-of results exceeded those of the high-average, while negative divergences mean that the high-average results exceeded the best-of. The sample is extremely small, but the negative divergence for Innovate may indicate that there are pockets of innovation in the region not reflected in the best-of questionnaire.

The Communities

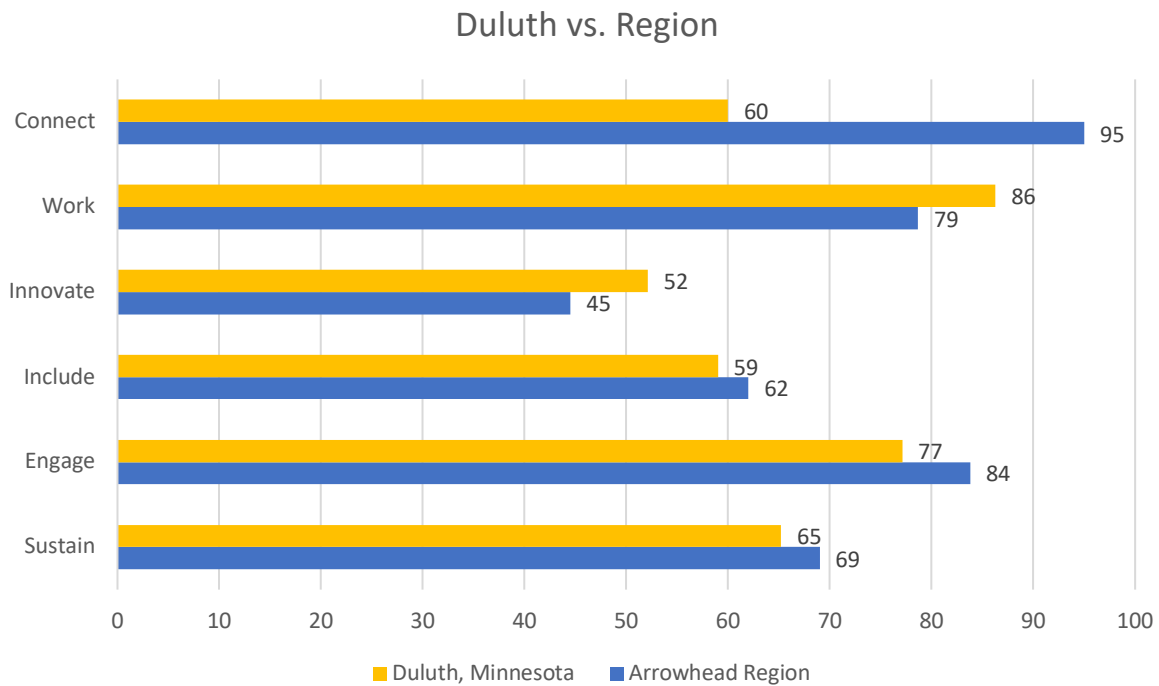
Duluth



The county seat of St. Louis County, Duluth is the world's farthest inland port accessible to oceangoing ships by way of the Great Lakes and St. Lawrence Seaway. It is Minnesota's fourth-largest city with a population of 86,000 and the center of a two-state metropolitan area of 279,000 people. Ranked among the top 20 US ports by tonnage, Duluth ships commodities including coal, iron ore, grain, limestone, cement, salt, wood pulp and steel coil. The city is also a tourist destination featuring the Great Lakes Aquarium, Canal Park and Park Point, and is the starting point for vehicle trips touring the North Shore of Lake Superior.

Duluth is the major regional center for health care, higher education, retail and business services in northeastern Minnesota, northwestern Wisconsin and the western Upper Peninsula of Michigan. In recent years, it has seen strong growth in the transshipment of wind turbine components from manufacturers in the US and Europe, as well as industrial machinery destined for the tar sands of northern Alberta. The city has also attracted several new engineering firms and startups in field from furniture and clothing to microbrews. The University of Minnesota-Duluth has helped spawn numerous research-intensive businesses including ERA Laboratories, the ASci Corporation and Ecolab.

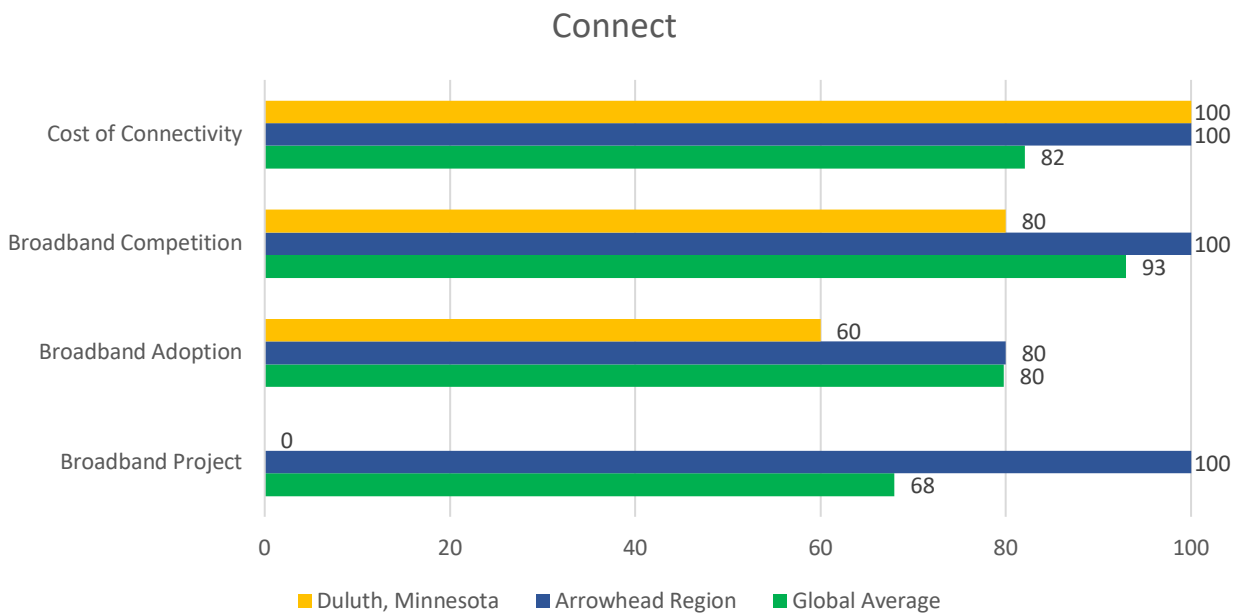
The chart below shows how Duluth compared with the best of the Arrowhead Region across the six Indicators.



The city's scores align with those of the Region in five factors, with an average 8% variance. The outlier is the Connect Factor, in which Duluth scored at only 58% of the Regional level for reasons explained below.

Intelligent Community Factors

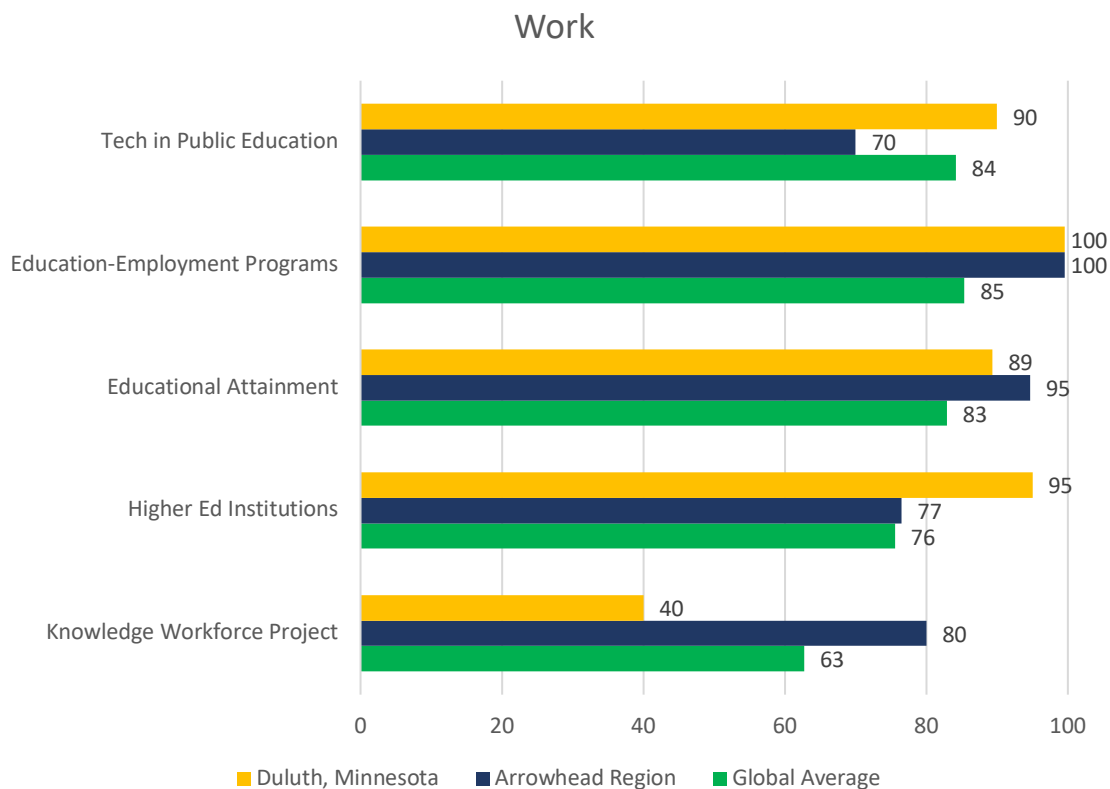
Connect



As the chart above reveals, Duluth received 100% of available points for the cost of connectivity (equal to the best-of-the-Region) and 80% for competition among providers (compared with 100%), but only 60% for premises adoption, which was reported to be 65% of premises passed by broadband. This disparity suggests a problem that needs to be addressed. However, the city did not complete the project question, which might have offered a chance to describe how Duluth is attacking this challenge. The score of zero for this question pulled down its total scoring significantly and is probably not representative of the city's approach to connectivity.

Work

Development of a knowledge workforce was an area of strength for Duluth. It equaled or outscored the best-of-the-Region statistics in technology in public education by 20 percentage points, education-employment programs (equal score) and access to higher education (by 18 percentage points). Educational attainment was within 6 percentage points of the best-of-the-Region.



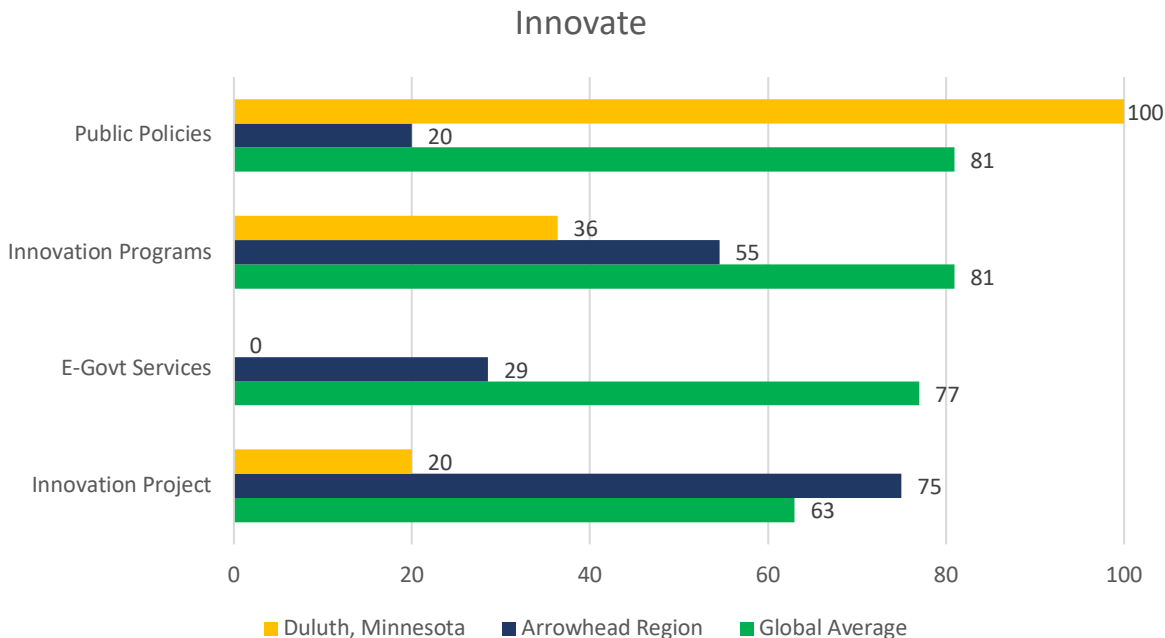
The city felt short in the projects section, scoring 40 percentage points below the best-of-the-Region. The three programs the questionnaire described focused on the twin problems of unemployment and underemployment on the one hand, and a shortage of qualified workers for the skilled jobs that do exist:

- SOAR Career Solutions, providing career planning services for job seekers and career changers seeking sustainable employment.
- NORTHFORCE, an online job matching platform matching candidates inside and outside the Region with job opportunities in the Region
- Duluth Workforce Development Board, which provides guidance and funding for workforce readiness and skills pathway programs.

Such programs clearly have value, but they address symptoms of the workforce problem rather than root causes. The ICF Method calls on communities to bring together educators and employers to rethink how education is delivered to all ages, and how employers' needs for talent can be met, so that education equips people young and old with the skills needed for a good career in the community. It is a difficult process requiring much patience, but can generate sustainable prosperity, in contrast to programs that seek to repair damage caused by economic changes and that must be continually funded to accomplish their missions.

Innovate

As represented in the questionnaire, innovation is Duluth's weakest point among the six Factors. It received 100% of available points for public policies, based on stating that policies promoting business, institution and/or government innovation have been reviewed and approved by Council and published as a public policy document.



Answers to the rest of the questions, however, leave this claim in some doubt:

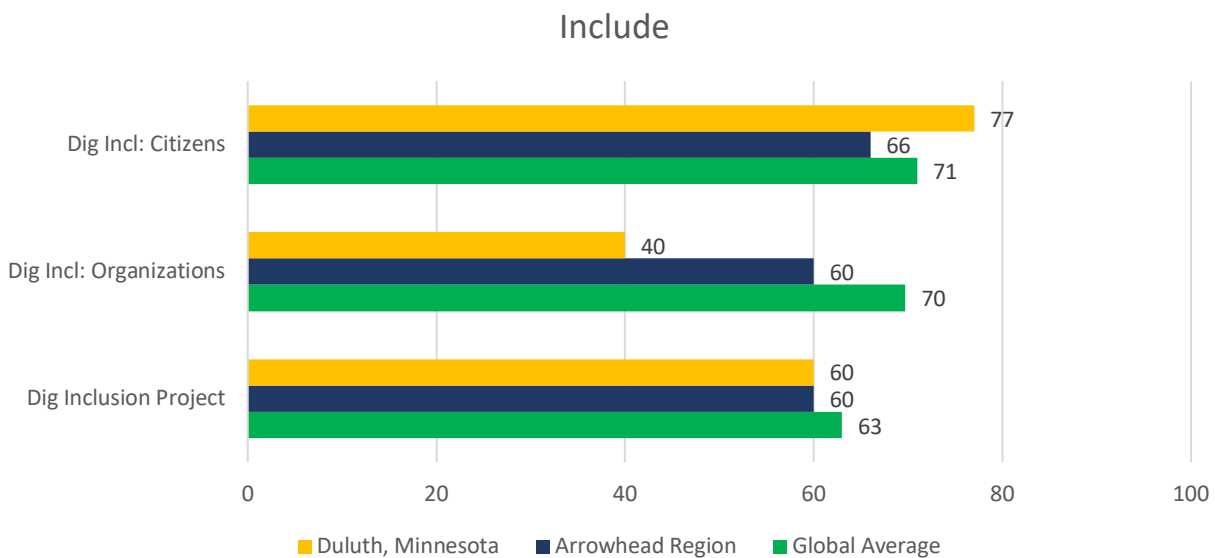
- The questionnaire identified only 4 out of a potential 11 innovation programs, resulting in a score of 36 out of 100 available points.
- The question about e-government services was left blank, resulting in a score of zero.
- Questions about projects offered six opportunities to provide examples, but only two were completed, one describing the Duluth Maker Space and the other a University of Minnesota program that partners the state with the German state of North Rhine-Westphalia to work toward greater energy efficiency.

The ICF Method guides communities in developing a self-sustaining ecosystem for business innovation, to which government contributes by investing in e-services among other actions. Maker spaces are one common element in such an ecosystem but without connection to other programs are largely of benefit to hobbyists. The questionnaire did not provide enough information for a meaningful assessment of innovation in Duluth.

Include

Duluth outscored the region and the global average for programs delivering facilities and services to citizens who do not have their own online access. Programs for organizations on the wrong side of the digital divide, however, are lacking, earning only 40% of available points compared with 60% for the Region and 70% for the global average.

Duluth's projects – Digital Inclusion Partnership, Achievement and Integration for Minnesota and LISC Duluth – scored at about the same level as the Region and global average. It is worth noting, however, that only one of the three examples, the Inclusion Partnership, addressed digital issues. The other two address the broader issue of inclusion for low-income and marginalized citizens, which is admirable but less relevant to the analysis.

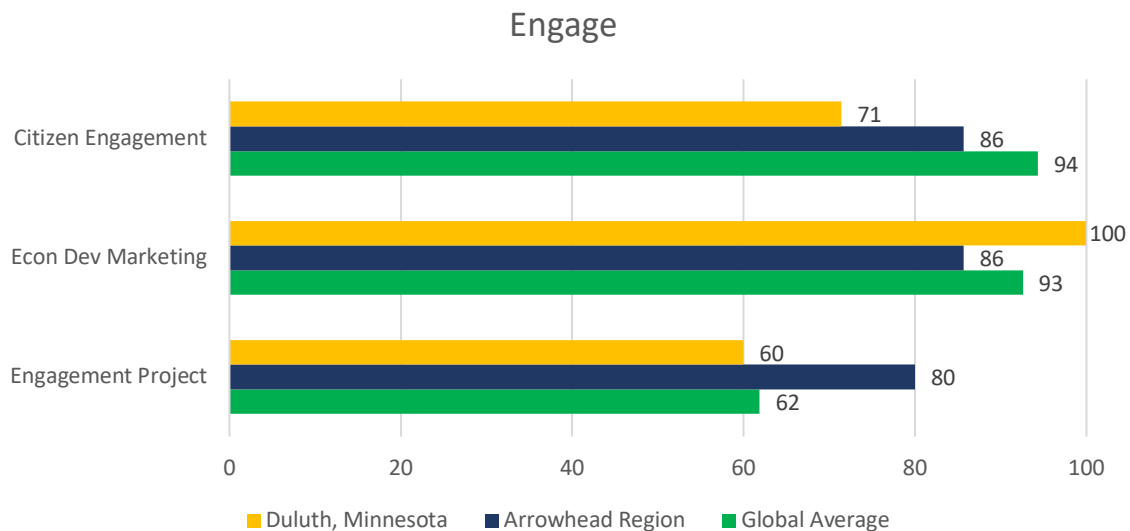


Engage

In its engagement efforts aimed at citizens, Duluth was awarded 71% of available points compared with 86% for the best-of-the-Region and 94% for the global average. This was based on the number of programs the city provides. Economic development communication, in contrast, received the top score on the same basis, compared with 85% for the best-of-the-Region and 93% for the global average. Duluth described three projects in this section:

- Area Partnership for Economic Expansion, a regional economic development organization focused on attracting site selectors.
- Arrowhead Growth Alliance, which provides a bi-annual forum for higher educational institutions, state and city economic development leaders, and port authority and electric utility executives.
- Minnesota Young Leaders Program, a capacity-building program from a partnership of educational institutions aiming to train business, nonprofit and government leaders from across Minnesota in economic development best practices.

Together, these programs scored at 60% of available points, matching the global average, compared with the 80% score of the best-of-the-Region.



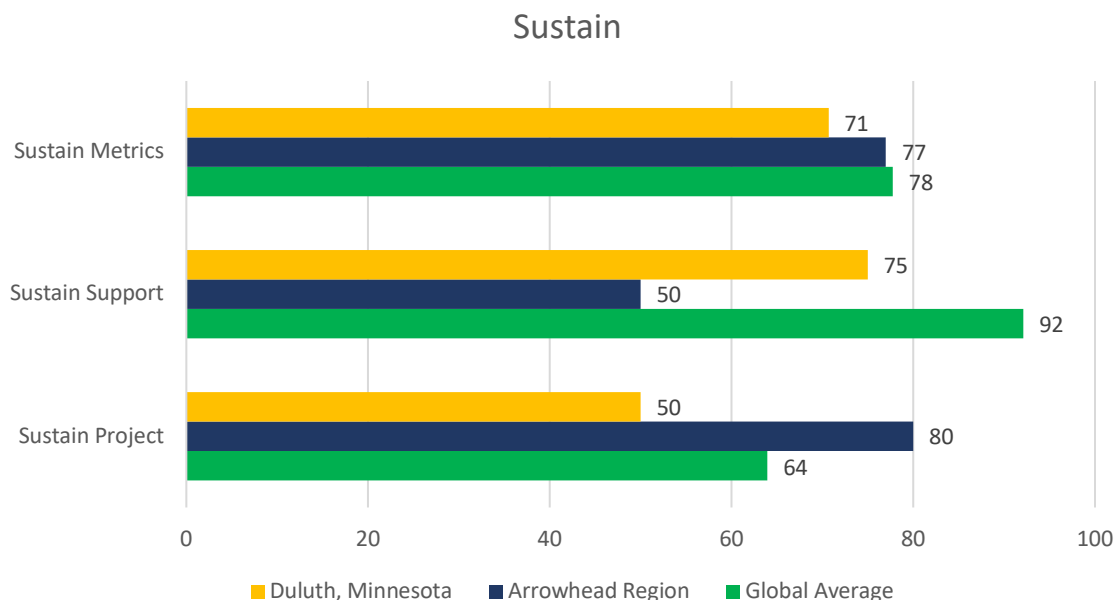
In the ICF Method, engagement means a deliberate effort to help citizens, businesses, institutions and community leader understand the need for change, identify opportunities and become champions of positive change. By engaging the passions and concerns of the community, engagement also energizes economic development, investment attraction and business generation, because the community has built a unique vision of its character and its future. Of the Duluth examples, the Young Leaders and Growth Alliance most nearly reflect that aim, while the Area Partnership is a sensible approach to encourage individual communities and counties to join forces on investment attraction. It is notable that these are

all state or regional programs, and there is little evidence of a commitment in Duluth to an engagement strategy.

Sustain

Duluth reported on four of five sustainability metrics, earning 71% of available points, only 6-7 below the best-of-the-Region and global average scores. Support for sustainability scored significantly higher, at 75% of available points, than the best-of-the-Region average, though lower than the global average of 92%. The three projects described by Duluth included:

- Duluth Natural Areas Program, which designated lands with environmental value as protected natural places.
- Duluth Energy Fund, which funds energy-efficiency projects to reduce GHG emissions.
- Duluth Energy Efficiency Program, which connects residents to financial assistance for home energy improvements and increased the percentage of households making these improvements from 2% in 2011 to 65% in 2014.



The city received only 50% of available points for these projects, compared with 80% for the best-of-the-Region and 64% for the global average. The missing ingredient in these programs was the involvement of citizens, local business and institutions in creating and carrying out the programs as well as making sustainability an economic development focus. For ICF, sustainability is important at the local level for reasons that go beyond preserving the environment on which we all depend. Because it concerns local quality of life, it has the power to engage the community in building a better future, and the habit of engagement inevitably crosses over into other development priorities. It also improves

quality of life, which makes the community more attractive to investors and new businesses. And sustainability is becoming a significant growth sector with enormous potential. It should be part of every community's economic development strategy – but can only succeed with genuine community support.

Recommendations

Duluth has the potential to accelerate its transformation into an Intelligent Community in a number of areas:

- **Connect.** The city appears to have a solid broadband foundation but has not yet generated the widespread adoption that can have a transformative impact in many areas. Programs to promote subscription and use, including those focusing on the digital divide, can pay dividends in that area. Failing to complete the projects section of the questionnaire, if it reflects actual conditions in the city, represents a missed opportunity that should be addressed.
- **Work.** This is an area of strength for the city. Its current roster of projects, however, addresses the symptoms of the workforce problem rather than root causes. Duluth will achieve much more over the long term from a sustained effort to rethink and redesign how education is delivered to all ages in close partnership with employers, as outlined in the ICF Method.
- **Innovate.** Duluth has strong policies promoting innovation but has not, based on the questionnaire, translated those policies into actual project and programs. These need to be generated at the local level and to be developed with vision and ambition suitable to a city of 86,000 people that is already an economic hub in the region. The partnerships with the educational community and the economic development relationships with employers that are described elsewhere in the questionnaire can be tapped to build a true innovation ecosystem.
- **Include.** Duluth is a strong performer in digital inclusion – and overall economic inclusion – aimed at citizens. The same is not true of its business community, where small-to-midsize companies predominate and are typically slow adopters of digital technology. Motivating, training and equipping these employers with digital know-how and applications can make a meaningful boost in their revenue and profits, benefitting the entire city.
- **Engage.** When it comes to engagement, Duluth appears to rely excessively on regional and state programs, at least as reflected in the questionnaire. Effective engagement is always local, based on the needs and passions of citizens. Energy devoted to engaging citizens and organizations in understanding the city's issues and contributing to solutions will power every other aspect of the city's development.

- **Sustain.** Engagement is the missing ingredient in Duluth's sustainability efforts, as reflected in the questionnaire. Keeping sustainability programs inside the four walls of government is a major missed opportunity to increase citizen commitment. Duluth also needs to make the development and attraction of sustainability businesses a priority, because it is currently a missed opportunity.

Conclusion



As a large rural region of many municipal and county governments, the Arrowhead is diverse in terms of people, landscape, infrastructure and economic activity. The recommendations in this report are based on the ICF Method, which applies the same framework to understanding every community's challenges and recommends similar strategies to all, regardless of size or location.

How those strategies are carried out – and the extent to which they are already in motion – will be different in each one. The goal is not to make all the municipalities and counties within the Arrowhead into identical units; it is to help each fulfill its potential as determined by the ambitions of its leaders and the wishes of the people who call that community home.