# Recommendations

During 24 months of meetings, the Statewide Broadband Task Force heard about the need for a more robust broadband infrastructure from more than 30 organizations and other stakeholders including small communities, educators, health, officials, providers, and entrepreneurs. Task Force members also examined multiple documents and reports and met with key stakeholders including educators, business leaders, and municipal executives. As such, the Task Force offers the following general recommendations to deliver 100 Megabits per second to every Alaska household as well as specific recommendations in the areas of education, jobs, and public safety.

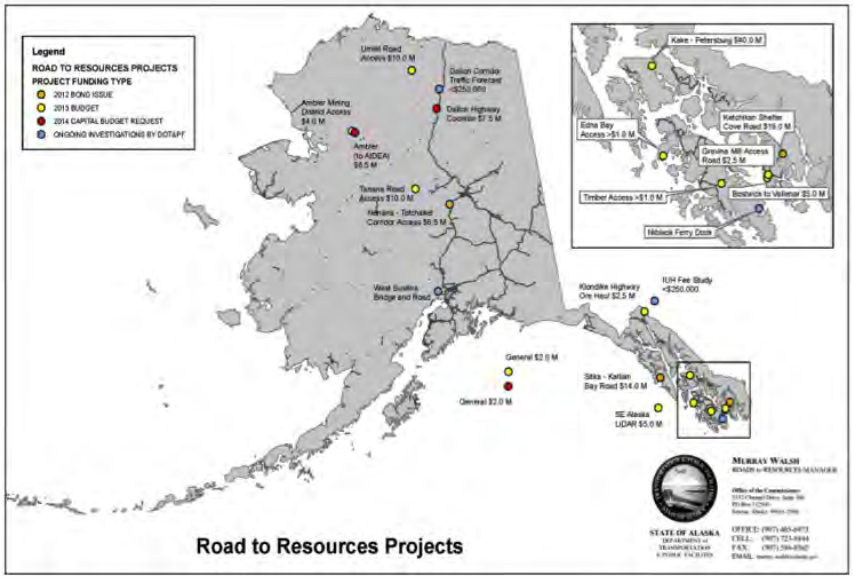
## General Recommendations

Alaska should:

1. Adopt a minimum service objective of access to broadband service of 100 Mbps (up and down) to households and businesses throughout Alaska by 2020, aligning with the FCC's goal for connectivity as outlined in the National Broadband Plan.[52] This objective should:
   - Recognize that speeds and deployment would be phased in over time; and,
   - Recognize that anchor institutions, (e.g. library, school, hospital, university, public safety, and governments including federal, state, municipal, tribal, and local) should be considered drivers of service to mass market end users and may demand a service objective in excess of 100 Mbps.
2. Establish an Office of Broadband Policy to manage the statewide plan, coordinate future strategy, planning, and policy, and market the importance of broadband adoption at the state and national level. This office would:
   - Coordinate with other agencies regarding uniform access methods and procedures for broadband infrastructure placement on state lands and facilities;
   - Educate community leaders and key stakeholders about adoption of broadband;
   - Coordinate the development of educational, economic, and health programs adaptable to e-platforms in partnership with providers and other e-organizations;
   - Pursue programs that provide training for digital literacy and broadband adoption;
   - Work to ensure the adequate deployment of broadband initiatives in collaboration with stakeholders;
   - Create a vehicle for public input on the topic of establishing and developing broadband policy; and,
   - Work with NTIA to facilitate an Arctic communications plan that is in Alaska's best interest to include an emphasis on economic and community development as well as safety/national security interests.
3. Prioritize rapid deployment of broadband access that improves current service levels. This deployment should:
   - Negotiate with national satellite providers to consider deploying high-speed spot beams throughout Alaska on planned or deployed next generation satellites;
   - Reach all locations as quickly as possible using satellite and terrestrial connections to deliver service at 10 Mbps or greater per household or economic unit. Once built, terrestrial connections can be upgraded to deliver the plan's 100 Mbps service at later dates;
   - Implement middle mile connectivity for each community starting with major hub communities based on total demand (number of homes/businesses/anchor institutions), and ensuring that communities can support the speeds offered by any initial middle mile deployment of at least 10 Mbps using all available technologies;
   - Support hub community last-mile implementation through grants and loans where new middle mile access is being deployed, such as high bandwidth fiber;
   - Encourage each community to develop and implement its own last-mile solution, compatible with the Task Force goal of 100 Mbps to every household and business so that a uniform system is developed;
   - Promote/encourage innovations and new wired and wireless technologies in the deployments;
   - Explore ways to incent 24-hour Internet access at community centers/meeting places and existing anchor institutions; and,
   - Recognize the importance of Arctic telecommunications development and promote sustainable deployment to the region.

4. Establish technical standards to be used for the qualification of proposed construction projects wishing to gain financial support pursuant to the Task Force's recommendations.
5. Establish public-private partnerships with industry innovators and entrepreneurs to rapidly accelerate broadband development and deployment within Alaska.
   - Consider public-private partnership models for technology training, production, and adoption in communities at the margins of technology (i.e., rural, low-income, immigrant, senior populations).
6. Encourage public and private advocacy efforts to maximize federal Universal Service Fund (USF) support for Alaska.
   - Recognize and document the impacts to Alaska of Universal Service Fund reform;
   - Ensure the Alaska Universal Service Fund is targeted to support infrastructure and broadband utilization, furthering all of the Task Force goals; and,
   - Examine the Alaska Universal Service Fund (AUSF) to determine if revisions to the fund are necessary.
7. Ensure network diversity through terrestrial (overland) means on the key Alaskan high density backhaul fiber routes. For example, interconnecting with Canadian Telecom networks at key cross border points could provide fiber-ring architecture between Canada and Southeast Alaska.
8. Streamline current state e-government systems and foster improved user access, ease of use, application development, and deployment through MyAlaska.
9. Streamline the permitting process for broadband deployment projects through the Office of Project Management and Permitting (OPMP) within the Department of Natural Resources to improve financial viability and shorten broadband deployment timelines.
   - The OPMP would facilitate state, local, tribal, and private permitting/access; champion and aggressively pursue support of accelerated regulatory permitting at the federal level; conduct a broadband review as part of any state-funded project, to associate broadband infrastructure advancement complementary to the primary project; facilitate the laying of fiber in connection with roads, oil or gas pipelines, and other applicable infrastructure projects; and,
   - The OPMP would establish an online clearinghouse with links to state, federal, and local agencies involved in the project, along with links to relevant forms for permits to construct infrastructure. Other agencies involved would be asked to continually monitor the site to ensure accurate and complete information.

Road to Resources Projects




This map created by the Department of Transportation & Public Facilities details the existing Roads to Resources projects that could include high speed fiber cables in the project design.

## Jobs Recommendations

Alaska should:

1. Establish policies and procedures that attract and encourage investment in "Big Data" communication industries (such as data centers) in Alaska.
2. Create training programs for knowledge workers, technicians, and web-based industries through the Alaska Department of Labor and Workforce Development that provide hands-on, long-term training to build business-level proficiency in digital media skills.
3. Incent Internet technology innovators to patent their innovations for funding purposes.

## Education Recommendations

Alaska should:

1. Establish and fund the Alaska Center for e-learning and e-commerce (AkCee) under the Alaska Distance Education Consortium to stimulate demand for broadband through increased e-learning, e-health, e-government, and digital literacy programs:
   - Coordinate the needs for e-learning/digital learning (at all levels) and e-commerce, e-government, and e-health services with their respective stakeholders across the state to ensure alignment with the broadband Task Force goals;
   - Encourage the design, development, and promotion of web-based platforms for distance education; and,
   - Establish a shared communications network to give post-secondary institutions, researchers, and university innovators access to grid computing, cloud-based applications, tele-presence networks, and connections to academic research networks.
2. Create an incentive for organizations to provide digital literacy, teaching, and learning programs that facilitate broadband adoption.
3. Establish funding to help anchor institutions such as schools, libraries, and post-secondary institutions acquire the service goal for connectivity (100 Mbps) when it is available in their communities.
   - The service goal for connectivity (100 Mbps) should be considered a minimum since the National Broadband Plan sets a much higher goal for anchor institutions.[53]
4. Establish priority funding for all public post-secondary institutions in Alaska not connected to an academic network with the service goal (100 Mbps) to expand their connectivity infrastructure.

## Public Safety Recommendations

Alaska should:

1. Ensure public safety and emergency services receive the highest priority for state and national emergency communications access to the broadband network including the state's Emergency Operations Center.
2. Future broadband planning should be done in collaboration with FirstNet and the Public Safety Broadband Network as well as with state and local providers to ensure there are efficiencies in planning, build -out, deployment, and adoption.
   - Broadband planning must ensure interoperability, focus on appropriate technologies, leverage funding streams, and recognize the mission control security requirements of the public safety broadband network;
   - System upgrades should be tied to state and regional Emergency Response Coordination Centers (local emergency planning efforts, State Trooper posts, local police departments as first response / incident command centers); and,
   - Redundancy should be established for communities on terrestrial networks via satellite, the configuration of network rings, or other options.

# What Will It Cost?

In addition to recommending infrastructure solutions, the Task Force evaluated the cost of new broadband infrastructure and reviewed possible funding mechanisms. The Task Force consulted others in the funding discussions, including the Alaska Department of Revenue, the Alaska Housing Finance Corporation, and the Alaska Industrial Development and Export Authority (AIDEA).

***Findings:***

1. The Task Force agreed that public resources should not be considered as the only funding source. In fact, it is likely that neither public nor private funding alone will provide the capital necessary to fully achieve the Task Force-defined broadband goal of 100 Mbps to every household by 2020.
2. Public funding, if available, should not impede further infusion of private resources, undermine past private investment, or create unsustainable projects.
3. The Task Force recognized that the future cost of broadband deployment would be different than estimated in this report due to a variety of factors.
4. Understanding the cost of broadband adoption, not just deployment, would be critical to develop public policies that provide for realistic targets based on economic considerations.

With that philosophy in mind, the Task Force also recognized that if private investments could return a profit on infrastructure development, investments would already have been made in rural broadband infrastructure. But because of Alaska's remote landscape and diffused population, a profitable return has been and will continue to be challenging.

***Background***: The Task Force identified three approaches as it began to review cost calculations:

1. Conventional engineering based on estimating the coverage requirements imposed by the goal and then using those estimates to project the necessary investment to fulfill the goal. This is the methodology followed for the investment estimation of Australia's National Broadband Plan.
2. The "top down approach" based on first determining the amount of financial resources needed and then sizing the amount of coverage that will be achieved given those resources. To some degree, this is the approach that has been followed in the United States with the Broadband Technology Opportunities Program.
3. The "public policy" framework, which defines targets, such as coverage and speeds, but leaves the amount of investment required unaddressed. The objective would not be to provide extremely precise estimates but to gauge the investment in broadband required in order to have a sense of the resultant social and economic returns.

Ultimately, the Task Force adopted the "public policy" framework, focusing its recommendations to meet the target of 100 Mbps (up and down) to every Alaska household by 2020 while utilizing current, conventional engineering methodologies to gauge the investment required for purposes of informing the development of those recommendations. Cost estimates were averaged across the entire state. The Task Force found that whether delivered by fiber, microwave, or satellite (or a combination) the cost to build out the required infrastructure would be in excess of $1 billion.

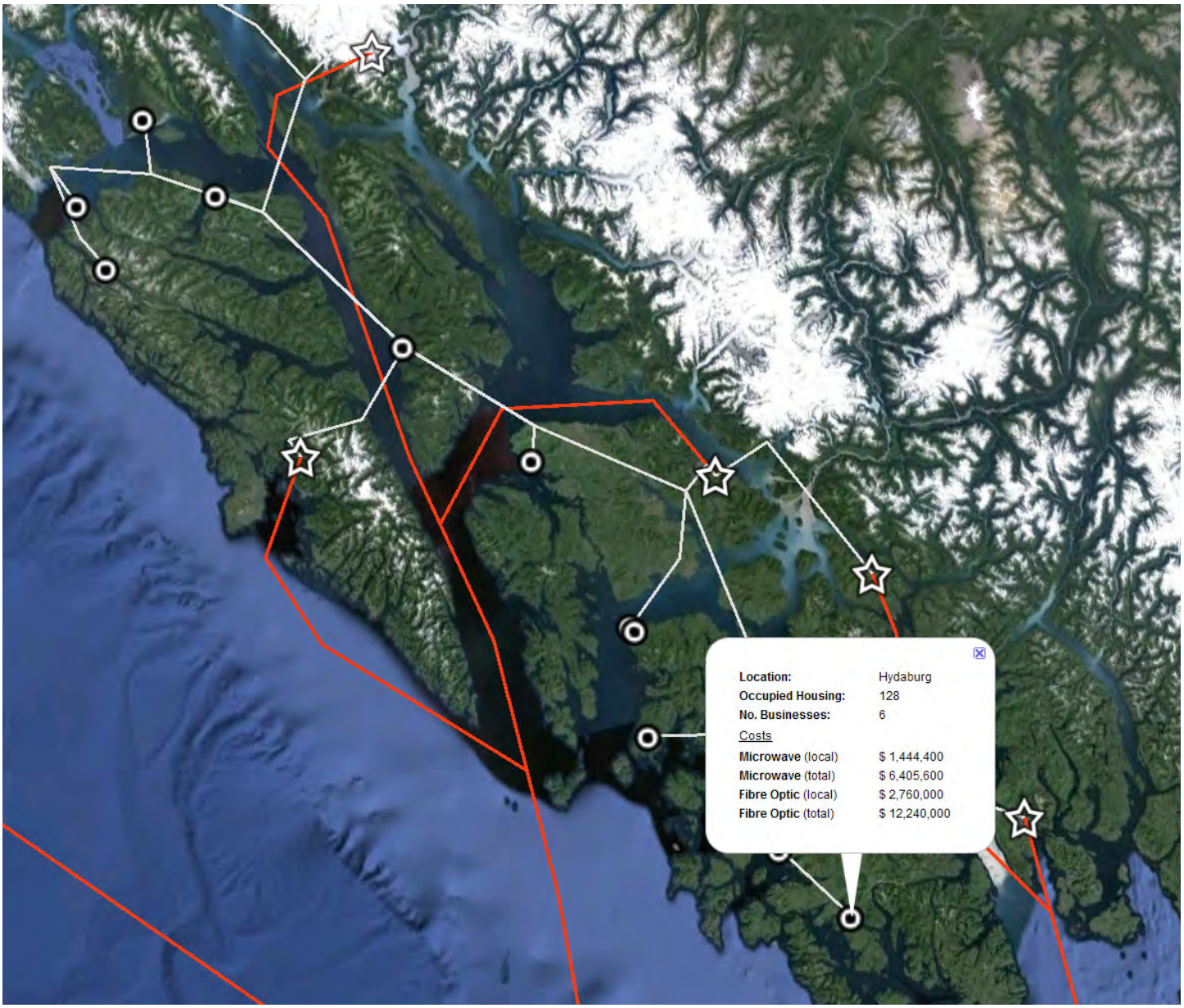
| Estimated Total Investment Required to Achieve Goal for 2020 | |
|---|---|
| Middle Mile New Construction (fiber & microwave) | $610 million |
| Add to Existing Microwave System | $30 million |
| Last Mile (all state households/businesses) | $580 million |
| Total | $1.2 billion |
| Additional Alaskans with High Speed Fiber Access | 80,000 |
| Additional Alaskans with High Speed Microwave Access | 20,000 |

Every individual segment of the network will have actual costs reflective of the terrain and other environmental characteristics and can vary widely from unit costs derived from these universal estimates.

While agreeing that private sector investment should be the primary funding of broadband development, the Task Force also considered that, to date, private sector investment has been in areas where demand and demographic density would generate an appropriate rate of return on investment. Over time there will be additional broadband facilities constructed by Alaska's telecommunications companies either based solely on market opportunity or with anecdotal economic incentive from any number of sources. The Task Force recognized, however, that there will remain a number of locations for which significant economic support or subsidy will be required to allow for construction and operation of the broadband facilities needed to meet the Task Force objective. For that reason, telecommunications infrastructure should be an important part of major construction projects.

## Example: Delivering High Speed to Hydaburg

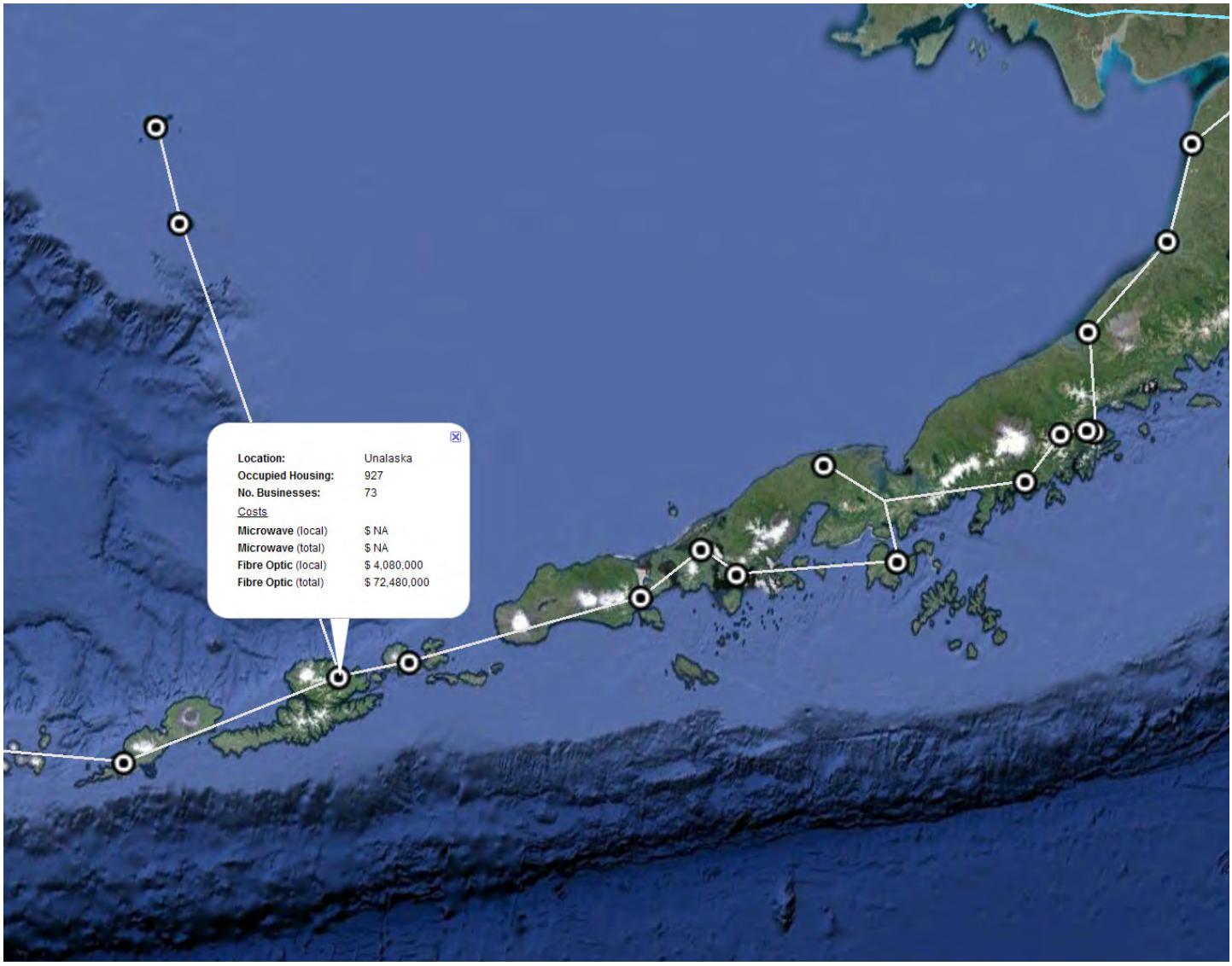
According to the estimates developed by SNAP, the cost of delivering 100 Mbps of broadband speed by fiber to Hydaburg – 128 households and 6 businesses – would be $12.24 million.




Broadband infrastructure cost model provided by the Scenarios Network for Alaska and Arctic Planning, University of Alaska, Fairbanks. 2012

## Example: Delivering High Speed to Unalaska

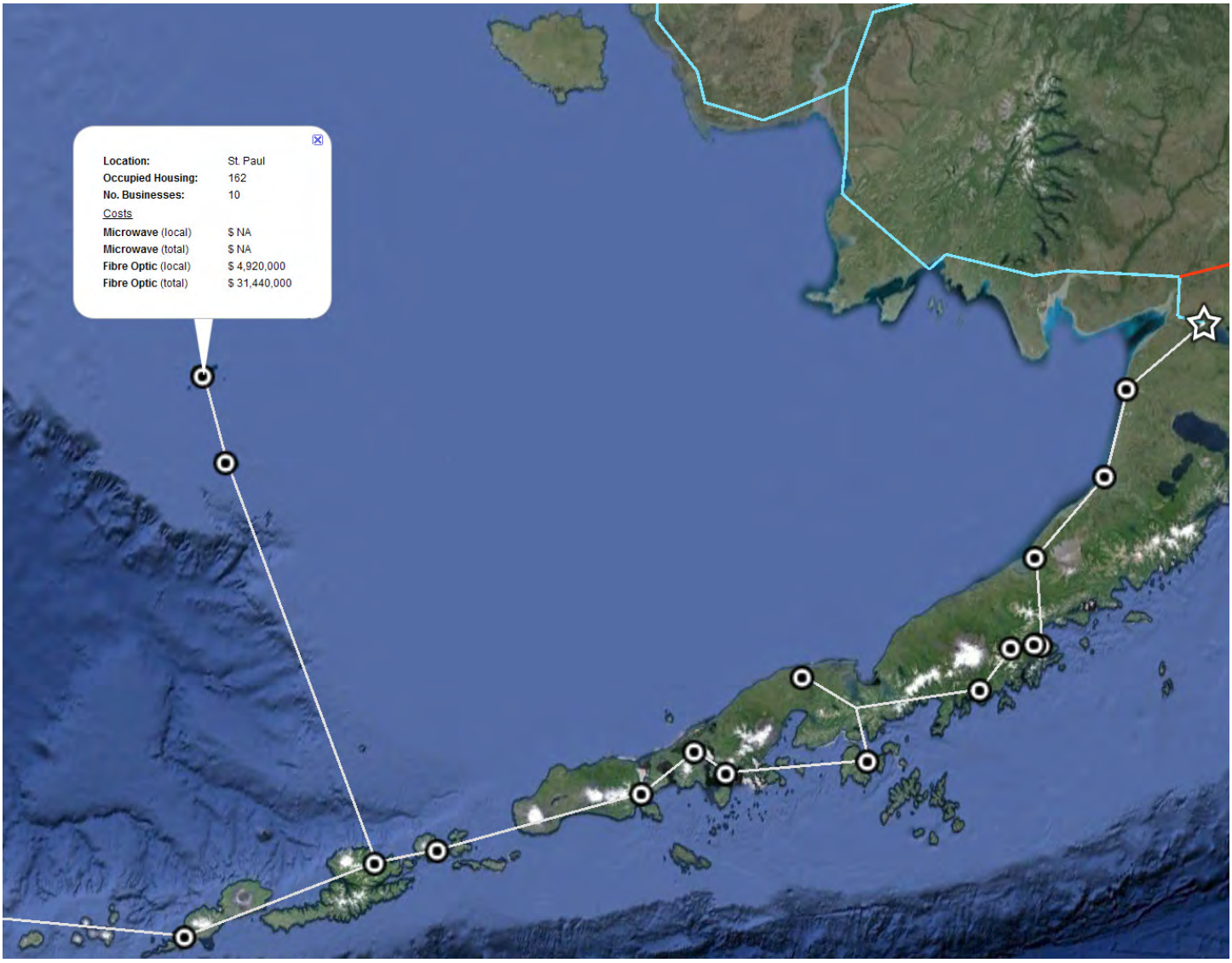
According to the estimates developed by SNAP, the cost of delivering 100 Mbps of broadband speed by fiber to Unalaska – 927 households and 73 businesses – would be $72.4 million.




Broadband infrastructure cost model provided by the Scenarios Network for Alaska and Arctic Planning, University of Alaska, Fairbanks. 2012

## Example: Delivering High Speed to the Pribilof Islands

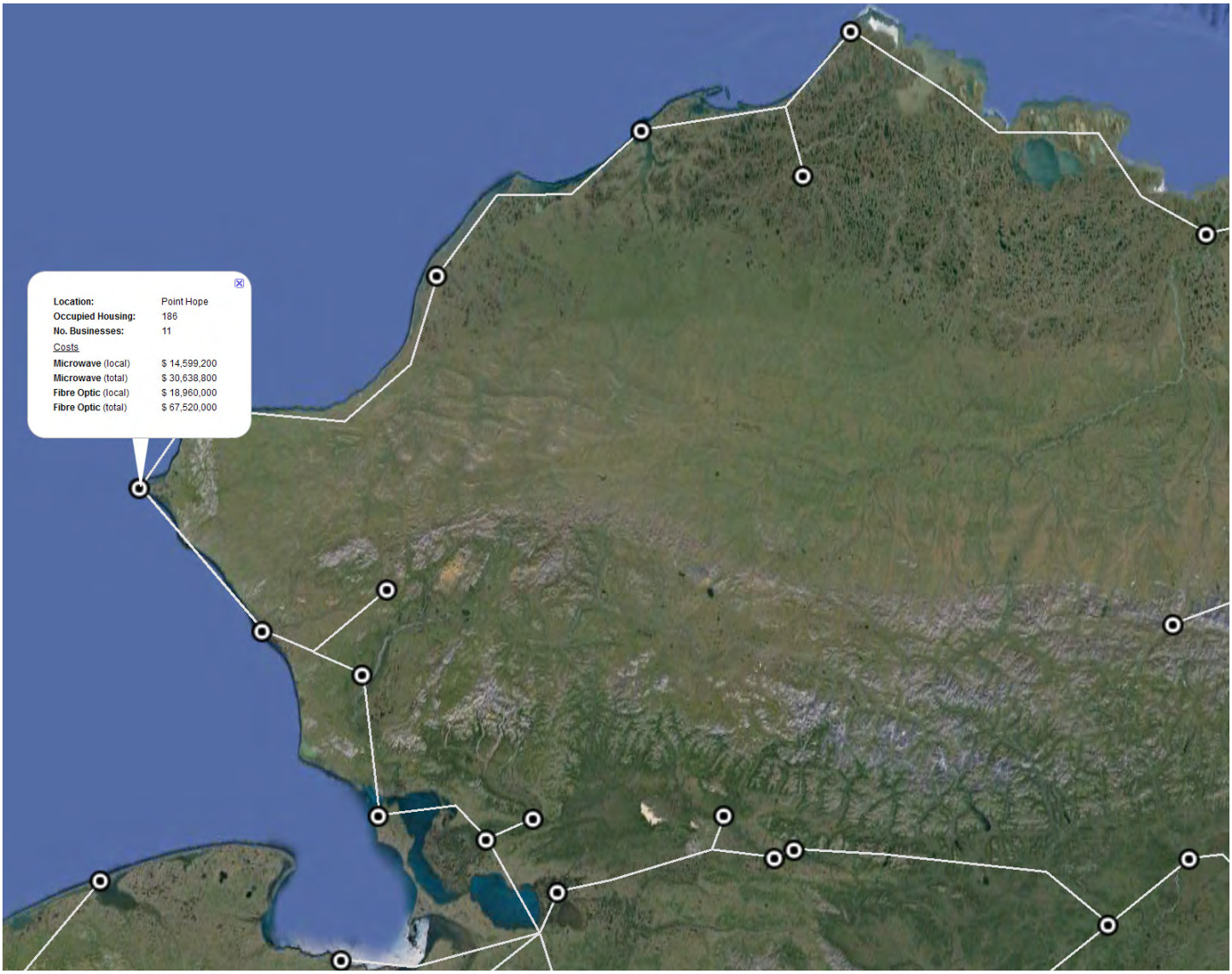
According to the estimates developed by SNAP, the cost of delivering 100 Mbps of broadband speed by fiber to the Pribilofs – 162 households and 10 businesses – would be $31.4 million from Dutch Harbor.




Broadband infrastructure cost model provided by the Scenarios Network for Alaska and Arctic Planning, University of Alaska, Fairbanks. 2012

## Example: Delivering High Speed to Point Hope

According to the estimates developed by SNAP, the cost of delivering 100 Mbps of broadband speed by fiber to Point Hope – 186 households and 11 businesses – would be $67.5 million.




Broadband infrastructure cost model provided by the Scenarios Network for Alaska and Arctic Planning, University of Alaska, Fairbanks. 2012

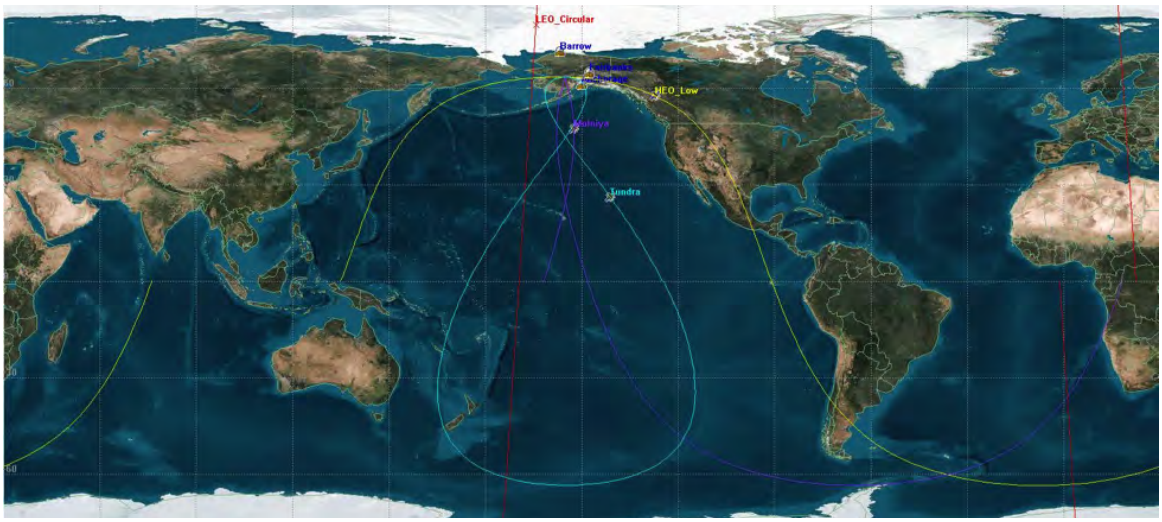
## Federal Universal Service Funding

Created in 1997, the FCC's Universal Service Fund (USF) system has played perhaps the biggest role to date in funding the development of telecommunications and broadband systems/infrastructure throughout Alaska. In 2010 alone, the USF contributed more than $300 million to the state in the form of subsidies for rural health care communications, network deployment in high-cost areas of the state, subsidies to connect schools and libraries, and discounts for basic telephone service for low-income households.

In 2010, the FCC published the National Broadband Plan to fulfill its directive under the American Recovery and Reinvestment Act of 2009 (ARRA). The National Broadband Plan called for a number of initiatives to improve broadband across the United States, including reforming the entire USF system: the first major USF reform since the program was established under the Telecommunications Act of 1996. Toward that end, the FCC issued the USF Reform Order in November 2011, which put in place a process to transition the USF program from a focus on traditional voice telephone service to one that focuses on broadband development (wireless and wireline).

For Alaska, the most significant program change has been the creation of three new universal service funding mechanisms (the Connect America Fund, the Mobility Fund, and the Remote Areas Fund) to gradually replace the old system that distributed funds under the high-cost section of the program. In addition to replacing existing federal universal service support mechanisms, the new funding mechanisms are now designed to extend and maintain broadband service to the "unserved" portions of the state where only slow, or even no, broadband access is available. The new funds will provide federal support to wire line, wireless, and satellite providers based on a combination of changes to legacy procedures, cost models, and reverse auctions. The new funds all have the slight potential to benefit certain parts of Alaska. However, there is a tradeoff: subsidies slated for these programs are limited and are likely to decline for Alaska in the coming years.

Other portions of the USF program are still under review, but the overall effect is that Alaska recipients of federal USF support are facing increased service obligations while enduring significant decreases to federal USF support levels under the current FCC reform measures. This uncertainty has had a chilling effect on some investment options in Alaska communications infrastructure. The Task Force agrees that funds dedicated to Alaska should not be diverted and that Alaska and its telecommunications industry should continue advocating Alaska's position on the FCC's reform measures by stressing Alaska's unique characteristics in terms of both demographics/ geography (with no comprehensive road system and rural areas characterized by small population centers dispersed across vast geographical expanses) and infrastructure (with no statewide terrestrial communications network). These dynamics should continue to be cited as justification for additional federal USF support to allow expansion of broadband services throughout Alaska and, at the very least, demonstrate that existing funds for Alaska should not be diverted to other locations.[54]



# How Do We Pay for It? Funding Options

## State of Alaska Funding

As the state considers the cost of developing a broadband network in Alaska, it must be underscored that the deployment and maintenance of broadband infrastructure will be costly and largely uneconomical to private enterprise due to the sparse population, vast land expanse, lack of a comprehensive road system, limited construction seasons, and vast imposing topography.[55] The challenge of expanding broadband services throughout Alaska is exacerbated by the fact that federal support (Universal Service Fund) for Alaska service providers is decreasing despite federal expectations that telecommunication companies upgrade voice networks to broadband-capable networks.

In consultation with a wide variety of advisors, the Statewide Broadband Task Force has identified the following possible options for state funding of broadband Internet infrastructure and services.

***Grant Programs:***

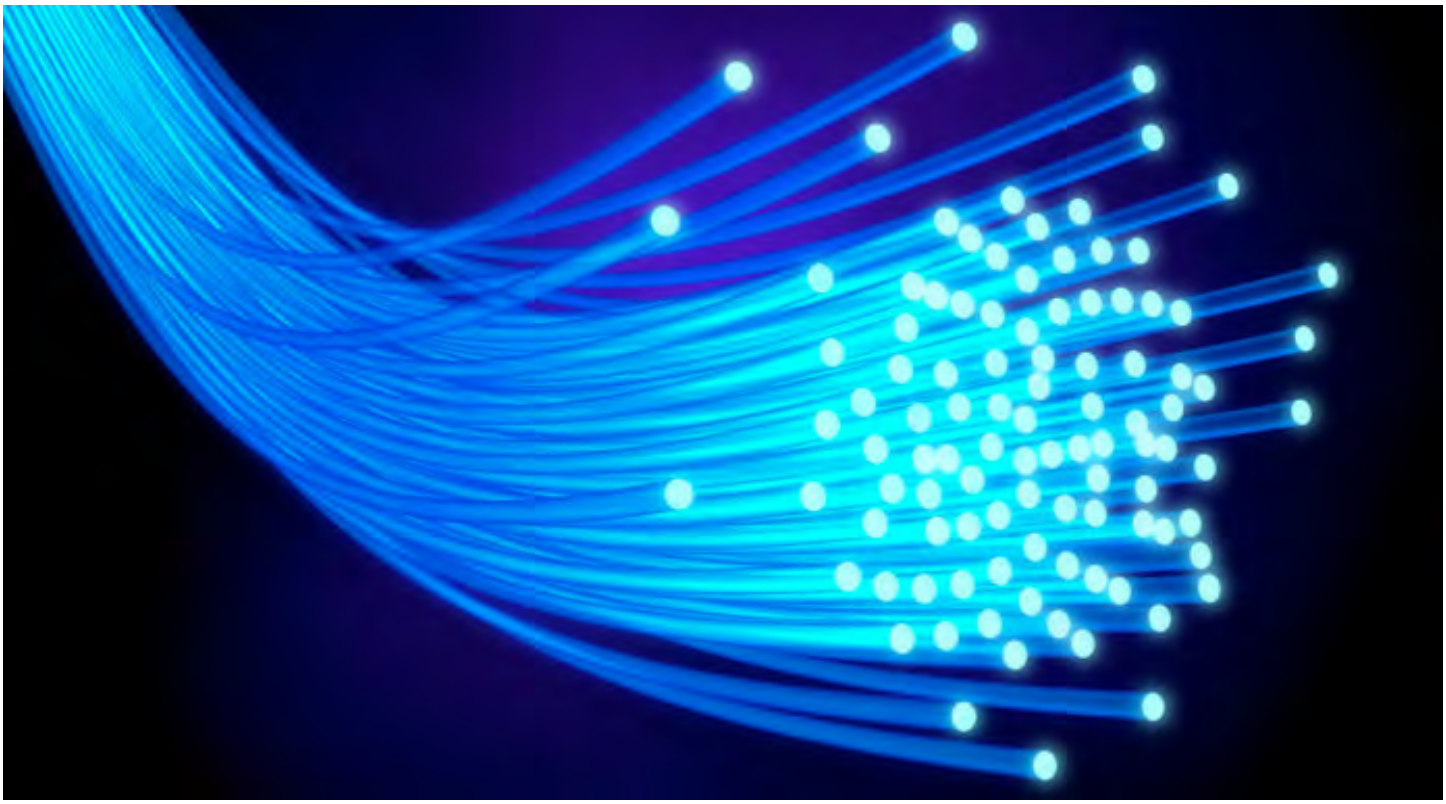
- Beginning in FY 2015, include in its annual budget a matching grant program for proposed broadband infrastructure projects. These projects must:
  - ◊ Have at least a 50 percent match from other sources of funding;
  - ◊ Meet the Task Force goal of 100 Mbps (up and down) for broadband service; and,
  - ◊ Not duplicate existing broadband infrastructure.
- Explore the creation of a state broadband equalization subsidy between urban and rural rates so that both are comparable in price and service level. Rural areas with broadband service comparable to that of urban areas (price and service) would not be eligible. This program could be patterned after the Power Cost Equalization (PCE) program, which is a state-funded program.[56]
- Consider creating a competitive state grant for organizations that provide training for digital literacy, workforce development, and broadband adoption.
- Create a state grant to reduce the local contribution required from eligible schools and libraries participating in the E-Rate program.[57]
  - ◊ The grant could match the community e-Rate contribution, and/or create a state-based program to provide funding for any public post-secondary institution.

***Loan Programs:***

- The State could consider ways to promote further deployment of broadly delivered broadband infrastructure:
  - ◊ Promote the capitalization of the newly established Arctic Development Fund within the Alaska Industrial Development and Export Authority [AIDEA]. Ensure the fund fully recognizes broadband development as a key component of Arctic infrastructure development and is administered consistent with Task Force principles.
    - » For example, through AIDEA, the state could consider anchor tenancy, and/or investment in a next generation satellite that could provide interim speeds of at least 100 Mbps to all regions of Alaska. If a state-supported investment was made in a satellite, management of the satellite capacity and wholesale Internet services to retail broadband providers and anchor institutions would be contracted through a competitive bid process.

***Permitting & Assessments:***

- Require that infrastructure projects such as roads, ports, railroads, pipelines, and mines financed with state appropriations include broadband build out as part of the project budget. This could be via bringing a telecommunications provider into the public-private partnership arrangement, or via a mandatory percentage for development of broadband infrastructure (similar to 1 percent for art requirements) or a budget not based on a percentage, but on actual costs. Reverse auction or otherwise incent the laying of high speed fiber and utilities at the same time these major infrastructure projects are developed.
- Streamline permitting for access across state land and work to coordinate the permitting process across federal and Native-owned land.
- Examine the Alaska Universal Service Fund to determine if revisions to the fund are necessary, including ensuring statutory authority for funding broadband services.



## Next Steps

It is the Task Force's fervent hope that this plan does not languish, but becomes a living document that helps guide stakeholders and policymakers as they engage in conversation, consider future broadband development, and make decisions. With that in mind, and to generate further action, we offer the following action items.

- The Task Force shall publicize and seek public comment on the plan in multiple venues including a website, presentations at stakeholder conferences and meetings, and testimony to appropriate legislative committees.
- Establish an Office of Broadband Policy within state government to manage the statewide plan, promote future policy, and market the importance of broadband adoption. Without such an office, the plan languishes.
- The Governor and legislature should review the plan before the next legislative session and consider possible legislation to enact recommendations and funding options that are appropriate at this time.

## Conclusion

We have reached a point in the development of modern communications wherein the Internet is firmly woven into our fabric of everyday life. America is in a race to the top in order to compete in the globalization of trade and development. In Australia, the government is investing $43 billion over eight years through its National Broadband Network to bring an advanced, fast, and reliable Internet backbone to the entire country that will include 12 Mbps at a minimum to the most rural and remote regions of the country. In Sweden, the government has endorsed a National Broadband Strategy (2009) and committed $34.9 million in public funds to deliver minimum speeds of 100 Mbps to 40 percent of households and businesses by 2015, and to 90 percent of households and businesses by 2020. The French government will spend $27 billion over the next 10 years to bring high speed broadband to the entire country, although exact speeds have not been committed. Meanwhile, the United States, through the FCC, is spending $4.3 billion for broadband deployment and support for rural and remote regions of the country to affect efficient and reliable communication systems. These are signs that the rest of the world is making the investments to ensure their citizens' basic needs are met.

Alaska is part of this race. The same factors that make broadband deployment difficult in Alaska—geographic remoteness, lack of roads, high costs—also mean that Alaska, more so than other states, has the most to gain from making sure that affordable and reliable high-speed broadband is available to all its residents. Very soon, social pressure will be too great for government and civil society not to act, whether collaboratively or alone. A clear plan is in the best interest of the state.