INTERNATIONAL BUREAU BACKGROUND RESEARCH PAPER
September 2011

Overview of Government Programs To Promote Broadband Deployment in Canada and Australia

While preparing the *2011 International Broadband Data Report*, International Bureau staff gathered information regarding foreign government programs intended to promote the supply of broadband. Staff found that the reasons for each country's broadband development are historical and contextual and cannot be fully explained by quantitative analysis. This background research paper presents some of the qualitative data gathered on government initiatives in Canada and Australia to promote broadband deployment in rural and remote areas.

The International Bureau is making this research available in order to better inform international comparisons of broadband deployment, and to encourage further empirical work that examines the details of national programs and their results over time.

I. Canada

Canada has implemented a number of innovative government programs to deploy broadband in rural areas. A few major examples include:

- The Broadband for Rural and Northern Development (BRAND) program, which funded projects identified through grassroots community applications and encouraged collaboration across neighboring communities and between national and local authorities.

- The National Satellite Initiative. Because of Canada's expansive northern regions, Canada is an international pioneer in its use of satellite to deploy broadband.

- The Broadband Canada: Connecting Rural Canadians program, a current initiative which focuses on connecting individuals, a change from previous programs that focused on connecting communities. Like the ongoing efforts of the National Telecommunications and Information Administration, with assistance from the FCC, to create and keep updated a National Broadband Map, the Connecting Rural Canadians program also involves an extensive mapping exercise to determine locations in which Canadians remain unserved or underserved.

- Alberta SuperNet, a provincial government effort to provide middle-mile infrastructure.

A. National Programs

In 2001, the government of Canada set up the National Broadband Task Force (Task Force) to "map out a strategy . . . ensuring that broadband services are available to businesses and residents in every Canadian community by 2004."[1] In 2001, Canada had 5,426 communities, of which 4,206, or approximately 77 percent, did not have access to broadband. Many of the communities identified as unserved were located in northern, rural, and remote areas of Canada, and approximately 10 percent were First Nations, Inuit, or Métis communities.[2]

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[1] National Broadband Task Force, *The New National Dream: Networking the Nation for Broadband Access* at 1 (2001), *available at* http://dsp-psd.pwgsc.gc.ca/Collection/C2-574-2001E.pdf (last visited May 24, 2011).

[2] Industry Canada commissioned an evaluation of its own programs. Hickling Arthurs Low for Industry Canada, *Formative Evaluation of the Broadband for Rural and Northern Development Pilot: FINAL REPORT* at 1 (July 2006), *available at* http://www.ic.gc.ca/eic/site/ae-ve.nsf/vwapj/BroadbandFinalReport.pdf/$file/BroadbandFinalReport.pdf (last visited May 24, 2011) (*Formative Evaluation*).

BRAND. In response to the Task Force's recommendations the Canadian government developed the Broadband for Rural and Northern Development (BRAND) Pilot Program, considered one of the most successful and innovative Canadian programs to support broadband deployment.[3] Canada launched the CAN$105 (US$66) million BRAND 2002-2007 Pilot Program in 2002. Its goal was to bring broadband to Canadian communities, with special priority for unserved rural, remote, or First Nations communities, and to far- and mid-north isolated areas of Canada. The program was a one-time capital investment by the national government to develop and implement plans to deploy broadband infrastructure.[4]

Unlike many government programs, BRAND administrators did not develop a centralized list of projects to fund. Instead, community champions – not-for-profit grassroots organizations (not local governments) – applied for funding. First, they applied for funding to develop a business plan, a BRAND strategy that recognized that many communities in need often do not have the resources to develop a broadband business plan. Community champions could be awarded up to CAN$30,000 (US$18,900) to develop a broadband business plan, which might include conducting a needs survey. In addition, the community champion had to cover 50 percent of the costs of developing the business plan with either cash or in-kind contributions. These contributions could come from the private sector, foundations, individuals, or volunteers. Compared to a simple grant, this cost-sharing arrangement increased the community champion's incentive to succeed and encouraged collaboration between the community organization and private sector entities. By involving the community in the creation of the business plan, BRAND administrators increased the probability that once broadband was deployed, the community would be likely to adopt it.[5]

Second, if community champions won business plan funding and completed their business plans, they went on to apply for implementation funding. Again, community champions had to show they could cover 50 percent of the implementation costs either with cash or in-kind contributions.[6]

The government conducted two rounds of business development funding and two rounds of implementation funding. The first round of development funding occurred in the fall of 2002 and the second in 2003. One hundred fifty-four projects representing approximately 2,285 communities were selected to receive business plan funding.[7] In the implementation funding rounds, 63 projects received funding for broadband infrastructure deployment totaling CAN$79.8 (US$50) million. The funded projects involved almost 900 communities, and included 140 First Nations reserves.[8]

The BRAND program was widely regarded as a policy success. The program's original goal was to reach 400 communities, but in the end it provided broadband service to 896 communities.[9] When surveyed, 90 percent of BRAND program recipients indicated that "broadband access was essential and

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[3] Telephone Interview by FCC staff with Prabir Neogi, Special Advisor, and Frédéric Nolin, Manager, International Development Policy, Industry Canada (Nov. 17, 2010).

[4] Industry Canada, *Summary of Broadband Deployment Initiatives in Canada* at 2 (Nov. 2010) (on file with author).

[5] Industry Canada, *Broadband for Rural and Northern Development Pilot Program (BRAND Backgrounder)*, *available at* http://www.creda.net/brand/doc/brand_b.pdf (last visited Nov. 15, 2010); *see also Summary of Broadband Deployment Initiatives in Canada*.

[6] *See BRAND Backgrounder*; *see also Summary of Broadband Deployment Initiatives in Canada*.

[7] *Id.*

[8] *Id.*

[9] *See Formative Evaluation* at vii-viii.

that there would be adverse impacts in their communities if the service were withdrawn."[10] An Industry Canada[11] commissioned evaluation of BRAND found that the majority (63 percent) of project representatives believed that the BRAND program helped communities identify their information and communications technology needs, particularly through BRAND's strategy of community consultations and support for business plan development.[12]

Another characteristic of BRAND projects that contributed to their success was collaboration within and between communities – which occurred for more than two-thirds of project representatives surveyed in the government's program evaluation. Respondents identified concrete social and economic benefits of broadband for communities – existing businesses expanded their services; businesses that had planned to leave, instead decided to stay; and new business opportunities developed for both physical and online businesses. The operation of home-based businesses, providing either main or supplemental income, was made viable by the availability of broadband, which reduced marketing costs and made online sales and purchases possible. Broadband was particularly valuable to those involved in tourism.[13]

The community champion's 50 percent contribution requirement, starting with the business plan stage, encouraged neighboring communities to develop partnerships and joint proposals among communities from different regions or jurisdictions, rather than developing separate proposals. Communities shared best practices and other practical information through these partnerships, which continued after the projects' conclusion.[14]

National Satellite Initiative (NSI). Industry Canada, Infrastructure Canada,[15] and the Canadian Space Agency partnered to develop the NSI to make affordable satellite capacity available to areas where it is the only practical method for broadband access. Launched in 2004 and continuing today, the NSI's goal was to deploy broadband services to communities in Canada's far- and mid-north communities, which include rural areas and First Nations (tribal) communities .[16] Communities that applied for satellite capacity were required to identify their needs and technologies currently available to their communities, demonstrate their community's ability to contribute toward installing the network components, and develop plans for the continued use and sustainability of the network that would be created.[17]

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[10] David Falconer, *Rural and remote broadband access: Public policy issues* at 17, The Journal of Policy Engagement, 1(3) (July 2009), *available at* http://members.peo.on.ca/index.cfm/document/1/ci_id/33377/la_id/1 (last visited May 24, 2011).

[11] Industry Canada is a department within Canada's Ministry of Industry. Industry Canada is responsible for fostering a growing, competitive, knowledge-based economy, and making Canadian industry more productive and competitive in the global market. *See* http://www.ic.gc.ca/eic/site/ic1.nsf/eng/h_00018.html (last visited May 24, 2011).

[12] *See Formative Evaluation* at vii, 24.

[13] *Id.* at 37-38, 58.

[14] *Id.* at 58.

[15] Infrastructure Canada is part of the Ministry of Transport, Infrastructure and Communities responsible for supporting infrastructure initiatives and facilitating public infrastructure across Canada. *See* http://www.infc.gc.ca/department/about-apropos/about-apropos-eng.html (last visited May 24, 2011).

[16] Infrastructure Canada, *Government of Canada launches National Satellite Initiative to provide broadband access to Northern and Remote communities* (October 5, 2003), *available at* http://www.infc.gc.ca/media/news-nouvelles/csif-fcis/2003/20031005rankininlet-eng.html#bg (last visited May 24, 2011).

[17] Industry Canada, *Backgrounder: National Satellite Initiative*, *available at* http://www.infc.gc.ca/media/news-nouvelles/csif-fcis/2003/20031005rankininlet-eng.html (last visited May 24, 2011).

The NSI had three rounds of funding. The first round, the C-Band Credit, included satellite capacity from Telesat Canada to deploy public and community-based services to remote communities. Four candidates from British Colombia, Manitoba, Ontario and Quebec received 28 megahertz of satellite capacity valued at CAN$20 (US$14) million over 15 years. The projects involved 52 communities, including 20 First Nations reserves.[18]

The second round, the Canada Strategic Infrastructure Fund (CSIF) round, included CAN$85 (US$59.5) million to acquire satellite capacity and fund the equipment and networks on the ground which are necessary to deploy satellite broadband in remote communities. Funded projects costing CAN$35.48 (US$24.8) million upgraded satellite earth stations and local networks for 43 communities in the northern regions of Manitoba, Ontario, and Quebec. These funds were also used to bring broadband service via satellite to 25 communities in Nunavut and 31 communities in the Northwest Territories that could only be served by satellite. In 2008, an additional CAN$36.4 (US$25.5) million was allocated to provide enhanced satellite bandwidth management tools, procure additional capacity, and upgrade satellite networks to improve Internet access in those same 25 Nunavut communities and 31 Northwest Territories communities.[19]

Finally, the third round, known as the Canadian Space Agency (CSA) Ka-Band Northern Project, consisted of a CAN$50 (US$35) million credit for Ka-Band satellite capacity for public and community-based institutions in the north and far-north of Canada until 2015. As of November 2010, none of these projects had yet been implemented.[20]

Satellite broadband service is included in the Canadian government's most recent program, "Broadband Canada: Connecting Rural Canadians." Renting capacity on satellites in space and leasing capacity on terrestrial towers to receive the satellite signals are both eligible for government subsidies.[21]

Broadband Canada. As part of Canada's Economic Action Plan, the Canadian government included CAN$225 (US$199) million over three years in stimulus funds in its 2009 budget[22] for Industry Canada to develop and implement a strategy to extend broadband service (defined as 1.5 megabits per second (Mbps) download speed) to as many unserved and underserved households in rural and remote Canada as possible beginning in 2009-10.[23] In contrast with earlier programs, Broadband Canada represented a shift away from previous goals of connecting communities toward the current focus on connecting households. Industry Canada undertook an extensive mapping exercise in order to get an accurate picture of locations in which Canadians remain unserved or underserved. Based on the mapping data, geographic service areas (GSAs) were defined, and in September 2009 a call for applications was

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[18] *See Summary of Broadband Deployment Initiatives in Canada* at 3.

[19] *Id.*

[20] *Id.*

[21] Industry Canada. *Broadband Canada: Connecting Rural Canadians*, *Frequently Asked Questions, available at* http://www.ic.gc.ca/eic/site/719.nsf/eng/h_00004.html (last visited May 24, 2011) (*Broadband Canada FAQs).*

[22] In 2009 both Canada and the United States included broadband funding in their fiscal stimulus programs. The Broadband Canada program represented an investment of approximately US$6 (CAN$7) per capita; and the American Recovery and Reinvestment Act (ARRA) of 2009 allocated approximately US$23 (CAN$27.5) per capita in grants and loans to support broadband. Neither the financial figures for Broadband Canada nor the ARRA reflect all of the ongoing government investments being made to support broadband programs in these countries.

[23] *See Summary of Broadband Deployment Initiatives* at *2*; Industry Canada, *Broadband Canada Connecting Rural Canadians*, *Program Update, available at* http://www.ic.gc.ca/eic/site/719.nsf/eng/home (last visited Nov. 9, 2010).

launched to fund projects in the GSAs. Maps of broadband access and of the broadband projects are available online.[24]

Private companies, not-for-profits, cooperatives, local governments, and other entities that can build and operate broadband infrastructure were eligible to apply for funds.[25] Projects are to be funded up to 50 percent of eligible project costs. Over 570 applications were received and over 90 projects totaling more than CAN$140 (US$137.2) million are being funded.[26] The most commonly funded technologies are fixed wireless, mobile wireless, and satellite projects.[27]

B. Alberta Regional Program

Like the national BRAND Pilot Program, the Alberta SuperNet (2001-2005) program focused on providing connectivity to communities, specifically public institutions within communities. Alberta is Canada's fourth largest province, with a total area of 255,541 square miles and a population of 3.7 million, more than 1 million of whom reside in rural or remote communities.

The Alberta SuperNet connected schools, hospitals, colleges/universities, libraries, and provincial and municipal offices to a broadband network. It had four goals:

- eliminate the digital divide between rural and urban areas,
- improve government services,
- encourage Alberta-based businesses to become leaders in developing Internet-based services, and
- drive future growth and prosperity for the province.[28]

The Alberta SuperNet is a "middle-mile" network, aggregating traffic from different locations on its network to a central location, where it can then be connected to the Internet, allowing Internet Service Providers (ISPs) to provide broadband connectivity to Alberta SuperNet communities.[29] The Alberta SuperNet faces competition from other facilities-based operators, such as Telus, as an operator for middle-mile services and backhaul.[30]

The Alberta SuperNet is made up of 12,000 km of fiber optic cable and 1,814 km of wireless connections.[31] The Alberta SuperNet covers a total of 429 communities (402 rural, 27 urban), 260 of

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[24] Industry Canada, *Broadband Internet Maps, available at* http://www.ic.gc.ca/eic/site/720.nsf/eng/home (last visited May 24, 2011).

[25] *See Broadband Canada FAQs*.

[26] *See Summary of Broadband Deployment Initiatives in Canada* at 2.

[27] Industry Canada, *Broadband Canada: Connecting Rural Canadians, List of Projects, available at* http://www.ic.gc.ca/eic/site/719.nsf/eng/00050.html (last visited May 24, 2011).

[28] Axia NetMedia Corporation, *Alberta's SuperNet: An Axia NGN Solutions Helps to Bridge the Digital Divide* at 1 (Nov. 2010), *available at* http://www.axia.com/documents/networks/Case%20Study_SuperNet_np.pdf (last visited May 24, 2011).

[29] Catherine A. Middleton and Jock Given, *Open Access Broadband Networks in Alberta, Singapore, Australia and New Zealand* at 3 (2010); Ted Rogers School of Information Technology Management Publications and Research, Paper 23, *available at* http://digitalcommons.ryerson.ca/trsitm/23 (last visited May 24, 2011) (*Open Access Broadband Networks*).

[30] *Id.* at 12.

[31] Government of Alberta: Service Alberta, *Alberta SuperNet, available at* http://www.servicealberta.gov.ab.ca/AlbertaSuperNet.cfm (last visited Nov. 23, 2010) (*Alberta SuperNet*).

which have at least one operational ISP.[32] Eighty-five percent of Albertans can access the Alberta SuperNet. The Alberta SuperNet connects 4,200 provincial and municipal sites, including 2,000 learning sites, 1,300 government sites, 400 health sites, 300 libraries, and 221 municipal offices.[33] As of November 2006, the Alberta SuperNet connected every hospital, learning institution, library, and provincial government facility in Alberta.[34]

The Alberta SuperNet is a partnership between government and private operators. Bell Canada and Axia SuperNet Ltd. (Axia) partnered with the provincial government to develop and deploy the Alberta SuperNet. The government of Alberta invested CAN$193 (US$103) million in the CAN$295 (US$158) million provincial network.[35] Bell Canada spent over CAN$102 (US$55) million to build the network, owns the infrastructure in the 27 urban communities served by the Alberta SuperNet, and provides services to Axia.[36] Axia provides capacity to the government of Alberta and to retail providers in the Alberta SuperNet's 402 rural communities.[37] Axia has a 10 year renewable contract with the government of Alberta to operate the network and provide services to government, health facilities, schools, libraries and municipal locations, and to retail service providers.[38] Pricing for service on the Alberta SuperNet is uniform across Alberta.[39] The Alberta SuperNet has reportedly been effective in extending government services in Alberta and in centralizing services and telecommunications spending.[40]

Despite the success of the Alberta SuperNet, a Rural Connectivity Gap Analysis found that in 2009 roughly 34 percent (430,000) of rural or remote residents in Alberta still did not have access to broadband.[41] In response, the Albertan government issued a Request for Information (RFI) in August 2010 seeking comments on how broadband might be deployed to rural and remote communities.[42] The RFI seeks input on reaching an interim goal of broadband coverage for 98 percent of Alberta's residents, with an ultimate goal of 100 percent coverage.[43]

Service Alberta, the Ministry responsible for the Alberta SuperNet, undertook an updated study of broadband coverage in Alberta. In particular, Service Alberta and the Alberta Federation of Gas Co-ops surveyed rural Alberta residents regarding their ability to access broadband services. Service Alberta also consulted with industry to determine broadband coverage and learn about the challenges of providing

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[32] *See Open Access Broadband Networks* at 3; Government of Alberta: Service Alberta, *Request for Information, Final Mile Broadband Initiative, Delivering Broadband Services to Albertans* at 7 (Aug. 19, 2010), *available at* http://communitieswithoutboundaries.ca/files/Final%20Mile%20RFI.doc (last visited Dec. 16, 2010) (*Alberta Request for Information*).

[33] *See Alberta SuperNet*.

[34] SuperNet Backgrounder: Kindergarten to Grade 12 (K-12) at 1 (Nov. 2006), *available at* http://education.alberta.ca/media/532962/supernetbackgrounder-nov2006.pdf (last visited May 24, 2011).

[35] Canada Connects on Broadband, *Alberta SuperNet*, *available at* http://www.canadaconnects.ca/broadband/main/1111/ (last visited Dec. 16, 2010).

[36] *Id.*; *see also* Alberta SuperNet, *Project Partners*, *available at* http://www.servicealberta.gov.ab.ca/1558.cfm (last visited Nov. 23, 2010).

[37] *See Open Access Broadband Networks* at 3.

[38] *Id.*

[39] *Id.*

[40] *Id.* at 11.

[41] *See Alberta Request for Information* at 7.

[42] *See Open Access Broadband Networks* at 12.

[43] *See Alberta Request for Information* at 10.

service. Additionally, Service Alberta worked with the Alberta Association of Municipal Districts and Counties, the Alberta Urban Municipalities Association and the Alberta Agriculture and Rural Development Ministry on a request for proposals for coverage analysis to document current infrastructure and gaps in service.[44]

On August 4, 2011, the Government of Alberta released an Expression of Interest (EOI) requesting input from interested parties on the government's approach to meet the Final Mile Broadband Initiative objectives. Through the EOI, the government sought to learn whether interested parties support the direction the government is taking to provide high speed Internet services. The EOI also sought suggestions to improve the government's approach. The Alberta government also wanted to determine what support or investment vendors need to provide services to those homes and business that do not have access to broadband. Input received from interested parties in response to the EOI may be used to define and finalize a Request for Proposal to implement the Final Mile Broadband Initiative. The EOI closed on September 9, 2011.[45]

II. Australia

The Australian government initiated its 2002 Regional Telecommunications Inquiry (RTI) to report on telecommunications services, including broadband, in the regional, rural, and remote areas of Australia, and to recommend policies that might be put in place to ensure that all Australians continued to share in the benefits of service improvements and developments in telecommunications technology. The RTI released its report in late 2002. The Australian government responded to the RTI's recommendations in 2003, accepting all 39 recommendations.[46]

As a result of the RTI and other initiatives, the Australian government over the last decade has launched several programs to promote broadband deployment and telecommunications infrastructure development, including, among others, the National Broadband Strategy (NBS) (2004), the Australian Broadband Guarantee (2007), and the National Broadband Network (2009).[47] These programs are described below.

A. National Broadband Strategy

The 2004 National Broadband Strategy (NBS) outlined a policy framework for broadband development that was agreed to by national, state, and territorial governments, to ensure that broadband in

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[44] Letter from Hector Goudreau, Minister of Municipal Affairs, MLA, Dunvegan-Central Peace to Mr. Bob Barss, President, Alberta Association of Municipal Districts and Counties (Mar. 15, 2011), *available at* http://www.aamdc.com/member-bulletins-public/373-government-of-alberta-responses-to-additional-ministerial-forum-questions- (last visited May 24, 2011).

[45] Alberta Purchasing Connection, *Opportunity Notice, Final Mile Broadband Initiative Expression of Interest, available at* http://vendor.purchasingconnection.ca/Opportunity.aspx?Guid=A0151F4F-0AF2-4AAC-ACBD-0617475862F5 (last visited Sept. 1, 2011).

[46] Australian Communications and Media Authority (ACMA), *Regional Telecommunications Inquiry 2002*, *available at* http://www.acma.gov.au/WEB/STANDARD/pc=PC_2040 (last visited May 24, 2011).

[47] Department of Communication, Information, Technology and the Arts (DCITA), *National Communications Fund: Evaluation of the appropriateness, effectiveness and efficiency of the program* at 18 (Nov. 2006), *available at* http://www.archive.dcita.gov.au/__data/assets/pdf_file/0004/83767/National_Communications_Fund_Evaluation.pdf; Department of Broadband, Communications and the Digital Economy (DBCDE), *National Broadband Network*, *available at* http://www.dbcde.gov.au/broadband/national_broadband_network; Department of Broadband, Communications and the Digital Economy (DBCDE), *Australia Broadband Guarantee*, *available at* http://www.dbcde.gov.au/broadband/australian_broadband_guarantee (last visited Mar. 24, 2011) (*Australian Broadband Guarantee).*

key sectors, including health and education, were supported by the government's investment in broadband.[48] The National Broadband Strategy included three major funding programs: (1) Higher Bandwidth Incentive Scheme (HiBIS), (2) Coordinated Communications Infrastructure Fund (CCIF), and (3) Demand Aggregation Broker Initiative (DAB). Several programs implemented at the local level through the CCIF provide insight into the dynamics of subsidizing broadband supply.[49] This research paper highlights programs in two areas, Yorke Peninsula and the Ngaanyatjarra Lands.

National Broadband Strategy CCIF: Yorke Peninsula, South Australia. For years, the local government of Yorke Peninsula struggled to attract a broadband company to provide the Internet services their residents and businesses needed. When incumbent telecommunications operator Telstra stated that it had no plans to provide broadband in Yorke, the local government assembled financing from a combination of regional and national government sources, including the CCIF funds from the National Broadband Strategy.[50] With these funds the local government issued a contract in 2004 to Agile Communications, a private telecommunications carrier, for the creation of a broadband network.[51] Within days of the announcement of Agile's plan, Telstra reversed its previous decision and declared that it would upgrade its exchanges to provide broadband in Yorke Peninsula. Therefore it appears that the National Broadband Strategy funds were the catalyst that propelled Yorke Peninsula from zero to two major broadband providers within a year's time.[52]

Agile's network, which consists of fixed wireless access, ADSL landline local access, and a backhaul network using high-capacity radio, was deployed in April 2005. In the first year, 4 percent of households and businesses in Yorke Peninsula had broadband; by the end of 2006, the adoption rate was nearly 10 percent. By November 2007, approximately 37 percent of households had broadband. Of the 37 percent with broadband, 30 percent were using Voice over Internet Protocol (VoIP) services.[53] According to a study prepared for the Government of South Australia, subsidization of broadband infrastructure in Yorke Peninsula created a market for broadband with adoption levels, price, and quality of service similar to those in urban areas in 2007.[54]

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[48] DCITA, *National Broadband Strategy* (Feb. 6, 2008), *available at* http://www.archive.dcita.gov.au/2007/12/national_broadband_strategy (last visited May 24, 2011) (*National Broadband Strategy*).

[49] The CCIF supported 13 projects valued at AU$23.7 (US$17.9) million to improve broadband infrastructure for government services, health services, and education and to develop broadband best practices. Collaboration between state and territorial governments, service providers and government agencies, and non-profit organizations in developing projects was encouraged. DCITA, *Coordinated Communications Infrastructure Fund (CCIF)*, *available at* http://www.archive.dcita.gov.au/2007/12/ccif (last visited May 24, 2011), *Program Overview*, *available at* http://www.archive.dcita.gov.au/2007/12/ccif/program_overview (last visited May 24, 2011).

[50] The project cost AU$1.3 million (US$981,500), and included funding of AU$630,000 (US$475.700) from the CCIF, AU$250,000 (US$188,800) from the South Australia Government Broadband Development Fund, AU$160,000 (US$120,800) cash and in-kind contributions from the District Council, AU$237,000 (US$178,900) cash and in-kind contributions from Agile, and AU$10,000 (US$7,600) pre-project funding from the Yorke Regional Development Board. The project also used funding from the DAB program to assess demand for, and awareness of, broadband in the Peninsula prior to undertaking the project. Government of South Australia, *BroadbandSA: Broadbanding Yorke Peninsula*, *available at* http://www.informationeconomy.sa.gov.au/__data/assets/pdf_file/0019/5059/CaseStudy_YP.pdf (last visited Nov. 28, 2010).

[51] Systems Knowledge Concepts, *Creating New Markets: Broadband Adoption and Economic Benefits on the Yorke Peninsula* at 15 (June 2008), *available at* http://www.acma.gov.au/webwr/_assets/main/lib310554/ypbb2%20final%2020080813.pdf (last visited May 24, 2011) (*Creating New Markets).*

[52] *Id.* at 15.

[53] *Id.* at 5 and 75.

[54] *Id.* at 6.

National Broadband Strategy CCIF: Ngaanyatjarra Lands Telecommunications Project, Western Australia. The Ngaanyatjarra Lands Telecommunications Project's objective was to establish broadband backbone and last mile services to six indigenous communities – including schools, police, justice, and health agencies – in one of the most remote regions of Australia.[55] Representing about 3 percent of mainland Australia's geographic territory, the Ngaanyatjarra Lands are home to just 2,800 people, mainly indigenous Australians. In 2004, the region relied on a radio-based telephone system for telecommunications service, which delivered poor voice service and was unsuitable for data or Internet service.[56]

The project was managed by the Western Australia State government with the cooperation of many local agencies and the Australian government. Funding consisted of a AU$2 (US$1.5) million grant from the CCIF; AU$2 (US$1.5) million from the Western Australian State Government Department of Industry and Resources; approximately AU$2.2 (US$1.7) million from Western Australia Government Agencies in operational funds (funds are over a five-year period with an option for a five-year extension totaling AU$4.4 (US$3.4) million); in-kind contributions valued at approximately AU$730,000 (US$551,000) from the Ngaanyatjarra Lands Communities and Western Australian Government agencies; and additional cash and in-kind contribution from the local Shire of Ngaanyatjarraku.[57]

By 2008, all six targeted communities were connected to high-speed, reliable broadband,[58] with reliability comparable to urban areas.[59] Government agencies, non-profit groups, and businesses offered improved services. For example, police and judicial agencies are able to share databases to reduce crime; telemedicine has given better access for medical diagnoses and treatment and reduced the need to travel to other communities for medical care; 12 schools in the Ngaanyatjarra Lands have improved access to information and the educational curriculum; and a business training campus has opened in Warakurna.[60]

Phase 2 of the Ngaanyatjarra Lands project, initiated in 2008, connected the remaining six communities in the region via satellite. Community-wide WiFi is now available in all 12 communities.[61]

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[55] DCITA, *Ngaanyatjarra Lands Telecommunications Project* (Aug. 4, 2005), *available at* www.archive.dcita.gov.au/__data/assets/pdf_file/0003/29982/NLTP_DCITA_CCIF_Project_Briefing_29_07_2005_v2.pdf (last visited May 24, 2011).

[56] *Id.*

[57] *Id.*

[58] Rosemary Sinclair, Managing Director, Australian Telecommunications User Group (ATUG), *Submission on broadband solutions for rural and remote areas* at 14-16 (June 30, 2008), *available at* http://www.archive.dbcde.gov.au/2010/october/regional_broadband_solutions/public_submissions_on_policy_and_funding_initiatives_to_provide_enhanced_broadband_to_rural_and_remote_areas/submissions/Australian_Telecommunications_Users_Group.pdf (last visited Mar. 19, 2011) (*ATUG Submission*).

[59] Government of Western Australia, Ministerial Media Statements, *Aboriginal Communities Get Connected* (Apr. 24, 2008), *available at* http://www.mediastatements.wa.gov.au/Pages/RecentStatements.aspx?ItemId=130053&page=42 (*Aboriginal Communities)*.

[60] *See ATUG Submission* at 14-16, and *Aboriginal Communities*.

[61] *See ATUG Submission* at 14-16; *see also* Daniel Featherstone, *abstract for The Ngaanyatjarra Lands Telecommunications Project: A Quest for Broadband in the Western Desert*, Telecommunications Journal of Australia, 61 (1) at 4.1-4.25 (2011), *available at* http://journals.sfu.ca/tja/index.php/tja/article/view/186 (last visited May 24, 2011).

B. Australian Broadband Guarantee[62]

With AU$237.7 (US$187.8) million allocated for four years until 2012, the Australian Broadband Guarantee (ABG) gives government subsidies for broadband to eligible providers to extend its service area to include underserved areas.[63] Both the broadband provider and user have to qualify for the subsidy to apply.

- Eligible users are residents, small businesses, and Aboriginal or Torres Strait Islander Community Councils that do not have access to "commercial metro-comparable [broadband] services."[64] The government uses national maps of broadband service to aid in determining eligibility.[65]
- Eligible broadband providers must provide "threshold" service and one "added value" level of service. Threshold service is defined as at least 1024 kilobits per second (kbps) upload/256 kbps download speeds with at least 6 gigabytes (GB) of data usage per month, at least half of which must be offered during peak periods. Added value service must meet or exceed the threshold service level, with at least 5 GB of data usage with no download/upload or peak/off-peak limits or time usage restrictions. ISPs may also offer one or more entry level service providing 256 kbps upload/64 kbps download speed with 500 megabytes (MB) of data usage per month. These providers register with ABG.[66]

Australian users who found that there were no broadband services available to them comparable to typical broadband service in metro areas could ask for a subsidy to receive service from a registered ABG provider.[67] The subsidy consists of a one-time incentive payment to the registered ABG provider. In turn, the provider must offer three-year service plans to customers in the subsidized area.[68] As a result of

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[62] HiBIS was the initial program established in response to the RTI. It operated from April 2004 to December 2005. The Broadband Connect (BC) incentive program was established in August 2005 (effectively extending HiBIS), which operated from January 2006 to March 2007. In April 2007, the Australian Broadband Guarantee program was implemented. It is scheduled to end at the end of FY2011, and will be replaced by the National Broadband Network discussed below. Auditor-General, *Australian National Audit Office Audit Report No. 36 2006-07, Performance Audit, Management of the Higher Bandwidth Incentive Scheme and Broadband Connect Stage 1* at 13-14, *available at* http://www.anao.gov.au/~/media/Uploads/Documents/2006%2007_audit_report_362.pdf (accessed Apr. 22, 2011).

[63] *See Australia Broadband Guarantee, available at* http://www.dbcde.gov.au/broadband/australian_broadband_guarantee (last visited May 11, 2011) (*Australian Broadband Guarantee)*.

[64] *Australia Broadband Guarantee, Program Guidelines 2010-2011* at 7, *available at* http://www.dbcde.gov.au/__data/assets/pdf_file/0017/128204/Australian-Broadband-Guarantee-2010-11-Guidelines-July-2010.pdf (*Australia Program Guidelines*).

[65] DBCDE, *Broadband Service Locator*, *available at* https://bcoms.dbcde.gov.au/BSL/Welcome.do;jsessionid=19DF78948E9765DE247A51C2D1BB2BD2 (last visited May 24, 2011).

[66] *See Australia Program Guidelines* at 15-18.

[67] Consumers can determine their eligibility by using an online Broadband Service Locator or by calling a consumer helpline. If no "metro-comparable" broadband service is available, the consumer may register for subsidized service through the ABG. "Metro-comparable broadband service" is defined as broadband service that offers a minimum of 512 kbps download and 128 kbps upload speed and a minimum of 3 GB of data usage per month. The total cost of this service per eligible user cannot exceed AU$2,500 (US$2,413), including taxes, installation, equipment, and connection fees, over three years. *See id.* at 3, 5, 10, 74.

[68] *See id.* at 66.

the ABG and previous programs, as of 2009, approximately 300,000 consumers in regional Australia have obtained broadband service comparable to service available in metropolitan areas.[69]

The incentive payments that ISPs were eligible to receive depended on the type of service provided. In 2010-11, the levels of incentive payments were:

- up to AU$2,500 (US$2,413) (or AU$2,000 (US$1,930) in metropolitan areas) for service upgrades,
- AU$1,000 (US$965) for a fixed line service (for example, ADSL),
- AU$2,000 (US$1,930) for a terrestrial wireless service in a metropolitan area,
- AU$2,500 (US$2,413) for satellite services in non-metro areas, and
- AU$2,500-$6,000 (US$2,413-5,790) for areas with difficult or costly installation requirements.[70]

The ABG ended on June 30, 2011, but existing ABG customers were not affected.[71] The ABG was replaced by the Interim Satellite Service on July 1, 2011, which is part of the National Broadband Network, described in the next section of this paper.[72]

In its 2008 report, the Regional Telecommunication Independent Review Committee[73] noted that the ABG and its predecessors "revolutionised access to broadband services throughout regional Australia and helped facilitate the rollout of additional infrastructure to enable access for regional Australians," and also "promoted competition in the regions and have assisted in closing the digital divide."[74] However, the Committee also expressed concern that because of interruptions between the ABG and predecessor programs, and because in some years funds have run out, thousands of Australians had been left waiting for service. Also, the Committee found that as technology improved, the definition of "metro-comparable" needed to be upgraded for the program to maintain its original goal.[75]

C. National Broadband Network

In April 2009, the Australian government announced plans to establish a new high-speed National Broadband Network (NBN), and the wholesale-only NBN Co Limited (NBN Co) was formed in April 2009 to deliver broadband throughout Australia. The company is wholly-owned by the Commonwealth

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[69] Colin Oliver, *Toward Universal Broadband Access in Australia* at 19 (Nov. 2009), ITU Case Study, *available at* http://www.itu.int/ITU-D/asp/CMS/Docs/Australia_broadband_case.pdf (last visited May 24, 2011).

[70] *See Australia Program Guidelines* at 61-62.

[71] *See Australian Broadband Guarantee*.

[72] Senator the Hon. Stephen Conroy, *Better Broadband for Rural and Regional Australians* (May 6, 2011), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2011/166 (last visited May 24, 2011).

[73] The Regional Telecommunications Independent Review Committee (RTIRC) was established in 2005. The RTIRC is a government commission of citizens asked to review telecommunications services in regional, rural and remote areas of Australia to determine whether new services were being equitably distributed. The first review was to begin no later than December 2008, with subsequent reviews every three years after receipt of the Australian Government's response to the prior review. *Regional Telecommunications Review*, *available at* http://www.rtirc.gov.au/background (last visited May 24, 2011).

[74] Regional Telecommunication Independent Review Committee Report 2008, *Framework for the Future* at 164, *available at* http://www.rtirc.gov.au/Report (last visited May 24, 2011).

[75] At the time of its report, the Committee found over 90 broadband plans available in metropolitan areas of Queensland that offered greater speed and data volumes at less cost than the then-threshold service of 512/128 kbps with a monthly download allowance of 3 GB, and recommended that improvements should be made to the ABG to prevent regional Australia from falling further behind. *Id.* at 164-165, 167. The ABG threshold speeds for 2010-11 are higher, as noted above.

of Australia, and the company reports regularly to its "Shareholder Ministers" – the Minister for Broadband, Communications and the Digital Economy and the Minister of Finance and Deregulation. NBN Co's Board is responsible for the company's strategic direction, with senior executives to direct company operations.[76]

NBN Co Limited will build and operate a wholesale-only, open access NBN. When completed, the NBN will:

- connect 93 percent of Australian premises with fiber to the premises (FTTP) technology that will deliver speeds of up to 100 Mbps;
- connect the remaining 7 percent of premises with next-generation wireless and satellite technologies that will deliver peak broadband speeds of up to 12 Mbps.[77]

The 2009 announcement predicted that the NBN would directly support up to 25,000 local jobs every year, on average, over the life of the project.[78] The NBN Implementation Study released in May 2010 estimated that around 70 percent of the construction cost of the access network would be driven by civil works, such as trenching, installing splitter cabinets, and creating fiber exchanges.[79]

The NBN Co Corporate Plan released in December 2010[80] indicates that the total capital expenditure for the project is expected to be AU$35.9 (US$35.5) billion, with the Australian government expected to contribute AU$27.5 (US$27.2) billion in equity. The NBN Co Corporate Plan anticipates that the government will more than recover its investment.

NBN Co expects to pass 1.7 million premises with its fiber, wireless, and satellite networks by June 2013. At the end of the NBN rollout in 2020-2021, it is estimated that over 13 million premises will be passed and 8.5 million will have an active connection.[81]

In June 2010, Telstra and NBN Co entered into an agreement regarding the rollout of the NBN which provides for the progressive migration of customers from Telstra's copper and hybrid fiber coaxial (HFC) networks to the new wholesale-only fiber network to be built and operated by NBN Co. The agreement also provides for the re-use of Telstra's existing infrastructure, avoiding infrastructure duplication. A wholly government-owned entity, USO Co., will be established to take responsibility for delivering most of Telstra's Universal Service Obligations (USO) relating to delivery of standard

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[76] NBN Co Limited, *Governance, available at* http://www.nbnco.com.au/wps/wcm/connect/main/site-base/resources/about-nbn-co/governance/; NBN Co Limited, *History*, *available at* http://www.nbnco.com.au/wps/wcm/connect/main/site-base/resources/about-nbn-co/history-of-nbnco/ (last visited April 29, 2011).

[77] Senator the Hon. Stephen Conroy, *NBN Roll-Out: Statement of Expectations, available at* http://www.minister.dbcde.gov.au/media/media_releases/2010/121 (last visited May 24, 2011).

[78] Senator the Hon. Stephen Conroy, *New National Broadband Network* (April 7, 2009), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2009/022 (last visited May 24, 2011).

[79] DBCDE, *National Broadband Network Implementation Study* (2010) at 46 and 101, *available at* http://data.dbcde.gov.au/nbn/NBN-Implementation-Study-complete-report.pdf (last visited May 24, 2011).

[80] Senator the Hon. Stephen Conroy, *Government releases NBN Co Corporate plan* (Dec. 20, 2010), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2010/120 (last visited May 24, 2011).

[81] NBN Co, Limited, *Corporate Plan, 2011-2013* at 134, *available at* http://www.nbnco.com.au/wps/wcm/connect/eea11780451bd3618ebfef15331e6bbb/101215+NBN+Co+3+Year+GBE+Corporate+Plan+Final.pdf?MOD=AJPERES (last visited May 24, 2011) (*Corporate Plan)*.

telephone services, payphones, and emergency call handling as of July 1, 2012.[82] The 2010 agreement provided that Telstra, the NBN Co and the Australian government would negotiate detailed, binding "Definitive Agreements" on the NBN rollout. Telstra, the NBN Co and the government announced Definitive Agreements valued at AU$9 (US$9.5) billion on June 23, 2011. The Definitive Agreement provides for payments totaling AU$4 (US$4.2) billion to Telstra for the disconnection of its copper and broadband HFC networks and the sale of lead-in conduits and payments totaling AU$5 (US$5.3) billion to Telstra for access to its infrastructure (dark fiber, exchange space, and ducts). The Definitive Agreements must be approved by Telstra's and NBN Co's shareholders and must also be reviewed by the Australian Competition and Consumer Commission (ACCC) as part of its review of Telstra's structural separation. In addition, the government provided NBN Co with a funding agreement to enable it to agree to the commitments in the Definitive Agreements and provided Telstra with guarantees regarding NBN Co's financial commitments to Telstra.[83]

On June 23, 2011, Australian provider Optus also reached agreement, valued at AU$800 (US$840) million, with NBN Co for the progressive migration of its HFC customers to the NBN, with a separate guarantee to Optus from the government regarding NBN Co's commitments. The agreement between Optus and NBN Co is also subject to ACCC approval.[84]

NBN Co expects to begin construction of its fixed wireless network with services beginning in mid-2012.[85] NBN Co expects to have satellites in orbit in 2015, but intends to offer an Interim Satellite Service, Satellite First Release Sites, beginning in mid-2011.[86]

The Australian government is also investing AU$250 (US$232.5) million in the Regional Backbone Blackspots Program to address backbone blackspots throughout regional Australia by delivering competitive backhaul to six priority locations.[87] Three of the shorter routes (Geraldton, Victor

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[82] Senator the Hon. Stephen Conroy, *Agreement between NBN Co and Telstra on the rollout of the National Broadband Networ*k (June 20, 2010), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2010/060 (last visited May 24, 2011).

[83] Senator the Hon. Stephen Conroy, *Government – Telstra – NBN Co deal Delivers Historic Telecommunications Reform* (June 23, 2011), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2011/203 (last visited June 28, 2011); TeleGeography, *Telstra, Optus sign NBN agreements, subject to conditions* (June 23, 2011), *available at* http://www.telegeography.com/products/commsupdate/articles/2011/06/23/telstra-optus-sign-nbn-agreements-subject-to-conditions/ (last visited June 28, 2011) (*Telstra; Optus NBN*); and *2011 Definitive Agreements – Telstra – NBN Co, available at* http://www.telstra.com.au/abouttelstra/download/document/2011-definitive-agreements-telstra-nbnco.pdf (last visited June 30, 2011).

[84] *See Telstra; Optus NBN.*

[85] Senator the Hon. Stephen Conroy, *Next step in NBN fixed wireless rollout for rural and regional Australians* (Feb. 17, 2011), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2011/134 (last visited May 24, 2011).

[86] *See Corporate Plan* at 21. On May 6, 2011, NBN Co announced that the Interim Satellite Service would be made available to eligible rural and remote Australians and small businesses, with priority given to those who do not have alternative broadband access. NBN Co will offer wholesale satellite service of 6 Mbps download/1 Mbps upload. NBN Co has entered into an AUD$200 (US$214) million contract with Optus to provide satellite capacity and managed satellite services. NBN Co has also contracted with IPstar for additional satellite capacity valued at AUD$100 (US$107) million. Service trials will begin in May 2011. NBN Co Limited, *Remote Australians the priority for new NBN Interim Satellite Service* (May 6, 2011), *available at* http://www.nbnco.com.au/wps/wcm/connect/main/site-base/main-areas/publications-and-announcements/announcements/Remote-Australians-the-priority-for-new-NBN-Interim-Satellite-Service.html (last visited May 24, 2011).

[87] The six priority locations are Geraldton, Western Australia; Darwin, Northern Territory; Emerald and Longreach, Queensland; Broken Hill, New South Wales; Victor Harbor, South Australia; and South West

Harbor and South West Gippsland) of the 6000 km fiber optic cable have been completed and construction on the longer routes is expected to be completed in 2011.[88] The program will cover 100 regional locations – and about 400,000 people – across six states and territories.[89]

Gippsland, Victoria. Senator the Hon. Stephen Conroy, *6,000 km Regional Broadband Backbone for National Broadband Network* (Dec. 4, 2009), *available at* http://www.minister.dbcde.gov.au/media/media_releases/2009/109 (last visited May 24, 2011) (*6000 km Regional Backbone)*.

[88] Department of Broadband, Communications and the Digital Economy, *National Broadband Network: Regional Backbone Blackspots Program, available at* http://www.dbcde.gov.au/funding_and_programs/national_broadband_network/national_broadband_network_Regional_Backbone_Blackspots_Program (last visited Sept. 7, 2011).

[89] *See 6000 km Regional Backbone.*