

Energy & Broadband Opportunities to Support Central Corridor Development

Overview

Internet access and energy¹ infrastructure and robust² access for all City residents, especially the disadvantaged, are essential ingredients for successful economic development –for building a labor force with digital literacy, reducing basic household operating expenses and potentially improving household socioeconomic status. In short, digital and energy sector market transformations - the rise of the Internet economy and energy sector changes based on “the grid of things”³ - are fundamental for building local wealth and development.

The City of Albuquerque recognizes the significance of building and deploying City owned Broadband networks as a foundation for enabling future renewable energy and other cost saving solutions for households that are adjacent to the Central Corridor.

Envision ABQ, the City’s lighting project to improve energy efficiency and public safety and cut municipal costs, is an early example of how combining broadband and energy policies and services can benefit the entire community. There are numerous other applications that can also be supported by integrating Internet and Broadband services and policies: clean transportation (EV’s, autonomous vehicles and other smart transportation options), emergency preparedness, waste-water and air pollution management, distributed energy, and micro grids, to name a few. Many of these infrastructure applications are also building blocks for smart city development. Best practice would call for these to be deployed on a portfolio basis as opposed to stand alone programs to maximize the operational synergistic and cost reduction benefits. A healthy dose of community input on the selection and design of programming elements, timing, etc. should occur in partnership with key stakeholders, such as other City, state and federal agencies and the private sector, including local small businesses, and investor-owned electric and gas utilities. Additionally, the City already has a rich organizational asset base in the form of:

- National laboratories (Sandia and though further away, Los Alamos)
- The Veterans Administration,

¹ Energy as used here refers to the electric or gas commodity itself, services such as energy efficiency, distributed energy, and other services, and energy from renewable sources such as solar, wind, renewable natural gas, etc., or as defined by the EIA and/or relevant State of New Mexico government agencies).

² The National Broadband Plan (NBP) defined access based upon availability of infrastructure capable of providing 10/1 Mbps fixed broadband. Meaningful access, takes the NBP standard as a minimum level of service with focus on both speed and latency.

³ Intelligent utility infrastructure systems (characterized by greater situational awareness and control via bidirectional communication networks of grid technologies). That is, the “smart grid” and that enables use of programmable end use devices and grid services such as the Nest thermostat, and that enable services such as demand response, time of use rates, net energy metering, etc. For a description, see: <https://www.electricity-today.com/smart-grid/the-grid-of-things> , last accessed 8/29/2017.

- Kirtland Air Force Base,
- University systems (UNM, CNMCC, Brookline College, National American University, St. Norbert, SIPI, U of St. Francis)
- Other major health services providers
- Cooperatives, such as the Land Trust
- Philanthropies
- Non-profits, community based organizations, and formal neighborhood associations

These organizational resources are already involved in serving disadvantaged communities in the Central Corridor to varying degrees and can be leveraged for innovative product development at the intersection of digital economy and renewable energy, in particular.

Approaches to Municipal Broadband

American cities have undertaken a variety of approaches to Broadband-driven economic development, especially in the wake of federal Broadband initiatives.⁴ Commonly utilized approaches to Broadband-based economic development include municipal ownership, cooperative arrangements, ownership by non-profit organizations and networks or hybrid models that draw elements from each of these approaches. Albuquerque is currently exploring a hybrid model that combines municipal ownership of Broadband with strategic community, public and private sector partnerships.

While Broadband and renewable energy have become fairly commonplace in local economic development initiatives, they are still rarely implemented together on a portfolio basis from both the physical infrastructure investment planning and service programming perspectives. This approach is most likely to be successful in redressing both the high degree of energy burden and the broadband access gap faced by disadvantages households in Bernalillo County and the City of Albuquerque.

The Need Gap - Broadband in NM, Bernalillo County and Albuquerque

These are the geographies for which reliable data on the gap and energy burdens are available at this writing. Further data collection and analysis of energy burdens and Internet access gaps for low income households in the Central Corridor Initiative study areas will

⁴“*The National Broadband Plan, released by the FCC on March 17, 2010, sets out a roadmap for initiatives to stimulate economic growth, spur job creation and boost America's capabilities in education, health care, homeland security and more.*” The NBP was issued by the Federal Communications Commission and National Telecommunications Information Administration to implement aspects of the American Recovery and Reinvestment Act of 2009. This legislation also created the Connect America Fund. See <https://www.fcc.gov/general/american-recovery-and-reinvestment-act-2009>. According to GovLoop.com there are over 450 municipal broadband systems, all with varying degrees of success. Notable success stories are Chattanooga, TN, Cedar Falls, IA, and Rural Bristol, Virginia.

required to support specific programming and implementation plans. That information is not currently available at this juncture, due to the dearth of low-income energy rate support programs in New Mexico. The National Broadband Study provides only limited Bernalillo County data.⁵ The NM Department of Information Technology (DOIT), however collects customer and service area data from ISPs twice annually and Community Anchor Institution data. DOIT provides commercial and consumer data access to state government agencies and provides a variety of support services including technical assistance on developing digital literacy resources, and development of Municipal and Tribal Broadband Master Planning Guides.⁶

The available data show that New Mexico ranks as the 43rd most connected state. Twenty four percent of New Mexico's residents are underserved for broadband service, which means that they either have no access at all, extremely limited access, access at very low speeds, or access at adequate speeds but at high costs in markets where there are only limited choices of ISPs or a single ISP facing little or no price competition. Roughly 79% of the State's consumers access the Internet through wired connections with true broadband speeds greater than 25 megabits per second (mbps). In Bernalillo County, some 21,000 residents were without access to wired broadband at or above 25 mbps and 12,000 had no wired access to the Internet at all. There is publicly sponsored Internet access at 21 libraries and public institutions in the City of Albuquerque.⁷ The City is served by some 36 Internet Service Providers (ISPs), of which two wired providers, CenturyLink and XFINITY (Comcast) demand the largest market share. ISP services are delivered via DSL, cable and fibre. Among ISPs download speeds range from 1.5 - 1000 mbps with varying levels of availability. Prices among these wired providers ranged from \$29.95/month for 10 mbps fiber service to \$45/month among those reporting data.⁸ Only 7% of New Mexicans have access to fiber optic service and some 3% have access to 1 gigabit broadband service. NM was awarded almost \$5M in federal Broadband Initiative grants in 2010 followed by an additional \$79M in federal infrastructure grants for Broadband. Internet access improved for NMM residents since 2011 with "access to a wired connection of at least 10mbps ... improved from 72.8% to 87.1%."⁹

⁵ See <https://www.broadbandmap.gov/summarize/state/new-mexico/county/bernalillo> Accessed 8/29/2017. A significant barrier to low income rate support is the State's prohibition against giving some residential customers preferential electric or gas rates (based on income levels) over other utility customers. CITE the State law. Ironically, this is the same law that was invoked by the solar lobby and environmental justice groups to successfully petition the New Mexico Public Regulation Commission to bar El Paso Electric's request for creation of a separate (discriminatory) rates class for residential solar customers. These are complex rate design and cost allocation issues that warrant greater review and analysis elsewhere.

⁶ See <http://www.doit.state.nm.us/broadband/news.shtml> . Last accessed 8/29/2017.

⁷ For data sources and a list of these public access institutions, see: <https://broadbandnow.com/New-Mexico/Albuquerque>;

⁸ Same as above.

⁹ See note 7, above.

The Energy Need Gap - Energy Burdens in NM, Bernalillo County & Albuquerque

Roughly 16% of Albuquerque households have incomes that are lower than federal poverty level. Poverty level values vary by household size. See Table 1 below.¹⁰

2017 HHS Poverty Guidelines*
Minimum Income Requirements for Use in Completing Form I-864

For the 48 Contiguous States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, Guam, and the Commonwealth of the Northern Mariana Islands:

| Sponsor's Household Size | 100% of HHS Poverty Guidelines* | 125% of HHS Poverty Guidelines* |
|--------------------------|---|---|
| | <i>For sponsors on active duty in the U.S. Armed Forces who are petitioning for their spouse or child</i> | <i>For all other sponsors</i> |
| 2 | \$16,240 | \$20,300 |
| 3 | \$20,420 | \$25,525 |
| 4 | \$24,600 | \$30,750 |
| 5 | \$28,780 | \$35,975 |
| 6 | \$32,960 | \$41,200 |
| 7 | \$37,140 | \$46,425 |
| 8 | \$41,320 | \$51,650 |
| | Add \$4,180 for each additional person. | Add \$5,225 for each additional person. |

Approximately 39% of Albuquerque households earn less than \$25,000, annually. Another ~36% of households earn between \$25,000 and \$50,000 per year. Depending on family size, over 70% of Albuquerque households are living at just double federal poverty level. This reality presents both a challenge and an opportunity, not just for the impacted disadvantaged households, but for the local electric and gas utilities and the City's economic development initiatives. For the utility, there is likely a sizable population of customers who are facing high energy burdens, and at risk in their ability to pay. In an era of growing customer demand for renewable energy solutions, declining utility loads and market transformation, it is essential for incumbent utilities to keep rates low, and therefore competitive. Even in non-deregulated utility markets such as New Mexico's¹¹, technological disruption has introduced competitive market forces to the utility sector. This trend coupled with declining loads raise affordable challenges for energy utilities who retain cost responsibility for the investments in and O&M costs for the physical assets that comprise the electrical grid and gas pipeline system. It also raises concern for risk of stranded assets and costs. At the same time, the utility retains the franchise responsibility to be the provider of last resort, with an obligation to serve all customers, including low income households. Failure to responsibly mitigate these risks could potentially leave the most financially vulnerable customers - who are unable to afford renewable energy solutions such as roof top solar

¹⁰ Source: The US Departments of Health & Human Services, and Homeland Security Citizenship and Immigration Service at <https://www.uscis.gov/sites/default/files/files/form/i-864p.pdf> Last accessed 8/29/2017.

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and employ net energy metering - to pay a disproportionate share of (potentially increasing) system costs.

The national average residential customer price for electricity was 13.22 cents per Kilowatthour. New Mexico's average residential customer price was 13.41 cents per Kilowatthour, slightly above the nation, based on data sourced from the EIA for June 2017.¹² Data sourced from Electricity Local, however, ranks NM 51st in the nation for monthly residential electricity bills, with an average bill of \$75/month compared to a national average of \$107/month.¹³ Even after considering the monthly costs provided by Electricity Local, New Mexico's residential electricity rates appear high, when taken in the context of the relatively low incomes of average households in the state, Bernalillo County and the City - which suggests greater energy burdens for poorer households.

Apart from the broadband and energy affordability need gaps that low income Albuquerque residents, especially those in the poorest communities along the Central Corridor likely face, there are policy and program level barriers to access. These include:

- ◆ Failures associated with market delivery that disproportionately impact low-income communities & households resulting from:
 - *inconsistent or differing definitions and boundaries for low-income/disadvantaged or Pocket of Poverty geographies, communities and/or households, inadequate outreach and engagement, high transaction costs for participation in public decision-making due to their limited time and resources, or due to slow rebate or reimbursement processing.
 - *lack of readily accessible, information on whole home or multifamily building energy usage and potential low cost, energy upgrade solutions
 - *inadequate coordination across services targeted to low income families, households or communities
- ◆ Limited information - inadequate energy and broadband specific data at the appropriate level of analysis and geographical resolution for Central Corridor low income communities impedes the expedited development of adaptive and innovative solutions
- ◆ Need for integrated programming - opportunities to integrate and streamline services, thereby allowing for a more portfolio-based approach and to link complementary funding sources (which are typically siloed)
- ◆ Unrecognized value of energy upgrades - non-energy based benefits of energy improvements to the home, such as improved health, safety comfort and tenant retention are often ignored in business cases or cost-benefit/cost-effectiveness tests need to justify low-income programming

Strategy Recommendations

¹² See https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a Last accessed 8/29/2017.

¹³ See <https://www.electricitylocal.com/states/new-mexico/albuquerque/> Last accessed 8/29/2017.

Following are proposed energy and broadband based strategies aimed to leverage the City's pre-existing inter-governmental collaborations with the University of New Mexico and the City's Water Authority, its Governance Committees and Technology Initiatives. Strategy recommendations are intended to build upon Innovate ABQ, an entrepreneurial hub, partly funded by the Cinco Amigos philanthropy and matching state funds (still underway?),¹⁴ the Integration Initiative with Living Cities,¹⁵ and the City's partnership with Bloomberg Philanthropies.¹⁶ Strategy proposals fall into two categories: 1) policy level and 2) programmatic recommendations. Emphasis was placed on recommendations that address major barriers, are sustainable and scalable, and redress access to financing mechanisms for low income households, especially those within the Central Corridor Initiative. The International District, which is one of the communities of interest, is amongst the poorest in New Mexico. Together these initial recommendations offer the building blocks for a coherent, portfolio-based vision for bringing clean energy programs, broadband, water use efficiency, and other closed loop economy services to low income households in order to realize the \$1B in savings to impoverished households. Many of these recommendations may also be beneficial to small businesses located in Central Corridor communities. The presumption for all recommendations proposed is that they would be thoroughly vetted and refined with a variety of relevant stakeholders, but first and foremost the communities that are likely to be most impacted.

Program Level Strategy Proposals

- Through EDD, in collaboration with other relevant agencies, or another entity created for the purpose, facilitate coordination of all state, county and local agencies that administer housing, water, sewer, stormwater, emergency / disaster response, energy efficiency or weatherization, broadband and clean transportation services for low income, disadvantaged and/or Pocket of Poverty communities.
- Plan and initiate pilot programs that take a neighborhood approach. Consider expansion to poor neighborhoods immediately abutting Corridor disadvantaged communities for future programming.
- Build out direct-install broadband (last mile), water use efficiency, energy efficiency and solar installation programs.
- Address non-energy and non-broadband health and safety work during retrofits - e.g., asbestos, lead or mold remediation and minor structural repairs. Pool and target funds design for abatement to these programs. Potential partners include Habitat for Humanity, the Rotary Club, the local association of realtors, bank community reinvestment programs and financing, LIHEAP, and the like.

¹⁴ See <https://www.bizjournals.com/albuquerque/blog/bizventures/2015/04/innovateabq-gets-rolling-as-epicenter-opens.html> Last accessed 8/29/2017.

¹⁵ See <https://www.livingcities.org/work/the-integration-initiative/about> Last accessed 8/29/2017.

¹⁶ See <http://www.cabq.gov/mayor/news/city-of-albuquerque-awarded-bloomberg-philanthropies-innovation-team-grant> Last accessed 8/29/2017.

- Work with institutional partners to effectively train workers from impacted communities to perform at least 50% of the jobs created by these programs.
- Create an action plan for improving opportunities for broadband, renewable energy, energy storage, demand response, renewable natural gas, and electric or CNG vehicle infrastructure for the Corridor, with emphasis on low - income communities, including multi-family housing. The national labs would be useful partners for this effort and collaboration on program development and co-funding opportunities should be explored, as well as technical information and best practices. Additionally, leverage existing state programs more fully.
- Establish common definitions of disadvantaged or low income communities or households, and establish standards/metrics for measuring energy-, broadband-, and non-energy benefits and monetary savings associated with each program measure to be installed.
- Establish a standing committee of expert advisors to align low income programming with market trends and industry best practices. The committee membership should include sufficient community representation and representatives from IT, clean energy finance, and property ownership/landlord associations, and tenant groups.

Policy Level Recommendations

- The City and State, through the New Mexico Public Regulation Commission (NMPRC) and related agencies should enable making community solar projects readily accessible to poor communities by installing them in or near low income communities with their input and consent. These installations should also be located to support the local electric utility's management of load on its distribution system. Broadband should also be deployed with community solar projects to support more advanced energy and grid management solutions in the future. Community solar requirements should also extend to public or municipal electric utilities.
- The City should engage community colleges, the Land Trust, UNM, trade unions, CBOs, and the local business chamber/s to develop strategies for and to track workforce training and development in the clean energy, broadband and closed loop economy sectors.
- Local workforce policies should be developed at the local and/or enacted at the state level to include performance-based direct hiring, training, and pre-apprenticeship programs run in partnership with community based organizations. This local content requirement would be included in all City (and State or possibly investor-owned utility¹⁷) contracts above a given amount (decided via public engagement). Companies doing business with the government may opt-out of the provision by paying a fee (also set in consultation with affected communities and other appropriate stakeholders). Alternatively, energy service companies who hire at least 1/3 of their staff from disadvantaged communities and keep them employed for at least 2 years, could become eligible for preference when competing for local or state government bids. Job duration and quality should both be evaluated.
- Contractor and local content employment standards should be developed and included in energy and broadband program requirements.

¹⁷ These terms would have to be negotiated with privately owned utilities.

- The NMPRC should consider an on-bill payment tariff for energy efficiency upgrades to homes designed for the low income customer segment. The tariff would be designed in a manner that does not convey a debt obligation on the customer. As proposed in CA, utilities would use the program to support energy and supporting broadband upgrades and recover costs via the customer's bill, when estimated savings are greater than the recovery charge.
- The State Treasurer could develop a pilot program to explore the efficacy of using social impact bonds to incentivize upgrades to low income customer homes.
- Develop a common database to be used by agencies implementing the broadband and energy portfolio with robust customer privacy protections in place.
- Manage and use available data and market intelligence to design and target specific implementation programming and measures for low income households. This approach has great potential to reduce program costs.
- Establish one-stop-shops to provide targeted outreach, technical assistance and financing services to enable homeowners and renters to install energy efficiency, zero net energy (ZNE) or near-ZNE upgrades, EV chargers, waste water, drainage enhancements, and water-use efficiency upgrades in their homes. All energy upgrade programs will include broadband installation. Provide program information in multiple languages to ensure deep penetration into hard to reach communities.
- Penalize companies that mislead customers or engage in predatory behavior with low income customers seeking energy and broadband services.
- Explore fiber in gas and renewable natural gas/pipeline decarbonization as an additional avenue for win/win/win solutions for low income customers/the City and the utility. The gas utility should perform a feasibility analysis for use of Low Carbon Fuel Standard type credits or RIN under the US EPA's Renewable Fuel Standard.¹⁸

¹⁸ See <https://www.epa.gov/renewable-fuel-standard-program> and <http://www.cleanfuelsdc.org/pubs/documents/cfdcfactsheetRINSd.pdf> Last accessed 8/29/2017.