Connecting the Dots:
Linking Broadband Adoption to Job Creation and Job Competitiveness

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The focus on broadband has been a salient point in telecommunications policy debates over the past several years. Driving this has been the assumption that broadband has the potential to fundamentally alter the nature of our economy. For that reason, a great deal of attention has been paid to the issue of broadband adoption, which generally is understood to mean the use of a high-speed Internet connection (deploying technology other than dial-up) to go online. In this report, the authors go a step further to examine whether and how broadband adoption occurs in a way that makes progress toward a critical economic goal, viz. enhancing employment opportunities, in particular for African Americans and Latinos.

One of the key purposes of our research program is to look beyond the state of current debates and provide insights about the future direction of policy. For that reason, we welcome this contribution from Madura Wijewardena, Chanelle Hardy, and Dr. Valerie Wilson of the National Urban League’s Policy Institute. Moving beyond the question of whether African Americans are adopting broadband, the authors look to the critical issue of how stakeholders can work together on job creation and job competitiveness to realize the benefits of broadband in a concrete fashion.

The authors find that significant gaps in broadband adoption continue to exist and that African Americans are underrepresented in employment and business ownership in sectors that depend on broadband connectivity. Their proposal is to identify solutions in a disciplined, sector-by-sector approach to fit the needs of local communities and businesses. In particular, they recognize the value of promoting business-to-business broadband activity to create job opportunities. They stress the importance of adapting job training programs and business licensing mechanisms to the reality of a broadband-centered economy. And they point to the long-term importance of science, technology, engineering and math education, and engagement by young people as critical to economic development in a broadband economy.

In addition to concrete recommendations, the report includes case studies that examine how the National Urban League’s affiliates are implementing some of the authors’ recommendations. These case studies provide lessons for future business and government engagement in communities most in need of economic development.

We are strong believers in the power of the broadband Internet to provide opportunity and economic growth. This paper argues that success should be measured in a way that bridges legacy divides and empowers all people, including those still on the other side of the digital divide. The broadband economy needs to work for everyone. This report makes important suggestions to ensure policymakers and stakeholders succeed.

We hope this report stimulates debate and encourages more thoughtful policy. As always, we look forward to your comments and feedback.
In today’s information economy, the connection between technological proficiency, economic success, and the role that broadband can play in creating jobs has been repeatedly emphasized by policy wonks and industry experts alike. Many have even gone so far as to suggest that access to broadband is the solution to unemployment.

While we are energetic proponents of closing the digital divide, we believe that to do so meaningfully will require more than access to and adoption of broadband by itself. Closing the digital divide should not be an end in itself—real progress will only occur if the digital divide is closed in a way that enhances employment opportunities for communities hit hard by the recession and the jobless recoveries of the last few decades. By this, we mean both creating jobs across the full spectrum of skill levels and ensuring that African Americans are competitive in securing those jobs. That is why we believe that providing affordable computer hardware to communities that have been left behind, offering access to broadband utilization solutions like digital literacy with curricula that help enhance job competitiveness, and facilitating business development so that African Americans become job creators are critical components in making the promise of broadband practical for those with low incomes, low levels of education, and minimal, if any, access to opportunity. That is the promise of the information economy and the real benefit of closing the digital divide. Many of the National Urban League’s local affiliates are bearing out these working theories through job readiness, job training, and job creation programs focused on broadband-enabled sectors (defined generally), some of which we discuss in this paper.

Adding to the urgency of this discussion is the dismal story of our nation’s recession.

The recession officially ended in June 2009, but the job prospects of all Americans—in particular African Americans and Latinos—remain dire.\(^1\) Since the official end of the recession, the overall unemployment rate has remained above nine percent, and that of African Americans has remained above 15 percent. In December 2011, the African-American unemployment rate was 15.8 percent. It is now 22 months into the recovery, and the unemployment rate has only fallen by 0.4 percentage points, while the unemployment rate for African Americans has increased by 1.3 percentage points.\(^2\) At this point following the end of the 1980s recession, the overall unemployment rate had fallen by 3.5 percentage points and that of African Americans had fallen by 5.2 percentage points.\(^3\)

Given the dire unemployment circumstances, the National Urban League (NUL) issued a clarion call for a focused and efficient war on unemployment (http://iamempowered.com/article/2011/05/18/national-urban-leagues-jobs-advocacy-campaign). NUL has called for jobs to be the top priority of government, national intermediaries, community-based organizations, think tanks, advocacy groups, and the private sector. The jobs focus does not mean job creation alone. As we noted earlier, it also means improving the job access and job competitiveness of African Americans.

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The views expressed are those of the author(s) and not necessarily those of Time Warner Cable or the Time Warner Cable Research Program on Digital Communications.
through effective job readiness, job training, and job placement. NUL encapsulated its initial thinking on these two critical issues of job creation and job competitiveness in its *12-Point Urban Jobs Rebuild America Plan*, released in January 2011. In January 2012, NUL released its *8-Point Plan: Educate, Employ and Empower*. This connects the dots between jobs and education. The work of the NUL and its affiliates is focused on creating and securing jobs for African Americans and members of other hard-hit communities, and it is through that lens that it evaluates the potential impact of all issues that come before the communities it serves.

In this report, our objective is to suggest ways in which the private, public, and non-profit sectors can work together on job creation and job competitiveness so that the benefits of broadband adoption are converted to jobs. Paying particular attention to African Americans, we seek to begin connecting the dots between access to broadband as a starting point, and a reduction in the unemployment rate as an end point. This report provides:

- a snapshot of where African Americans stand today in terms of broadband access and adoption
- a description of projects whose technology, business, and other imperatives may push African-American broadband access and adoption in the future; and finally
- recommendations on connecting broadband to jobs

### Findings

**Snapshot of African-American Broadband Adoption and Use**

- **A broadband access gap persists.**
  The broadband access gap between African Americans and white Americans is narrowing, but significant gaps remain for certain African-American communities—specifically, African Americans without a high school diploma and whose annual household income is under $20,000. In 2010, 56 percent of African Americans and 67 percent of white Americans had access to broadband at home. For African Americans without a high school diploma, this rate was 38 percent; for white Americans without a high school diploma, it was 51 percent. This means that solutions to narrow the broadband access gap must focus on African Americans without a high school diploma and with annual household income under $20,000.

- **Enthusiasm exists among African Americans to use broadband for job searching.**
  African Americans use broadband to search and apply for jobs and to social network more than white Americans do. This is especially true for African Americans without a high school diploma and with an annual household income under $20,000. Seventy-eight percent of African Americans and 48 percent of white Americans used the Internet to look for a job during 2009 and 2010. For African Americans without a high school diploma, this rate was 77 percent; for white Americans without a high school diploma, it was 17 percent. The challenge here is to ensure that this interest is supported by the skills necessary to secure employment. Digital literacy and other efforts must focus on this demographic group and on skills needed to secure jobs.

**African Americans in Broadband Jobs and Businesses**

- **African Americans are significantly underrepresented in broadband jobs and businesses.**
  African Americans are significantly underrepresented in science, engineering, math and technology interactive occupations, and as business owners in the information sector. Underrepresentation as business owners is most striking when considering the revenues generated instead of the number of businesses. In 2007, 6.2 percent of businesses in the information sector were African-American-owned, but they only generated 0.23 percent of all revenues in that sector. Closing the broadband jobs and entrepreneurship gap must be an integral part of any solutions to close the broadband adoption gap—broadband must be a vehicle for jobs and wealth creation for African Americans, not just a vehicle of consumption.
Recommendations to Connect Broadband Adoption to Jobs

- **Recommendations should be guided by results-driven basic guidelines.**

  The following guidelines will ensure that real and widespread results are achieved.

- **Target solutions using community, geographic, and sectoral analysis.** Macroeconomic solutions must be complemented by microeconomic approaches that ensure policy and program solutions fit the needs of different communities, geographies, and sectors. One-size-fits-all solutions will rarely work.

- **Promote business-to-business broadband activity to create jobs.** Promote private-sector led job creation in underserved communities. Place greater emphasis on broadband-driven businesses and how they transact with bricks-and-mortar businesses so that there is a balance between production and consumption.

- **Eradicate structural inequalities that flow through to new sectors like broadband.** No action to connect broadband adoption to jobs will ever be complete without incorporating solutions to address the underlying structural inequalities. Without that focus, failures in education, transportation, and other areas will flow to broadband.

- **Connect broadband adoption to job creation and competitiveness.**

  Getting African Americans to adopt broadband at rates similar to others should not be an end in itself. The end goal should be to implement steps that facilitate African Americans and others, including businesses, in adopting broadband in ways that achieve two things—first, enhanced job creation in communities hardest hit by joblessness, and second, enhanced ability of African Americans and others who are hit hardest by joblessness to compete for those jobs.

  The following recommendations can help to accomplish that:

  - **Creating workforce training in broadband sectors that incorporate jobs placement.**
  
  - **Create broadband-enabled human capital in economically hard-hit communities.** A pool of skilled workers across all levels can attract businesses to those areas.
  
  - **Partner with broadband businesses to connect job training with job placement.** Job training programs must include job placement as part of the suite of services.
  
  - **Provide targeted access to computer equipment and digital capability.** The greatest need is access to computers and jobs-focused, long-term digital literacy.

  - **Incentivizing bricks-and-mortar and broadband businesses in hard-hit areas.**

  - **Use broadband to encourage bricks-and-mortar businesses to enter hard-hit areas.** Broadband infrastructure can attract businesses to such areas.

  - **Fast-track approvals for broadband businesses in hard-hit areas.** Create fast-track approval processes to attract broadband-driven businesses.

  - **Grow businesses in emerging industries and revive rate of business creation.** Use innovative policies to generate revenue streams for minority businesses.

  - **Modernizing the education pipeline as a long-term solution.**

  - **Address key issues that drive STEM engagement.** Focus on middle school and early grades, and expose students to professionals in STEM fields that the students can relate to.

  - **Implement learning programs based on performance metrics.** Innovation must target underperforming schools and all elements that go to underperformance.

  - **Develop multiple pathways to success in STEM.** Expanded learning opportunities complement school education. Local intermediaries are the strongest partners.
In this section of the report, we review existing literature to provide a snapshot of broadband adoption by African Americans and what that broadband adoption is utilized for today. By broadband adoption, we mean having physical access to broadband and subscribing to the service. By understanding where African Americans are today in broadband adoption, we are better able to identify the opportunities and weaknesses and then offer effective solutions on how to better connect broadband adoption to jobs, which includes both creating jobs and making it possible for African Americans to compete effectively for those jobs.

Our focus is to understand the extent to which broadband adoption is enhancing job creation and job competitiveness for African Americans. We hope to gain some sense of whether broadband is evolving as a vehicle for production as well as consumption activities by African Americans. Our research has shown that a large amount of the available literature in this field examines broadband adoption but does not extend it to how broadband adoption can be connected to job creation and job competitiveness for both African Americans and the population at large. We hope that along with being a base from which to build our recommendations, this section of the report also will shine a light on areas where more research is needed.
The home broadband access gap between African Americans and white Americans is narrowing

Available research indicates that a gap still exists between African Americans and white Americans in access to broadband at home, but that gap is steadily narrowing.

In 2010, 56 percent of African Americans had access to broadband at home, while 67 percent of white Americans had similar access—this means that the broadband access gap in 2010 was 11 percentage points. In 2009, the broadband access gap was 19 percentage points; therefore, between 2009 and 2010, the broadband access gap narrowed by eight percentage points, continuing a trend of several years. This was largely driven by significant improvements in African Americans’ access to broadband, while access among other groups remained unchanged: the percentage of African Americans with access to broadband increased from 46 percent in 2009 to 56 percent in 2010.

When we look beyond broadband at home to Internet access from any location, a similar gap emerges—68.1 percent of African Americans had such access in 2009, compared with 79.9 percent of white Americans.

Education and income are closely correlated with the African-American broadband access gap

The narrowing of the broadband access gap between African Americans and white Americans is not uniform across all education and income groups.

In 2009 and 2010, education was the most important indicator of the gap in broadband access between African Americans and white Americans. The gap was most pronounced for those without a high school diploma—African Americans without a high school diploma had significantly lower broadband use than did white Americans of similar education. We note that the rates below are for Internet adoption and not broadband Internet adoption (meaning at speeds generally understood to be broadband) and relate to all locations, not just adoption from home. However, given that only five percent of Americans accessed the Internet via dial-up in 2010, we use these rates to be a reasonable proxy for broadband adoption.

- 38 percent of African Americans who did not complete high school had regular Internet use, compared with 51 percent of white Americans with similar education.
- 61 percent of African Americans and white Americans with a high school diploma had regular Internet use.
- 82 percent of African Americans with some level of college had regular Internet use, compared to 89 percent of white Americans with similar education.
- 94 percent of African Americans and white Americans with a college degree had regular Internet use.

When assessing the impact of education on the broadband access gap, we must appreciate that education levels among communities are different. Our analysis found that in 2010, the percentage

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About the National Urban League

Recognizing that true empowerment for individuals could only be achieved through economic equality, the National Urban League (NUL) was established one hundred and one years ago to seek justice in accessing housing, healthcare, education, and—most important—meaningful work that paid a decent wage. NUL and its 98 local affiliates continue that tradition by providing a full suite of services to assist people in achieving those goals. In this way, 2.6 million people were directly served in 2010.
of African Americans without a high school diploma was nearly twice that of white Americans—22.3 percent of African Americans and 12.9 percent of white Americans were high school dropouts (Table 1). This means that the portion of the broadband access gap that is driven by the lack of a high school diploma has a greater negative impact on the African-American community.

Table 1: Distribution of Education Attainment in Each Community

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Total Population</th>
<th>White</th>
<th>Black</th>
<th>Asian</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>No high school diploma</td>
<td>18.1%</td>
<td>12.9%</td>
<td>22.3%</td>
<td>14.9%</td>
<td>40.6%</td>
</tr>
<tr>
<td>High school graduate – high school diploma</td>
<td>29.5%</td>
<td>29.8%</td>
<td>33.2%</td>
<td>19.3%</td>
<td>28.0%</td>
</tr>
<tr>
<td>Some college but no degree and associate degree</td>
<td>26.4%</td>
<td>27.9%</td>
<td>28.1%</td>
<td>18.9%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Bachelor’s degree and above</td>
<td>25.9%</td>
<td>29.3%</td>
<td>16.4%</td>
<td>46.9%</td>
<td>11.4%</td>
</tr>
</tbody>
</table>


In 2009 and 2010, household income was also an indicator of access to broadband, but there was no apparent trend in the broadband access gap between African Americans and white Americans by income category. The lowest rate of broadband adoption was for individuals with an annual household income less than $20,000 and adoption rates increased as income increased, indicating that cost is likely a significant factor in broadband adoption. Again, we note that the rates cited below are for Internet adoption and not broadband Internet adoption, and relate to all locations, not just adoption from home. For the reasons outlined earlier, we use these rates to be a reasonable proxy for broadband adoption:

- There wasn't a significant broadband access gap between African Americans and white Americans with annual household incomes under $20,000—56 percent of African Americans with household incomes under $20,000 adopted the Internet compared to 58 percent for white Americans of similar income.14
- For African Americans with annual household incomes between $20,000 and $50,000, the gap in broadband access was actually in the opposite direction—77 percent of African American households and 71 percent of white American households adopted use of the Internet.15
- For African American households with annual household incomes greater than $50,000, the broadband access gap was negligible—91 percent of African Americans and 94 percent of white Americans with household incomes greater than $50,000 adopted use of the Internet.16

Again, as is the case with education, we must appreciate that not every community is equally distributed across different income groups. Our analysis found that in 2010, the percentage of African Americans with household incomes under $20,000 was over twice as high as for white Americans—27 percent of African Americans and 11 percent of white Americans have household incomes under $20,000 (Table 2). This means that the portion of the broadband access gap that is driven by having a household income under $20,000 affects a larger share of the African-American community.

While market forces, technological advancements, government policies like the National Broadband Plan of the Federal Communications Commission (FCC), and other factors have contributed to narrowing the broadband digital divide, those benefits may not be fully realized by persons without a high school diploma and with an annual household income under $20,000, and this has a disproportionate impact on African Americans, precisely the community hardest hit by the
unemployment crisis. The unemployment rate in December 2011 for African Americans without a high school diploma was 24.2 percent. Though greatly in need of the employment opportunities available through broadband-driven job creation and job competitiveness, this group is poorly positioned to take advantage of them because of its lower levels of broadband adoption. This makes a strong case that in narrowing the broadband adoption gap, policies and solutions should target people without a high school diploma and with an annual household income under $20,000.

More African Americans use broadband to search, connect, and apply for jobs

The next step in examining broadband adoption and its relationship to job creation and job competitiveness is to determine if improvements in broadband adoption identified earlier have translated into African Americans utilizing broadband for jobs-related functions.

Our review of existing literature shows that African Americans are significantly more likely than white Americans to see broadband as a critical tool for accessing job information. In 2010, 53 percent of African Americans believed that lack of broadband is a major disadvantage to finding out about jobs and obtaining career skills, compared with 39 percent for white Americans.18

The importance that African Americans place on broadband for getting job information is supported by the disproportionately higher use of broadband by African Americans for getting job information:

- African Americans are greater users of broadband to search for jobs than white Americans are—in 2009 and 2010, 78 percent of African Americans and 48 percent of white Americans used the Internet to look for job information.19
- African Americans are greater users of broadband to get ideas about starting an online business—in 2009, 28 percent of African Americans and 14 percent of white Americans reported using the Internet to get ideas about starting an online business.20
- African Americans are greater users of social networking—71 percent of African Americans and 58 percent of white Americans used online social and professional networking in 2010.21 Also, 13 percent of African Americans and five percent of white Americans used Twitter in 2010.22

African Americans with lower formal education levels and lower annual household incomes use broadband to search for jobs and apply for jobs more than white Americans of similar background do:

- The greatest gap between African Americans and white Americans in using broadband for job information is among those with lower formal education levels—77 percent of African Americans without a high school diploma and 79 percent of African Americans with only a high school diploma in 2009 and 2010 went online to search for jobs, compared with 17 percent and 35 percent, respectively, for white Americans with similar education levels.23

Table 2: Distribution of Household Incomes in Each Community

<table>
<thead>
<tr>
<th>Household Income</th>
<th>Total Population</th>
<th>White</th>
<th>Black</th>
<th>Asian</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between $0 and $20,000</td>
<td>14.4%</td>
<td>11.0%</td>
<td>26.6%</td>
<td>11.3%</td>
<td>20.4%</td>
</tr>
<tr>
<td>Between $20,001 and $50,000</td>
<td>28.5%</td>
<td>26.1%</td>
<td>34.4%</td>
<td>21.6%</td>
<td>36.1%</td>
</tr>
<tr>
<td>Over $50,001</td>
<td>57.1%</td>
<td>62.9%</td>
<td>39.1%</td>
<td>67.1%</td>
<td>43.5%</td>
</tr>
</tbody>
</table>

African Americans with lower incomes used broadband more during 2009 and 2010 for job information than white Americans did—92 percent of African Americans with family incomes under $20,000 and 73 percent with incomes between $20,000 and $50,000 went online for job information. In contrast, 54 percent of white Americans with a family income under $20,000 and 38 percent with incomes between $20,000 and $50,000 used the Internet for job information.

Our discussion so far shows that African Americans, especially those with less formal education, are using broadband at significantly higher rates for jobs-related functions—this also happens to be the segment of the African-American population facing the widest broadband adoption gaps. This may appear to suggest that there will be few problems with African Americans utilizing broadband for jobs functions if the adoption gap is solved. But finding and applying for jobs is not the same as securing a job, making online social connections is not the same as successfully leveraging them for jobs, and online social connections are rarely of the same value as traditional jobs networks like alumni, family, mentoring, and other relationships.

The greater use of broadband by African Americans for jobs-related functions, especially by those with lower formal education, shows that when faced with lower access to traditional job networks, African Americans are using broadband as an alternative. Although online networks may be evolving as alternatives, the tendency for the Internet to enhance the value of traditional networks means that broadband alone is not a remedy for the opportunity gaps that African Americans face. Rather, providing African Americans with the full suite of tools necessary to leverage the enormous enthusiasm for broadband as a vehicle for securing jobs must form part of a multifaceted solution for connecting broadband adoption to jobs.
Part II: African Americans in Broadband Jobs and Businesses

Section Summary

Findings
African Americans are underrepresented in broadband and technology jobs.

African Americans are underrepresented in both their share of jobs and in the qualifications they hold for the jobs. In 2010:

- African Americans were 11 percent of the entire employed labor force, but only held 8.4 percent of all jobs in occupations outside of healthcare that required some skills in science, engineering, and math, or required interaction with technology.
- 56 percent of African Americans and 62 percent of white Americans in occupations that required some skills in science, engineering, and math, or some interaction with technology, had a bachelor's degree or higher degree.

African Americans are underrepresented as business owners.

- In 2007, African Americans were 12 percent of the population but owned only 6.2 percent of businesses in the information sector.
- African American-owned businesses were 7.1 percent of all businesses, but only 6.2 percent of businesses in the information sector—and, they generated 0.23 percent of all revenues in the information sector.

African Americans are underrepresented in broadband and technology jobs

Despite the gains in the adoption of broadband by African Americans and the evolving use of broadband to access jobs networks, analysis of data from the U.S. Census Bureau and the U.S. Bureau of Labor Statistics shows that African Americans are underrepresented in jobs directly related to broadband and technology sectors.26 This suggests that the gains from broadband adoption may have mostly been confined to consumer endeavors rather than producer endeavors.

Focusing on producer endeavors in broadband and technology is important because these sectors employ a significant number of people. The real benefits of broadband adoption will occur when African Americans use the enhanced adoption of broadband to increase their participation in both creating and gaining jobs in this sector. Also, the importance of broadband and technology goes beyond these sectors because an increasing number of jobs in all sectors require skills in broadband and technology and science.

When we focused on occupations outside the healthcare field that required some skills in science, engineering, and math, or some interaction with technology, we found that these occupations supported 12.6 million jobs in 2010. This is 8.3 percent of the employed labor force. If jobs in healthcare that require similar skills or interaction are included in this mix, then these occupations supported 26.4 million jobs in 2010, or 17.4 percent of the employed labor force.

African Americans held 8.4 percent of all jobs in occupations outside of healthcare that required some skills in science, engineering, and math, or interaction with technology in 2010 (this was 1.1 million jobs).27 African Americans were 11 percent of the entire employed labor force (Figure 1), so there is an underrepresentation of African Americans in these jobs.
As expected, people employed in occupations classified as requiring some skills in science, engineering and math, or interaction with technology, had higher levels of educational attainment than people employed in other occupations. In fact, 61.4 percent of people employed in these occupations, compared with 29.1 percent of people in all other occupations, had a bachelor's or higher degree (Table 3).

### Table 3: Distribution of Education Level in Occupations

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Occupations that Have a Direct Relationship with Technology, Broadband, and Science</th>
<th>All Other Occupations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>0.7%</td>
<td>11.1%</td>
</tr>
<tr>
<td>High school diploma only</td>
<td>9.1%</td>
<td>30.5%</td>
</tr>
<tr>
<td>Some college but no degree, or associate degree</td>
<td>28.8%</td>
<td>29.2%</td>
</tr>
<tr>
<td>Bachelor's degree and above</td>
<td>61.4%</td>
<td>29.1%</td>
</tr>
</tbody>
</table>


Despite these occupations requiring higher levels of education, our analysis showed that African Americans in occupations classified as requiring some skills in science, engineering, and math, or interaction with technology, tended to have somewhat lower levels of education than white Americans in those occupations did: 56 percent of African Americans and 62 percent of whiteAmericans are 11% of the employed labor force but only 8% of technology, broadband, and science occupations.

**Source:** National Urban League Policy Institute Analysis of March Supplement of the Current Population Survey 2010
Americans in these occupations had a bachelor’s degree or higher in 2010. It seems that African Americans in these occupations were somewhat more likely than white Americans to be concentrated in occupations that required a high school diploma, some college, or an associate’s degree; but are less likely to be in such occupations and hold bachelor’s or higher degrees (Table 4).

**African Americans are underrepresented as business owners in broadband and technology**

Our analysis of the U.S. Census Bureau’s surveys of African American-owned businesses shows that over the last several years, African Americans have started private businesses at a much higher rate than members of other demographic groups have. However, despite this dramatic drive for entrepreneurship among African Americans, African American-owned businesses are performing at lower levels than white American-owned businesses in size and revenues.

Between 2002 and 2007, the number of African American-owned businesses increased at three times the national rate—an increase of 60 percent (from 5.2 percent of all firms in 2002 to 7.1 percent of all firms in 2007) compared with an 18 percent increase for all firms. The number of African American-owned businesses with employees also increased disproportionately: by 13 percent compared with a four-percent increase for all firms with employees.

Despite these impressive overall growth rates for African American-owned businesses, they were underrepresented and underperforming in the information sector. We use the category of information sector here because this is the broadest category of businesses with a close connection to broadband that is available from the U.S. Census Bureau:

- Only 6.2 percent of businesses in the information sector were African American-owned, totaling a mere 23,442 firms. This represents an underrepresentation of African Americans as business owners in the information sector because in 2007, African Americans were 12 percent of the population.
- African Americans were participating in the information sector at rates below their participation in other sectors. African American-owned businesses were 7.1 percent of all businesses compared with 6.2 percent of businesses in the information sector, and African American-owned businesses in the information sector were just one percent of all African American-owned businesses.
- African American-owned businesses in the information sector were significantly underrepresented on revenue generation. African American-owned businesses generated 0.23 percent of all revenues in the information sector. The information sector also represented a small share of the revenues generated by all African-American businesses: this sector contributed just two percent of all revenues generated by African-American businesses.

African Americans are not gaining jobs or creating businesses in broadband, technology, and related sectors at levels comparable to their representation in the population and the labor force. Given the significant improvements in broadband adoption among African Americans, this again suggests that broadband adoption is not being used as effectively as it could be to enhance job creation for African Americans. Our focus here is not to highlight weaknesses and to leave it at that; rather, we identify these challenges, as well as opportunities, as bases from which to suggest targeted actions on how the opportunities can be leveraged to rectify the weaknesses in a way that connects broadband adoption to jobs so that all Americans have a stake in becoming creators as well as consumers of broadband. The remainder of this report will focus on targeted recommendations.
Part III: Recommendations to Connect Broadband Adoption to Jobs

Section Summary

Findings and Recommendations

Actions must target the underlying weaknesses.

Actions to create jobs and enhance the job competitiveness of African Americans in broadband-driven sectors must address these underlying weaknesses:

- The existence of a broadband adoption gap, especially among African Americans without a high school diploma and with an annual household income under $20,000.
- The disconnect between the enthusiasm of African Americans to utilize broadband versus their success in securing related jobs and creating broadband businesses.

Actions should be guided by results-driven basic guidelines.

Actions must be designed after the possible permutations of all outcomes are considered—this will avoid simplistic, magic-bullet solutions that rarely achieve results. We suggest the following as basic guidelines:

- Target recommendations using community, geographic, and sectoral analysis. Generally, most orthodox economic policy is designed by looking at the economy as a whole, but in an economy that is diverse, complex, intertwined, and globally connected, it is impossible to expect that one-size-fits-all solutions will work. We suggest that macroeconomic methods be complemented by microeconomic approaches to economic procedure and that policy and program solutions be designed to fit the unique needs of different communities, geographies, and sectors.
- Promote business-to-business broadband activity to create jobs. Promoting private sector-led job creation in underserved communities is essential. Ensuring that underserved communities are producers and not just consumers of broadband is the way to do this. It is arguable that much of the broadband-driven consumption is a transfer of economic activity rather than the creation of new economic activity. We suggest that greater emphasis be placed on utilizing broadband to create businesses and to enhance production to reach balance between production and consumption.
- Eradicate structural inequalities that flow through to new sectors like broadband. No broad-based action to connect broadband adoption to jobs will ever be complete without incorporating solutions to address the underlying structural inequalities that limit the employment opportunities of African Americans. Broadband will never be an alternative to having equal access to the foundations on which prosperity is created, including education, housing, and healthcare. This is a moral and an economic efficiency issue because inequality threatens the health of the U.S. economy.

Recommendations to connect broadband adoption to jobs.

Below are our recommendations to better connect broadband adoption to job creation for and job competitiveness of African Americans:

Create workforce training in broadband sectors that incorporate jobs placement

- **Recommendation One:** Create broadband-enabled human capital in economically hard-hit communities. Create skilled workers that broadband-driven industries need in underserved areas. Partner with community intermediaries to ensure all skills that go to job success are provided and that those left out of the traditional job training pathways are included.

- **Recommendation Two:** Partner with broadband businesses to connect job training with job placement. Job training must include job placement as part of the suite of services. Job training organizations must partner with employers as in apprenticeship models. Governments must incentivize employers to create apprenticeships.

- **Recommendation Three:** Provide targeted access to computer equipment and digital capability. Access to computer equipment must be coupled with digital capability training and these need to be targeted at people without a high school diploma and with annual household incomes under $20,000. FCC and the cable industry’s recently announced Connect to Compete Program is an example of the type of solution that is needed.
Several opportunities and weaknesses emerge from our analysis of broadband adoption by African Americans and how it is being connected to job creation for and job competitiveness of African Americans. One major weakness is the failure to narrow the broadband adoption gap among African Americans without a high school diploma and with an annual household income under $20,000. Other weaknesses are in the disconnect between the enthusiasm of African Americans to utilize broadband to look for jobs versus their success in securing those jobs and in the underrepresentation of African Americans in broadband jobs and businesses.

In this section, we provide recommendations to further narrow the broadband adoption gap, which can be leveraged to rectify the weaknesses. We do not claim these are magic-bullet solutions to the unemployment crisis, but rather ideas worth considering from a problem-solving perspective. The Appendix provides case studies on how some of our recommendations are being put into practice by NUL’s affiliates.

To make sure that our recommendations were founded on real-life experience of what works and what does not work on the ground, we conducted, in April 2011, a survey of all Chief Executive Officers of NUL’s affiliates to get their thoughts and ideas about what needs to be done to connect broadband adoption to job creation and job competitiveness of African Americans. Recommendations in this section incorporate thoughts and ideas in response to that survey.

At the outset, it would be useful to establish guidelines in designing and implementing policies and programs that connect broadband adoption to jobs. We believe that this will help avoid quick-fix magic bullets often peddled in this area, and in other areas of job creation, which rarely produce results or make us think through the different permutations of outcomes to ensure that benefits are more widely distributed. These guidelines are:

**Incentivizing bricks-and-mortar and broadband businesses in hard-hit areas**

- **Recommendation Four**: Use broadband to encourage bricks-and-mortar businesses to enter hard-hit areas. Large retail, manufacturing, and other bricks-and-mortar businesses in underserved areas can help grow ancillary businesses that rely on broadband. Incentives like transportation and communications infrastructure can attract these businesses.

- **Recommendation Five**: Fast-track approvals for broadband businesses in hard-hit areas. Delays in getting approval for businesses in underserved areas put these areas at a significant disadvantage because these areas already have other obstacles to overcome. Pre-approval of land use for job-intensive investments is one way to address this.

- **Recommendation Six**: Grow businesses in emerging industries and revive rate of business creation. An extra 16.1 million jobs could have been created if African-American business creation was similar to that in other communities. Government procurement and capital-raising assistance can be used to increase African-American business creation.

**Modernizing the education pipeline as a long-term solution**

- **Recommendation Seven**: Address all issues that drive STEM engagement. Solutions to increase African American participation in STEM education (science, technology, engineering, and math) must address the structural reasons for low participation. The way to address these is to start the focus at least at middle-school level and expose students to STEM professionals from similar backgrounds.

- **Recommendation Eight**: Implement learning programs based on performance metrics. Promote measurable innovation in education and, in particular, innovation in STEM education. Targeted innovation funding for underperforming schools and for local education boards is necessary to provide flexibility to create solutions that fit the needs of communities.

- **Recommendation Nine**: Develop multiple pathways to success in STEM. Career success must be an end goal of STEM education and any programs must be designed in a manner that fits the unique characteristics of the students. Out-of-school education must be aligned with in-school education.
targeting solutions using community, geographic, and sectoral analysis
promoting business-to-business broadband activity to create jobs
eradicating structural inequalities

Guidelines

Targeted solutions using community, geographic, and sectoral analysis

It is important to appreciate that any policy or solution to create jobs, whether it is through broadband adoption or another solution, must be designed to fit the specific characteristics of different communities. This will ensure that maximum benefits are achieved for the resources and efforts that are expended and that those benefits are also available to those in greatest need of them. Our focus here is efficiency and effectiveness through targeting.

Generally, most orthodox economic policy is designed by looking at the economy as a whole, but the U.S. economy is diverse, complex, intertwined, globally connected, and made up of human beings who respond differently to various triggers. It is impossible to expect that one-size-fits-all solutions will work. The failures of the magic-bullet job creation solutions of the last few decades to enhance employment opportunities across all communities are evidence that the time is now to look at things differently and demand more in terms of intellectual and practical rigor. Basically, we argue that macroeconomic methods be strongly complemented by microeconomic approaches to economic procedure, whereby policy and program solutions are designed to fit the unique needs of different communities, geographies, and sectors instead of employing broad economic, one-size-fits-all solutions.

In making our recommendations, we are mindful of the fact that when historical and structural weaknesses and inequality still exist, trickle-down effects of economic growth alone will be insufficient to drive job creation for African Americans—be it in broadband or elsewhere. We must look at the underlying drivers of economic growth and then design policy and program solutions to fit them. For example, economic growth can come from increases in productivity or increases in employment; and, if the goal is to create jobs, then we must trigger economic growth in sectors where growth will be driven by employment as well as productivity.35 In recent years, most of the growth in the goods-producing sectors has come from productivity growth as overall employment has declined.36

Promote business-to-business activity to connect broadband to jobs

One objective of broadband-related policy and program solutions should be to create an environment conducive to private sector-led job creation in underserved communities. Ensuring that underserved communities are producers and not just consumers of broadband is essential for achieving this objective. Therefore, we propose that greater emphasis be placed on utilizing broadband to create businesses and to enhance production in order to reach greater balance between production and consumption. This focus on production as opposed to consumption should apply to the economy as a whole, not just to broadband sectors, if the economy is going to adjust structurally to a growth path for job creation that is different from the consumption-led growth of the past.

For example, by placing greater emphasis on exports over domestic consumption, developing countries like China and even wealthy, developed countries like Germany show that there are alternative routes to economic growth beyond domestic consumption. Recent data from the U.S. Census Bureau show that only about one percent of U.S. businesses are exporters.37 As individuals use broadband to create new businesses and to enhance production, economic policy and, especially, tax and regulatory policy should also aim to facilitate exports so that the American
consumer is not the only driver of the economic growth necessary for job creation in the United States.

It is arguable that much of the consumption that is driven by broadband adoption is a transfer of economic activity rather than the creation of new economic activity. For example, e-commerce shifts transactions from bricks-and-mortar businesses like corner bookstores to online transactions like downloading e-books. This kind of shift is detrimental to employees when the benefits are offset by the loss of jobs in bricks-and-mortar businesses—an example is the decrease in workers in “book, periodical, and music stores” by nearly 30 percent between 2002 and 2009. Although now consumers can buy these products online and have much greater choice, previous employees of those businesses are possibly out of jobs.

The impact of broadband on business-to-business activity stands to be much greater in terms of economic growth and job creation through the generation of new economic activity if the production elements of that new economic activity are equally shared among all communities. For example, in 2008, business-to-consumer e-commerce revenues reached almost $300 billion, while business-to-business e-commerce revenues reached nearly $3.4 trillion. So the goal is to make sure that business-to-business broadband transactions are expanded and that hard-hit communities and areas are able to share in that expansion.

Eradicating structural inequalities must be part of any solution

No broad-based action to connect broadband adoption to jobs will ever be complete without incorporating solutions to address the underlying structural inequalities that limit the employment opportunities of African Americans. Without a focused strategy to deal with that, broadband adoption will not trigger the benefits that it is capable of generating. For example, if a child is living in an area that has underfunded and underperforming schools, then having broadband access at home is not going to make much difference in that child’s education. Broadband will never be an alternative to equal access to the foundations on which prosperity is created: education, housing, and healthcare. The need to address these inequalities is a moral and an economic efficiency issue, because inequality threatens the overall health of the U.S. economy.

Since the 1970s, wages for workers at the 90th percentile of the wage distribution—such as office managers and professionals—have grown much faster than wages for the median worker (at the 50th percentile), such as factory workers and office assistants. This widening of the 90/50 differential, though not talked about much, is one of the most harmful developments in our modern economy. Lack of an equitable safety net that targets those in need, and the increasing technological proficiency demanded from workers, are two of the causes analysts have identified. Despite these slow or declining real wages for most workers, consumption was maintained or even increased over the last decade by means of easy credit, ultimately resulting in the financial market meltdown of 2008. Real solutions, and not financial gimmickry or empty talk, are required to deal with joblessness, declining real wages, and inequality. The improvements in broadband adoption and the enthusiasm of African Americans for taking part in the digital economy are opportunities that can be part of the solution, but not without addressing the underlying structural inequalities.

We outline below our short-term and long-term policy and program solutions on how broadband adoption can be connected to enhancing job creation for and job competitiveness of African Americans. Consistent with the guidelines laid out earlier, we have tried to ensure that these recommendations are targeted to fit the unique features of communities, that they promote private-sector driven job creation, and that they address underlying structural inequalities.
Recommendations

Creating workforce training in broadband sectors that incorporate jobs placement

Recommendation One: Create broadband-enabled human capital in economically hard-hit communities

Building pathways for talent to grow in underserved areas is essential for connecting broadband adoption to jobs. There is extensive evidence to suggest that new businesses and the resulting jobs are created when the right supply-and-demand environment for talent is present. Research indicates that the availability of tax incentives for investment ranks far below the availability of talent and infrastructure. The focus of public resources must be to create an effective workforce training pipeline in economically hard-hit areas, with a particular focus on low-to-medium-level skills acquisition in broadband sectors. We recommend the following:

• Given the disastrous unemployment rate in December 2011 of 24.2 percent for African Americans without a high school degree, it is essential that workforce training programs in broadband sectors target this particular community.

• One way to do this is to engage community intermediaries with substantial on-the-ground presence to be partners of community colleges in providing training. This will ensure that communities otherwise left behind are connected to the broadband job training pipeline.

• For example, community intermediaries, by providing GED and other wraparound services, can prepare people without GEDs to enter community colleges to get low-to-medium technical skills training.

• The goal here is to create a pathway to broadband technical skills for people without a high school diploma, one that does not involve a four-year college degree. Policymakers must consider that there must be pathways for people for whom a four-year college degree is not an option.

• Job training partnerships must be end-to-end so that community intermediaries are engaged in designing workforce training programs and are actively engaged in post-graduation follow-up like organizing on-the-job training and other apprenticeships.

Recommendation Two: Partner with businesses to connect broadband jobs with job training

Connecting people to job placement networks is as important as providing job training. African Americans who have lower levels of access to traditional job placement networks are at a distinct disadvantage here. Record unemployment among African-American college graduates shows that obtaining higher qualifications does not diminish the importance of job placement networks—the unemployment rates for African-American and white American college graduates in December 2011 were 7.1 percent and 3.6 percent, respectively, and the gap between the two groups rose from 0.8 percentage points in 2006 to 3.2 percentage points in 2011. We recommend the following:

• Job training programs in broadband sectors must have a job placement or a job-securing component attached so that the people trained are able to secure a job. This is a way to ensure that training is provided in fast-changing fields where there is demand for it.

• Job training organizations must partner with employers so that an apprenticeship or a similar on-the-job training or permanent position is available at the end-of-job training. This partnership will ensure that the employer is engaged in training from start to finish.

• Choose sectors where there is scope for hiring. The utility industry, where field technicians have an average age of 48 years (five years above the median age of a worker) is one sector that should be a focus for job training.

• Governments must assist by providing incentives for employers to create apprenticeships or similar positions. Governments should work closely with employers to ensure that incentives are provided in sectors where there is a need for labor.
Community intermediaries that provide wraparound services that address all factors that go into being successfully employed should be engaged to ensure that workers are not inhibited in participating in the training-to-employment pipeline due to external factors such as lack of transportation or child care.

Recommendation Three: Provide targeted access to computer equipment and digital capability

Our survey of NUL affiliate CEOs indicates that people who visit the computer labs operated by NUL’s affiliates do so primarily to study for their GEDs and search for jobs. This suggests that the greatest need is access to computer equipment and digital training for GED and jobs-related functions. Innovative programs such as Comcast Corp’s Internet Essentials Program, which provides laptop computers to children eligible for the school lunch program, and the FCC’s and the cable industry’s Connect to Compete Program, are examples of the types of solutions needed. The goal here is targeting individuals who do not have a high school diploma and who have an annual household income under $20,000. We recommend the following:

- The critical issue in digital literacy is ensuring that the curriculum is designed for the unique needs of people without a high school diploma and with an annual household income under $20,000. This is the group that is not seeing improvements in broadband adoption.
- Digital literacy programs must incorporate a component that deals with assisting people to obtain a GED and then enter into post-GED training, such as a community college. Focusing on this will ensure that broadband adoption will have a relevance to this community.
- The curriculum of digital literacy programs must also focus on job competitiveness skills and be designed to have ongoing interaction between the student and the training provider. NUL’s affiliate CEOs referred to this as digital capability, as opposed to digital literacy.
- Providing access to low-cost computers and broadband access also must be incorporated because cost and relevance are both impediments to broadband adoption. Comcast Corp’s Internet Essentials Program and the new Connect to Compete Program are examples of solutions.

The Connect to Compete Program

Connect to Compete (C2C) is an unprecedented effort by the cable industry and the FCC in partnership with other private sector and governmental stakeholders to spur broadband adoption among the millions of Americans who lack a home broadband connection. Beginning with the 2012 school year, the Connect to Compete partners will offer low-cost broadband connectivity and equipment nationwide to eligible families with a child or children in the National School Lunch Program (NSLP) who lack a home broadband connection. The National Cable and Telecommunications Association (NCTA) estimates there are more than 10 million NSLP students living in some five million C2C-eligible homes.

Beyond the hardware and connectivity, C2C addresses another hurdle of broadband adoption by providing free digital literacy, education, and employment skills training materials. These materials and training aides will be available to anyone. C2C will be administered by the not-for-profit OneEconomy. According to Gail MacKinnon, Time Warner Cable Executive Vice President and Chief Government Relations Officer, the program is being offered because the company and its partnering stakeholders recognize the importance of broadband adoption for education, employment, and competitiveness in the digital age.

Providing incentives for the establishment of bricks-and-mortar and broadband businesses in economically hard-hit areas

Recommendation Four: Use broadband as a way to encourage bricks-and-mortar businesses to enter hard-hit areas

One way to encourage innovation and broadband businesses in economically hard-hit areas is to promote other businesses in those areas—local businesses are characterized by intense competition...
and so the need to achieve efficiencies in those businesses often creates the demand that trig-
gers innovation. This means that promoting large retail, manufacturing, transportation, and other
bricks-and-mortar businesses in underserved areas can drive innovation in ancillary areas like broad-
band-enabled services that are owned and operated by minorities. We recommend the following:

- Stakeholders in governments, business, community intermediaries, and education should part-
tner to create wraparound solutions to attract bricks-and-mortar businesses into underserved
areas and then enable local broadband businesses to engage in business-to-business transac-
tions with those businesses.
- Providing broadband access at speeds required by business (and higher than those available
to residential consumers) can attract businesses to certain areas. There is ample evidence of a
causal relationship between the arrival of broadband and business and job growth.
- Encourage foreign direct investment in broadband sectors into economically hard-hit areas
with concessional tax rates and reform of foreign direct investment regulations in ways that
encourage job-creating capital inflows into economically hard-hit areas.
- Encourage on-shoring of middle-to-low skilled broadband jobs, like the recent efforts by the
FCC to work with the private sector to on-shore call center jobs. Public-private partnerships
like this address all the underlying ingredients necessary for investment and job creation.

Recommendation Five: Fast-track approvals for broadband businesses in hard-hit areas
One of the impediments to growth of businesses in hard-hit areas is the time that it takes to obtain
regulatory approvals for businesses. Recently, a World Bank report identified that the United States
has fallen to 27th—behind Thailand and Saudi Arabia—on the ease of getting a construction permit.
These delays have a significant detrimental effect on economically hard-hit areas because those areas
already have substantial barriers to overcome in attracting businesses and capital. We recommend
the following:

- Pre-approval of land-use and other regulations for investment in hard-hit areas, with a focus on
high jobs-growth sectors.
- Focus on sectors that are likely to create jobs. Low-tech, green jobs in local services such as
retrofitting have greater potential to generate jobs than renewable energy technology does.
Governments can support these sectors through government contracts or R&D subsidies.
- Overhaul the corporate tax code in a way that encourages investment in underserved areas. An
example is authorizing the repatriation of foreign-earned profits of United States corporations
for investment and other purposes.
- Release wireless spectrum more quickly, and ensure the more efficient use of spectrum that is
currently not in use.
- National policy on urban renewal should be founded on partnerships between governments,
private sectors, and community intermediaries to address the underlying problems.

Recommendation Six: Grow businesses in emerging industries and revive rate of business
creation
Since the start of the recession in December 2007, the rate of new business creation has dropped by
23 percent, and this has resulted in 1.8 million fewer jobs. In addition to this decline in new business
development since the recession, the below-parity performance by African American-owned busi-
nesses presents a significant lost opportunity for job creation. Had minority businesses reached parity
with other businesses, the economy would have created $2.5 trillion in additional economic activity and
16.1 million additional jobs. This means that reviving business creation and, in particular, minority
business creation must be part of the broadband-to-jobs solutions. We recommend the following:

- Use government purchasing as a way to promote early-stage growth of small broadband busi-
nesses. Given the low capital needed for these businesses, they provide an attractive vehicle for
business growth. A credibly enforced national minority contracting policy is a must.
• Build close relationships between business, education/research institutions, and on-the-ground facilitators to get an effective ecosystem for accumulation and spreading of know-how.  
• Take immediate action to assist African-American broadband businesses to attract capital. Greater funding of Community Development Financial Institutions, the Small Business Administration, and the Minority Business Development Agency is critically important. 
• In addition to these traditional funding mechanisms, other possible innovative methods include requiring minority partners and minority contracting and divesting to minorities in conditions of transactions authorized by the FCC and the U.S. Department of Justice.

**Modernizing the education pipeline as a long-term solution**  
**Recommendation Seven: Address key issues that drive STEM engagement**  
Greater engagement by African Americans in science, technology, engineering, and math (STEM) as fields of study is one of the most important long-term solutions to connecting broadband adoption to jobs. By facilitating greater engagement in STEM fields of study, we will be creating a pipeline of African Americans with skills for broadband jobs and the interest to start broadband businesses in the future. A major obstacle to getting African-American students more engaged in STEM is the low levels of contact that they have with persons who are engaged in those sectors in their communities. By this we do not mean just highly trained engineers or scientists, but people who are involved in STEM careers of differing skill levels. This means that STEM programs must go beyond tutoring and address this underlying obstacle. We recommend the following: 
• Create STEM Academies based on partnerships between school boards, community intermedi-aries, higher education institutions, the U.S. Department of Education, and businesses that are based on hands-on experience and exposure to people working in STEM fields. 
• Focus attention on middle school or earlier ages so that the interest of the students is obtained early on. Provide research experience and exposure to people working in STEM fields so that interest in research-based study and working in STEM fields are triggered. 
• Ensure that all colleges receiving federal funds are actively working to increase STEM participation by African Americans. Reforming the internship-based job placement systems so that they do not discriminate against students from low-income backgrounds is a must.

**Recommendation Eight: Implement learning programs based on performance metrics**  
There is a critical need for continued investment in, and expansion of, education reforms that work, and a parallel need for meaningful and targeted innovations that are focused on STEM fields. Innovations such as effective early childhood education, the innovative use of learning time with a clear and deliberate emphasis on combating summer learning loss, the expansion of high-quality out-of-school time, and youth development opportunities that are systemic approaches to sustained literacy hold a great deal of promise as impactful innovations. These programs need to be focused on fields like STEM where African Americans are historically underrepresented. Innovative programs are most needed in fields where traditional methods are failing to achieve results:  
• Replicate meaningful and targeted innovations that are tied to measurable outcomes. An example is support for high-quality charter schools and charter schools focused on STEM as one model of innovation and meaningful progress.  
• Targeted innovation funding and support for low-performing schools and for low-performing students are essential. This type of flexibility is needed to ensure that African-American students are not confined to underperforming schools.  
• Develop sustainable public and private investment in order to foster and support partnerships between districts and non-profit organizations. These should be modeled on programs that have a demonstrated track record of closing achievement and opportunity gaps on a large scale.  
• Support incentives for communities, local and district education boards, and community
intermediaries to fund educational research and development of educational innovations that can potentially have long-term payoffs.

**Recommendation Nine: Develop multiple pathways to success in STEM**

In-school and out-of-school educational environments are equally important, and career success must be an end goal of all education. In a California survey, 81 percent of high school students who were discontented with their school experiences stated that opportunities for “real world” learning would engage them more in school. Education-to-work programs that had strong employer involvement (on-the-job training, job search assistance, networking) were generally successful. We recommend the following:

- Additional support for out-of-school learning time, including experiential and career-focused opportunities, in order to expand the perspectives and enrich the development of youth, and allow students to see the applicability of their coursework.

- Additional investments in early childhood education to increase the quality and quantity of reading experiences in the home and in community-based settings.

- Encouragement by schools in the area of using culture and identity as assets to learning and development; they also must ensure that all students have equitable access to high-quality teaching and content.

- Creation of opportunities for multiple pathways; this must focus on a balance of incorporating college-required courses with technical courses that will assist students in being competitive and help them establish direct linkages with the local business and labor market.
Appendix: Case Studies On How NUL’s Affiliates are Connecting Broadband Adoption to Jobs

Three case studies examine in detail how NUL's affiliates are putting into practice some of the recommendations presented in this report:

- **Case Study One—STEM Education Program of the Urban League of Greater Chattanooga.** STEM Academy of the Urban League of Greater Chattanooga was launched in 2007. It provides a research-based, hands-on math and science approach to learning for middle school children in grades 6, 7, and 8. The STEM Academy impacts five middle schools and takes place after school, two to three days a week, giving an additional six to nine hours of hands-on instruction in mathematics and science each week. The STEM Academy also includes a STEM summer camp component held in June on a full-time, four-day-a-week schedule. The program uses highly qualified teachers and adheres to curricula from the Society for Automotive Engineers and the Carnegie Mellon University. Students get a variety of hands-on experiences at AT&T facilities and the University of Tennessee at Chattanooga (UTC) SIM Center. More than 615 students have participated in the STEM Academy since 2007. The average student gain in Reading/Language Arts is 31.65 percent and in mathematics it is 31.92 percent. Students reported a 20 percent increase in their knowledge of STEM careers and their desire to learn more about careers in science and technology.

- **Case Study Two—Center for Workforce Innovation Job Training Program of the Central Florida Urban League.** Central Florida Urban League launched its inaugural class at the Center for Workforce Innovation (CWI) on June 10, 2011. The CWI model is structured to train workers in areas needed by industry and to place those students into apprenticeship-style job placements. CWI focuses on technology/broadband, energy, hospitality, culinary, manufacturing, and medical support services. The business partners of the program supply seed funding, a menu of applicable training and curriculum modules, collaboration around teaching, testing, and evaluation tools, and, most importantly, a commitment to hire individuals certified by the CWI. Most participants will complete a 30-day hard skill introduction, followed by a 90-day paid apprenticeship. The projected success rate of the CWI is 70 to 80 percent, meaning 70 to 80 percent of students who enter the program graduate with a job at the end of the program.

- **Case Study Three—Entrepreneurship Centers of the National Urban League.** The Entrepreneurship Center Program is in its sixth year of operation. Currently there are nine centers, which operate in Atlanta, Chicago, Cincinnati, Cleveland, Jacksonville, Kansas City, Los Angeles, New Orleans, and Philadelphia. They provided 10,911 hours of management counseling and 11,242 hours of business skills training to 5,938 entrepreneurs in 2010. The program provides management skill evaluations, relationship building, strategic group deployment, and business management training. The Urban Empowerment Fund is a planned future endeavor of NUL which aims to offer a range of loan products, provide business technical assistance, and engage in national policy advocacy to support community development efforts. These activities are similar to what most Community Development Financial Institutions (CDFI) provide, but the Urban Empowerment Fund will be national in scope, focus primarily on minorities in urban areas, and will have the NUL’s brand, reputation, network, and capacity behind it.

In this Appendix, we provide three case studies that examine in detail how NUL’s affiliates are putting into practice some of recommendations suggested in this report.

Following is a snapshot of the programs that NUL’s affiliates offer which connect broadband to jobs—this will provide a context on the depth, variety, and efficiency of NUL’s programs.

- The primary focus of NUL’s affiliate programs in broadband is in providing skills to gain jobs.
- NUL’s solutions are long term and short term, targeting two population segments.
- On the short-term side, 59 percent of NUL’s affiliates had job training or job placement programs for people who were currently in the labor force or are looking to be in the labor force.
• On the long-term side, 57 percent of NUL affiliates had job readiness programs that provided college preparatory instruction, tutoring, and immersion in STEM for students. The long-term focus is to create a pipeline of future workers.
• Eighty-nine percent of NUL’s affiliates made computers available through computer access programs, which offered different degrees of technical assistance.
• Twenty-five percent of NUL’s affiliates provided programs that facilitated job creation, including providing capital, technical, and other assistance to entrepreneurs.

Case Study One: STEM Education Program of the Urban League of Greater Chattanooga, Tennessee

Challenges Targeted by the Program
When broadband is used to drive new business activity and economic growth, then it will create jobs. The challenge is to ensure that there is a pool of properly skilled labor available to take those jobs in communities hard hit by job losses. Having that pool of labor will boost economic activity and job creation by itself, because businesses, both domestic and foreign, are likely to invest where there is a ready supply of labor with skills to match their needs.

The workforce in construction and retail that was created in abundance during the economic boom was relatively low-skilled in technology, leaving the economy with a shortage of technologically skilled workers. For example, in Nevada between 1997 and 2007, a period that included the extraordinary boom in construction, high school graduation rates declined by a record 23.9 percentage points (making Nevada the nation’s lowest ranked state at 41.8 percent) while the national high school graduation rate increased by 3.1 percentage points in that time. Although there are no studies establishing a positive statistical correlation between the boom in construction and the increased high school dropout rate, and while acknowledging that other factors impact on graduation rates, we believe that the boom in construction drove some individuals who would have pursued further skills to obtain easily available construction jobs.

Another indicator that the current workforce has inadequate technology and related skills is the fact that in 2007, only 16 percent of bachelor’s degrees in the U.S. were awarded in STEM, compared with 28 percent in Germany. The appropriate comparison for the U.S. in this regard is another wealthy, industrialized country like Germany and not a developing country like China, because low starting bases and social factors in developing countries push students into STEM fields, but this growth slows down when those economies reach maturity.

Research Underlying the Program Design
There is work to be done over the medium to long term to create a labor force that has the skills suitable for jobs created in broadband and related technology sectors. The STEM Academy of the Urban League of Greater Chattanooga (ULGC) is founded on a medium- to long-term strategy to build a labor force among African Americans and other underrepresented urban communities for broadband jobs and businesses.

STEM Academy of the ULGC is focused on African Americans and other underrepresented minorities because of their underrepresentation in STEM studies and STEM careers:
• Low college STEM graduation rates: 20.8 percent of all African-American high school students who entered college in 1995–96 and 2001 entered STEM fields, which is nearly comparable to white American students (21.5 percent). Of these students, 31.7 percent of the African-American students graduated with a degree or certificate in STEM-related fields, compared with white American students (at 43.9 percent).
• **Gaps in STEM emerge in early years:** In early elementary school, African-American students already lag behind in mathematics and science proficiency. For example, in California, 47 percent of African American second-graders achieved proficiency in mathematics, compared with 76 percent of white American students—a 29-percentage point gap. By sixth grade, proficiency rates have decreased and the gaps have grown—32 percentage points separate African American and white American sixth-graders in mathematics proficiency.

• **Inadequate access to effective STEM education:** Approximately 3,000 schools serving about 500,000 high school students don’t offer Algebra II classes and more than two million students in 7,300 schools didn’t have access to calculus courses in the 2009–2010 school year. At schools where the majority of students are African-American, teachers are twice as likely to have only one or two years of experience teaching, as compared with schools in the same district that have a majority-white student body.

Rectifying these disparities is essential for equal opportunity to exist. It is also an efficient way to grow a skilled labor force for broadband jobs because the low starting base of these communities in STEM means that there is scope for fast and substantial increases.

Research indicates that solid preparation from an early age, hands-on experience, school-based learning in the workplace, exposure to role models in the fields, and access to peers who share these interests is critical to promoting interest in STEM. STEM Academy of the ULGC’s focus on early immersion in STEM for middle school students was driven by this research and also by its track record on the ground. ULGC also leverages greater adoption of broadband and related activities like social networking in these communities, as discussed earlier in this report, and also leverages them to build interest in STEM studies.

**Solution**

STEM Academy of the Urban League of Greater Chattanooga was launched in 2007. It provides a research-based, hands-on math and science approach to learning and student engagement. The STEM Academy was established to improve state standardized test (TCAP) scores in math and science and to introduce students to a variety of careers in STEM.

When launched in the summer of 2007, the STEM Academy was aimed at 3rd, 4th, and 5th graders, though it was concluded after evaluation of the first year that it was best suited for middle-school children in 6th, 7th, and 8th grade. Several observations led to this decision:

- Urban League of Greater Chattanooga’s ability to influence high school class selection, which in turn can impact career choices
- VEX Robotics Program, an integral part of the STEM Academy, proved too complicated for younger children

Currently the STEM Academy impacts five middle schools and takes place after school two to three times a week, giving participants an additional six to nine hours of hands-on instruction in mathematics and science each week. The STEM Academy extends from October until March (after standardized testing). It includes a STEM summer camp component held from 9 am to 4 pm four days a week in June, intended to build on skills learned throughout the academic year.

The curriculum of the STEM Academy is aligned with Tennessee State Curriculum Requirements and includes opportunities to increase reading and writing proficiency. Children who apply to the STEM Academy and STEM summer camp are chosen based on their interest in STEM careers or their desire to learn more about science and engineering.
Overview of the Program
The STEM Academy of the ULGC is offered during the school year as an after-school program and in the summer as a summer camp.

The school-year program is held over a 20-week period from November to April, Monday through Thursday between 3:00 pm and 5:30 pm. The program was started at the premises of the ULGC and later expanded to schools in partnership with the Chattanooga School District. Chattanooga School District also feeds students into the program. The program uses highly qualified teachers and adheres to the Society for Automotive Engineers’ *A World in Motion* and Carnegie Mellon University’s *VEX Robotics* curricula.

The summer program lasts five weeks and takes place from 9 am to 4 pm on Monday through Thursday, with Thursday a field trip day when students visit a variety of science and technology destinations in the Chattanooga area. These include AT&T facilities, the University of Tennessee at Chattanooga (UTC) SIM Center, and River Gorge Explorer. It is in these instances that students are provided one-on-one contact with professionals in STEM careers.

The program also incorporates a parental component by providing an orientation at the start of the program and monthly reports to keep parents engaged with their children's progress.

Evaluation of the Program
More than 615 students have participated in the STEM Academy since its inception in 2007. The average student gain in Reading/Language Arts is 31.65 percent and in mathematics is 31.92 percent. Students reported a 20-percent increase in their knowledge of STEM careers and their desire to learn more about careers in science and technology. Evaluation for the STEM Academy includes a pre- and post-survey; at this time, the STEM Academy does not track students through high school. However, additional evaluation tools are being reviewed to track students after their completion of the program.

Case Study Two: Center for Workforce Innovation Job Training Program of the Central Florida Urban League

Challenges Targeted by the Program
Creating a future labor supply for industries that rely on technology and broadband as core inputs, or industries that require some proficiency in technology and broadband, cannot only be a task for school education programs. Effective and efficient solutions that target the needs of the broadband industry, as well as other parts of the economy, are necessary to ensure that the recovery does not falter and that the economy is on a sustainable, long-term growth trajectory. Economists who support job-creation programs point out that programs that facilitate the re-skilling of the unemployed provide ways to improve job growth. The argument here is that a well-trained, highly skilled labor force will create healthier and more sustainable aggregate demand.

One of the major challenges faced by the Central Florida Urban League (CFUL) is how to train people to take jobs that are emerging in broadband sectors—both to fill existing demand in those sectors and to create demand. Providing broadband-related skills training creates demand by attracting businesses to localities where there is ample labor supply with the necessary talents.

Research Underlying the Program Design
The Center for Workforce Innovation (CWI) at CFUL provides an immediate solution that will increase skill development and connect people with jobs. The CWI focuses on the chronically
unemployed, low-income individuals, military veterans in need of skills redevelopment, and members of the general population seeking new, employable skills.

CWI is targeted in the following communities with an excessive need for assistance in workforce development:

- **Long-term unemployed**: As of December 2011, nearly 5.6 million people are reported to have been unemployed for at least six months or longer. More than one million of the long-term unemployed have run out of unemployment benefits, leaving them without the money to get new training, buy new clothes, or even get to job interviews.

- **Need for new skills training**: Only 24 percent of those who have recently returned to work after experiencing long-term unemployment returned to the same industry and only 19 percent were in the same occupation.

- **Military veterans**: The unemployment rate for veterans who served since September 2001, a group referred to as Gulf War II-era veterans, was 11.5 percent in 2010, compared with 9.4 percent for non-veterans.

Only 27.4 percent of Americans hold a bachelor’s degree or a higher degree. Yet, more than one-third (38.6 percent) of jobs available in occupations that have a direct relationship with technology, broadband, and science require education and technical skills lower than a bachelor’s degree. The CWI focuses on direct workforce development equipping citizens with the skills necessary to succeed in technology and innovation, and more.

**Overview of Program**

On June 10, 2011, the CFUL launched its inaugural class at the CWI, representing a multifaceted approach to addressing key issues of access to training, development, and job opportunity. Through collaboration with the local business community, training entities, government entities seeking to improve the region’s economic quality of life, and philanthropic sources focused on education and economic development, the CWI offers a curriculum mix of classroom instruction, field training, and practical application of learning that meets current and future workforce demands.

The CWI aims to expand employability skills and development training in new-economy jobs in the areas of technology and broadband, energy, hospitality, culinary, manufacturing, and medical support services. The program seeks to match the training and skills of those completing the CWI certification with existing job opportunities. The goal is to establish an accessible vehicle to deliver job-skills training that keeps pace with the growth and direction of the Central Florida economy. The CWI acts as an apparatus enabling public and private sectors to achieve goals within key metrics around local and regional job training and hiring by providing a cost-effective means of equipping Central Floridians with the skills necessary to achieve a living wage and overall better quality of life.

In this program, the CFUL provides facilities management and program administration, intake and assessment of program users, career counseling services, promotion and marketing of the CWI, and fiscal and financial management. The partners of the program supply seed funding and sustainability contributions, a menu of applicable training and curriculum modules, collaboration around teaching, testing, and evaluation tools, and, most important, a commitment to hire individuals certified by the CWI.

While the training and development process will vary based upon the requirements set by the industry partner or industry certification, most participants will complete a 30-day hard-skill
introduction, followed by a 90-day paid apprenticeship. The curriculum is designed for participants to enter the workforce immediately upon completion of the training. Participants are being trained by industry subject matter experts (SMEs) from the CFUL-CWI industry partner. Each applicant is screened for employment with their prospective industry partner during the course delivery in order to expedite the hiring process.

Participants with the CWI are recruited through partnerships with other community-based organizations. For example, Jobs Partnership of Florida (JPF) provides enhanced employability skills training to enable the chronically unemployed and underemployed to gain the soft skills necessary to obtain and retain a job, like time management and interpersonal skills. In addition to JPF, the CFUL-CWI also receives referrals from Workforce Central Florida, the NAACP, and other community-based organizations. CFUL also works with employers to post opportunities on their websites.

Evaluation
The projected success rate of CWI is 70 to 80 percent, meaning 70 to 80 percent of students who enter the program graduate with a job at the end of the program.

Case Study Three: Entrepreneurship Centers of the National Urban League

The goal of NUL’s Entrepreneurship Center Program is to enable minority entrepreneurs to take advantage of new business opportunities and qualify for financing that will lead to high-level business growth through the provision of proper management skills. The ECP focuses on all sectors of the economy, but broadband and technology sectors have had a special focus. This is because NUL’s analysis shows that from 2004 to 2008, firms in professional, scientific, and technical services sectors were more likely to persist and survive, increasing their presence from 15% in 2004 to 18% in 2008. In this time, high-tech firms did especially well by nearly doubling from 5% of new firms to 9% of surviving black-owned firms.

Overview of Entrepreneurship Center Program
The Entrepreneurship Center Program is in its sixth year of operation. Currently there are nine centers, which operate in Atlanta (GA), Chicago (IL), Cincinnati (OH), Cleveland (OH), Kansas City (MO), Los Angeles (CA), New Orleans (LA) and Philadelphia (PA). They provided 10,911 hours of management counseling and 11,242 hours of business skills training to 5,938 entrepreneurs in 2010. Key components of the Entrepreneurship Center Program are as follows:

- Management Skill Evaluation: Each program participant is evaluated to determine the type of assistance necessary and the source of that assistance.
- Relationship Building: Each center develops relationships with outside resources that provide management and technical assistance in a full suite of business programs.
- Strategic Group Deployment: Grouping outside resource providers by skill level of clients ensures that the client is receiving the necessary assistance from the proper resource.
- Business Management Training: Clients receive group training sessions on business management topics that can advance their entrepreneurial skill level along with information on new business opportunities and financing options. Training sessions are held monthly.

An Example of the Entrepreneurship Center Program at Work
Environmental & Safety Solutions, Inc. (E & SS) is an OSHA and EPA regulatory compliance consulting company. In 2006, E & SS expanded its services to include providing construction safety professionals to projects around the U.S. Some of E & SS’ customers include Duke Energy, Graphic Packaging International, Greater Cincinnati Metropolitan Sewer District, and General Electric.
In March 2010, E & SS was referred to the Entrepreneurship Center Program of the Urban League of Greater Cincinnati by the African American Chamber of Commerce's Minority Business Development Organization (MBDO). The Entrepreneurship Center Program of the Urban League of Greater Cincinnati is run out of its Economic Empowerment Center and MBDO is a partner organization that refers clients. E & SS received the following services:

- Development of a company Strategic Plan
- Selection to and graduation from the Urban League's African American Business Development Program (AABDP)
- Membership in the AABDP Alumni Networking Group which meets monthly
- Monthly business consultation sessions
- Business development workshops
- Identification as a High Potential Client for preparation and consideration for the Cincinnati USA Regional Chamber's Minority Business Accelerator, which works with minority firms with gross revenues of $1 million or more

**Urban Empowerment Fund**

In addition to the Entrepreneurship Center Program, NUL also has a full suite of other services and future plans intended to promote black private enterprise in growth sectors.

The Urban Empowerment Fund is a planned future endeavor to fill a credit gap that has widened during the last two years, particularly in minority communities. A comprehensive market study performed recently confirmed the need and demand for flexible capital to meet small business needs. Due to a perception that lending to minorities creates high risk with low returns, traditional banks and equity investors often underserve minority communities.

The Urban Empowerment Fund will invest in new and expanding small businesses, nonprofit organizations, community facilities, and affordable housing development in underserved communities. Through its lending activity, the Urban Empowerment Fund will help empower African Americans to attain economic self-sufficiency and to create sustainable, vibrant minority communities throughout the country.

The primary objectives of the Urban Empowerment Fund are to:

- Provide flexible financing to meet the needs of minority-owned small businesses, community facilities, and affordable housing developers in NUL affiliate communities
- Provide a vehicle for social investors, foundations, and grantors to meet their financial and social goals by offering a means by which to invest in minority communities
- Enhance economic opportunity and empowerment by encouraging and enabling sustainable development to move forward and succeed
- Offer additional capital choices in underserved communities that are additive to, not in competition with, existing capital providers
- Support job creation and retention in low-income and minority communities and generate net income annually to increase net assets and support greater loan activity and impact

To achieve these objectives, the Urban Empowerment Fund will:

- Offer a range of loan products
- Provide business technical assistance and housing counseling through NUL’s Entrepreneurship Center Program locations and affiliate network of service providers
- Engage in national policy advocacy to support community development efforts in low-income and minority communities
These activities are similar to what most Community Development Financial Institutions (CDFI) provide, but Urban Empowerment Fund will differ from existing CDFIs because it will be national in scope, focus primarily on minorities in urban areas, and will have the NUL's brand, reputation, network, and capacity behind it.
Endnotes

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Prior to NULPI, Madura worked for a Chicago consulting firm where he used quantitative analysis of complex databases to assist state governments, foundations, and political campaigns to micro-target services and messages. Madura has been interviewed on C-SPAN, ABC-TV, and Public Radio International, and his work has been quoted in The New York Times and in testimony before the U.S. Congress.

For the first eight years of his career, Madura was a corporate attorney in technology and telecommunications, where he structured and negotiated mergers, acquisitions, and joint ventures for global corporations. Madura has an MA in Public Policy from the University of Chicago (in microeconomics and statistics), and an LLB (equivalent of a JD) and a Bachelor of Economics degree from the University of Sydney, Australia.

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Chanelle received her JD from the Howard University School of Law. She received her undergraduate degree in English, with Honors, and Piano Performance from the University of Maryland at College Park (UMCP). She is a member of the board of the UMCP College of Arts and Humanities, Vice President of the Howard University Law Alumni Association, and Secretary of the Board of Industry Ears, a non-profit think tank dedicated to improving media literacy for young people of color.
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About the Time Warner Cable Research Program on Digital Communications

The Time Warner Cable Research Program on Digital Communications will be dedicated to increasing public understanding of the benefits and challenges facing the future of digital technologies in the home, office, classroom, and community.

The Research Program will focus on the following areas:
• Increasing knowledge about the marketplace and the consumer
• Increasing knowledge about digital technologies
• Increasing knowledge about communications policy
• Increasing knowledge about innovation in digital communications

About the Research Stipends

Individuals receiving a stipend should produce a 25– to 35–page report. The report should be submitted no later than six months after the start of the project.

Proposals from any discipline with research interest in digital communications will be considered. Multidisciplinary research teams, consisting of two or more authors from different fields, are encouraged.

Size of Stipend: $20,000

Application Deadlines for 2012 Awards: April 1, 2012 and November 1, 2012

Submitting Applications: Applications should be submitted online at www.twcresearchprogram.com. Applicants should submit:
• A three-page description of the proposed project
• A resumé (no more than three pages per author)

Applicants will be notified when their application is received and when the proposal review process is completed.

About Time Warner Cable

Time Warner Cable Inc. (NYSE: TWC) is among the largest providers of video, high-speed data and voice services in the United States, connecting more than 14 million customers to entertainment, information and each other. Time Warner Cable Business Class offers data, video and voice services to businesses of all sizes, cell tower backhaul services to wireless carriers and, through its NaviSite subsidiary, managed and outsourced information technology solutions and cloud services. Time Warner Cable Media, the advertising arm of Time Warner Cable, offers national, regional and local companies innovative advertising solutions. More information about the services of Time Warner Cable is available at www.timewarnercable.com, www.twcbc.com and www.twcmediasales.com.