Dear FCC,

BROADBAND POLICY SHOULD INCLUDE SOCIAL AND ECONOMIC FACTORS
The Technology and Development Research Team at the Center for Latino Policy Research (CLPR) at the University of California, Berkeley, applauds the renewed public attention for technology development, the creation of the Broadband Opportunities Program and the FCC's goal and request for comments on the elements of a National Broadband Plan to generate broadband expansion in areas that lack it for social inclusion and economic development.

CLPR recommends that broadband policy be defined beyond technical classification and that "under-" and "un-served" categories includes social and economic factors and demographic indicators for framing the development problem and distributing public funds within institutional sites (social realm, economy, politics, and public institutions). Some fundamental components of a development plan include institutional, infrastructural and human inputs.

CRISIS: BREAKING TECHNOLOGY MARKET BOTTLENECKS
The social and economic crisis now facing public and private institutions, as they enter the technology development cycle is the negative bottleneck in growth and development of technology markets in society, the negative or low broadband in poor areas, and the disorder it causes in the reproduction of the means of production, consumption and exchange seen in low income places. Consequently, this crisis, without public intervention, reinforces pre-existing conditions of place and population imbalances, uneven intra- and inter- local regional development at global scale, and spatial segregation by class, ethnicity, and race, as is, in the United States landscape. Such conditions maintain the unequal public finance tax structure by place. This translates into low levels of tax dollars in poor resource areas that undermine entry into development processes underway.

Uneven public investment with the ongoing structural social disinvestment maintains a two-tier public education system that reinforces occupational stratification and labor market segmentation that generates disparities in network technology ownership rates by class, race, ethnicity, disability and place.

Digital network technology includes external technology artifacts that facilitate voice, print, and visual communication or representation to produce, consume, and exchange materials, products or public and private content. This all purpose technology includes technologies that facilitate training, formal education, social engagement, economic benefit, institutional exchange and collaboration, and the interface that makes possible the transfer of political voice and vote—for example, computers, the internet, the intranet, cell phones, online radios, standard software applications, hand-held digital devices, and in various organizational forms such as list serves, e-mail, operating Web pages, portals, online postings and transactions, and so on. This includes an interconnected digital network of compatible computer systems connected to the Internet at standard operation performance rates and sustained by a high speed broadband without time and online restriction uses of computational functions that can facilitate efficient and productive in time communication, transfer of data files, transaction exchanges, production, and sharing of digital content. All of these are online information and exchange mechanisms.

TECHNOLOGY MATTERS BECAUSE OF THE ECONOMIC CONTEXT
The disparity in availability and training in the productive uses of network technology is fueled under a changing economic context. The United States has a high concentration of service and knowledge economies that is increasingly sustained by a technology system that can facilitate returns

on investment.

The integration of technology functions and institutional processes are creating or sustaining productive social systems of operation in society. The innovation or change created in governance structures, work processes, and social service delivery processes via technology-based automated electronic and digital systems of communication that facilitate material transaction has produced a new set of human skills demands that give rise in technology adoption use rates in society.

Precisely because more people use and institutions require online forms of transaction and information sharing that disparities in technology ownership rates are fueled. The outcome is imbalance in social, economic, political, and institutional rewards based on technology in society. The effect is the social and economic crisis that is further complicated under institutional restructuring and changes in regulation when public institutions meant to offset unequal development results are failing and not prepared to meet the labor market demands and newly established technology based requirements to participate and thrive in society.

ADDRESSING HUMAN AND INFRASTRUCTURAL BARRIERS AND DIFFERENCES
Public investment should focus on seeding innovative (in)formal projects for integrating and developing social processes and technology systems structured to address barriers to reaching development (jobs and wealth). Innovation programs are ones that tackle structural barriers to address ongoing social and economic problems that are now only complicated by emerging technology based processes and different forms of productive participation, competition and prosperity in society that evolve with the integration of technology. Thus, the National Broadband Plan’s policy framework needs to take account of how technology is integrated into the productive functions of society.

TECHNOLOGY IS A PROCESS OF PRODUCTION
Technology is more than a tool; it is a process of production, consumption, and exchange. This process is regulated according to the policy and governance of any given place. New to this process is the use of information and digital network technology into the delivery mechanisms of formal institutions that are adopted and used by the general population. This can maximize profit for entrepreneurs and industry, and benefit places from its generative economic growth and development.

Some indicators of development are the increasing number of populations that attain gainful employment and the generation of a strong and secure tax base for public development budgets. Such positive development can channel back local public finance tax dollars for reinvestment in public development projects of any given place.

Those individuals and places that prosper within the productive technology processes in almost any given industry continuously cycle through the IT development process, and generate consistent patterns of growth (jobs) and development (higher incomes, higher education).

IT development as a interconnected multi-phase circular process with necessary human and infrastructural investment inputs to innovate, create, diffuse, adopt, use and integrate technology to generate social and economic returns on investment (productivity, efficiency, cost savings, and profit). For schematic representation of the IT development process, see Chart 1. Information and Digital Network Development in a Circular Process in Gordo, et al., 2008.

This development model operates within institutional work processes, sustains governing bodies, and is used in web based electronic and digital social service delivery systems that are increasingly maintained by public

and private institutions. The development process operates through various units: the individual, collective populations, organizations, institutions, and by geographic place. The development process can also work at a different pace and time line. Overall operations are affected by policy, quality of technical infrastructure, human capital, and institutional resources. It is also affected by investment and the learning curve involved in establishing the capacity to support those who manipulate the productive function of technology.

The technical infrastructure involved ranges from “obsolete functionality” to state-of-the-art digital network technology, sustained by low to high levels of high speed broadband, (i.e. dial up, Cable, Wi-Fi, Wi-Max, and DSL are some types). Together, these elements determine whether it is a weak, standard or high quality cycle that an agent moves through in the development process. These elements are also affected by an increase in economic returns for investment (profit), and a reinvestment in the process to maintain advancement.

TECHNOLOGY CREATES A DEMAND FOR MATERIALS AND HUMAN SKILLS

Various and necessary interconnected factors that determine participation in the technology process exist. Some fundamental determinant inputs that explain cycling in the development process and attaining benefit (i.e. profit) within the technology process are:

1. Technology hardware. The hardware operates at different levels and with some standards: capacity, speed, time, electric and digital power, broadband, function, digital network alignment of compatible software. Digital power measures the pace of change of the digital infrastructure and it is a function of computing, communication, storage, and content (Brown and Dugid, 2002).

2. Content. Digital applications, information and materials online. The public and private content transferred through the intranet and internet is the intersection of information, knowledge, and ideas. This content includes information generated through the following domains: .gov, .edu, .com, .org, .info, .name, etc.

3. Human skill. This includes the embodiment of social technical abilities operating at the following standard types: ability to analyze, facility in computing functions that maximize capacity to work efficiently and productively in less time through the use of computer and web based tools, ability to communicate online, creativity, and ability to maintain social networks across time and space productively with the use of digital network technology.

4. Policy and governing Rules. The policy, regulatory process, institutional environment, and culture embedded within public and private institutions, play a role in shaping the different outcomes.

INSTITUTIONS ARE INTEGRATING DIGITAL NETWORK TECHNOLOGY

Public and private institutions are integrating technology into work processes, redesigning social service delivery systems, and automating material exchange in an attempt to maximize efficiency, reduce transaction costs, and save time. By and large, competitive pressures have driven businesses and public institutions to adopt a wide range of digital network technology and computer systems to improve productivity, maintain both internal and external communications, manage production, and offer customers new services (Castells, 1996).

The integration of technology involves: (1) maintaining complex management structures, extending outside the agency or locale, (2) enhancing productive work processes; and (3) reinforcing beneficial social service delivery systems. In short, network technology is what some call “a

general purpose technology", with applicability across a broad range of uses in a wide variety of work processes, institutional forms of collaboration and governing, and varied in the types of digital social services it enables. Whether or not populations can manipulate the productive function of digital network technology is crucially important. This opportunity is often determined by educational attainment, formal or informal training.

In today's economic marketplace, competitive industries seek workers that can adapt, work and sustain the digitally based social service delivery systems and work processes facilitated by new digital network technologies. A place that lacks a well- prepared labor force will not attract advanced long-term investment. It will also need to profitably attract talented workers with a high level of education and a high value skill set. Regardless, thriving industries located in areas that lack a supply of skilled workers, will likely hire workers living outside the region. Thus, a public incentive (such as a tax break, to attract jobs to the area) may not benefit the area and might fail to meet the needs of local talent and needy populations preparing a young work force for regional economic development is a better alternative. A quality and trained labor force will attract long-term investment.

PRODUCTIVE USE OF TECHNOLOGY GENERATES BENEFIT

Technology can be used to facilitate learning (i.e. by providing access to educational resources and facilitating the production of content). Technology can also be employed to reduce cost per any transaction. For instance, public and private institutions are increasingly replacing paper-based systems of exchange with a digitally based process of exchanging pay per online service. For example, today Wells Fargo and Bank of America are providing web based banking through the Internet. A customer can check balances, request paying services, etc. Telecommunications and wireless cellular companies, such as AT&T and Sprint, are using web-based applications to facilitate buying and paying for services. Services through this medium often offer discounted prices or considerable convenience. People can reserve appointments for the Department of Motor and Vehicles to reduce waiting time to register a car, obtain a driver's license, or pay for vehicle registration. The use of technology can generate economic benefit (i.e. savings on available discounts online and a positive rate of return on productive IT based skill sets in the labor market in almost any industry) (Castells, 2001; Gordo, 2003; Cohen, Garibaldi, and Scarpetta, 2004). For instance, Southwest airlines offers Internet based discounted prices for some flights. The United States Immigration and Naturalization Office provide and accept applications for certain visas only through the internet.

LACK OF TRAINING IN THE PRODUCTIVE USE OF TECHNOLOGY

The lack of public intervention (access to the necessary mechanism that determines advantage—access to technology at standard levels and education and training to develop marketable social technical skills) will refuel the digital divide problem and induce a multiplier effect on crisis.

The digital divide refers to the difference between those who are and those who are not able to participate and prosper in the society's productive social, economic, political, cultural, and institutional processes increasingly integrating digital network technology. This divide operates at different levels, moving from the unit of the individual and collective to organizations, institutions, and is measured by geographic areas. The intensity is determined by the integration and strength and capacity of the digital network technology integrated into a global social institutional digital network system through all the components mentioned above. The context and social living conditions of the population also determine the capacity to use technology productively. Controlling for all these factors, the generated benefits intersect with the level of

education and embodied skills of the user.

DIGITAL DIVIDE MEASURES

Scientific research on the digital divide problem has established a correlation between place, income levels, educational attainment, language, English proficiency, and age with the use of digital network technology (Castells, 2001; Cohen, Garibaldi, and Scarpetta, 2004; Gordo, 2003; Robinson, DiMaggio and Hagarti, 2003; Alvarez, 2003).

Most scholars agree that areas with high income populations and high educational attainment are most likely to have access anytime, anywhere—and these indicators include: computer ownership and internet connection at home, school, work, library, and in mobility sustained by high speed broadband, i.e. Cable, DSL, Wi-FI, Wi-Max.

Access “anytime anywhere” is unrestricted (in types of uses) and unlimited (in time and quality of applications) widespread (in coverage) high speed broadband access to the digital network technology system infrastructure that facilitates communication, exchange of digital information, and production of digital content whenever it is wanted and as needed.

On the other hand, low-income populations with low educational attainment and living in rural or low-income urban areas are least likely to own, use, and benefit from a functional computer and internet connection at home. This population tends to have connection sometimes somewhere or no connection anytime.

Access “sometimes somewhere” is restricted (types of uses) and limited (time and quality of applications) short range (coverage) low speed broadband access to the digital network technology system infrastructure that facilitates communication, exchange of digital information, and production of digital content whenever it is wanted and as needed.

Most analyses of the U.S. Census Community Population Survey (CPS), the most reliable survey sample of the general American population with a statistically significant sample of Latinos and African Americans, support the following general findings:

- Populations (primarily African American and Latinos) with low-income and educational underachievement, living in urban areas with a high concentration of people with low income and educational attainment levels are less likely to own computers and use the internet at home than their counterparts. More specifically, older and immigrant populations with limited English proficiency are even less likely to own and use digital network technology. Low income populations are also more likely to access internet at a community center and library. These services are limited by institutional purpose that determines use and time that limit or slow down the process of necessary experience needed to ride the learning curve.

- Populations (primarily Whites and Asians) with high incomes and educational achievement, living in urban areas with a high concentration of people with high income and educational attainment levels, are more likely to own computers and use the internet at home. This population is also more likely to afford market prices.

The low income will always face an economic barrier to being able to own the autonomy to access the utility of the Internet and learn to manipulate the production function of technology. There will always be some people who do not make enough to pay for the necessary service. Thus, price mechanisms need to be established. Policy needs to adjust and collect the necessary cost for entering and profiting in the market place. Technology is a public good when it creates utility for public and private institutions. Private and public investment in the development of early adopters and users of technology, now advancing their counterparts,

generates market externalities. Social and corporate responsibility involves creating mechanisms of fairness and entrance to participate and prosper in the technology based social environment.

STRUCTURAL ELEMENTS OF DIGITAL DIVIDE PROCESS

The institutional crisis (the lack of a plan and inability to prepare for the economic development needs of the population) generate a poor horizon of social mobility and disconnects affected people and places from the opportunity structure. This negatively limits public institutional support that causes a low rate public infrastructure (i.e. schools, library, industry, city and social organizations) that creates a low level of technology integration within public and private institutions. This sustains a lack of modern social and technical structures of opportunity that produce low technology adoption rates. The crisis also keeps low quality conditions in the operation and competitiveness of schools that keeps a low educational achievement in the population. Combined, these set of factors turn out limited chance to develop internal innovation and the ability to embody external technology. This keeps the inability of some people and places that cannot or do not control the productive function of technology within existing social and institutional productive processes. Consequently, the inability to use electronic and digitally based social systems of transaction causes low labor market skills among the population. In the political realm, the transfer of political voice is undermined. The lack of online interfaces negatively affects electoral power and representation. Lack of access to educational materials only weakens learning processes. Together these digital divide outcomes jumpstart an evolving poverty challenge: digital destitution.

RECREATION OF SOCIAL STRUCTURE

Digital destitution is the process of deprivation and alienation from the productive functions of society based on technology. This process negatively affects social inclusion by reinforcing relations of exclusion from the mechanism that determines advantage in society today. In the economy, digital destitution negatively affects material poverty by reinforcing relations of exploitation for those who do not have the necessary resources to live.

In the political realm, political powerlessness continues with the reinforcement of related relations of domination and subordination that happen without fair representation. Public institutions (meant to advance development plans) that do not restructure themselves to prepare the population for emerging social changes will maintain institutional marginalization (where some institutions thrive while others continue to fail in their mandate) by supporting relations of differentiation that exist. Thus, the ideology of social differentiation by class, race, ethnicity, disability and place of residence will strengthen social stigmas and dogma of valueless people.

INDICATORS OF DIGITAL DESTITUTION

The multiplier effects of digital destitution are uneven development and the deterioration of the built environment will continue. Unprepared labor markets, dependent and unproductive populations will experience a multiplier effect. High rates of participation in the informal economy will double without the necessary preparation. This translate into a concentration of people who lack benefits and civil rights now maintained vis-à-vis a technology based productive social system. This only compounds residential segregation in space (by race, class, and ethnicity). Thus, high levels of income and wealth inequality and concentration of poverty in place is kept. These processes are fertile ground for continued high institutionalization rates by race, ethnicity and class (prison population). Consequently, social regression (broken families, disconnected communities, and violence) and high rates of pubic health problems (drug addiction, poor health indicators) will continue and

justify ideology of difference.

MARKET OPPORTUNITIES

Federal and state regulation agencies have the opportunity to create and update a pathway for mobility and connection for the least likely to own network technology and information services; this, in turn, will generate economic demand and facilitate sustainability and improve efficiency and productivity that could yield positive returns on previous investment.

The opportunity to expand broadband for development is in integration of technology in ways that restructure and facilitate governance, work processes, and service delivery via public institutions and organizations that serve low-income people and places to connect them to the cycle of development.

A key component of public investment designed to achieve economic growth and broadband expansion includes human training; there are different types and valued differently, i.e. formal education vs. certification training or experience. While mainstream society and prosperous institutions are cycling through the productive technology development process, most low income populations and places remain disconnected through their failing institutions awaiting upgrades. The uneven capacity of the under and un-served to connect to the productive formal social processes of society will drain or limit the potential investment benefits generated by online systems.

For the most part, the public institutions meant to intervene in the inequality processes are lacking the necessary resources to restructure their work process, deliver service, and governance via technology.

Community technology development programs are necessary, especially when institutions are failing or unable to provide the necessary resources that facilitate participation and development today. Technology development programs provide autonomy and unlimited (in time and uses) technology access and creation of learning spaces that support critical skills. Another component is the provision of experimental spaces that develop entrepreneurial skills. Also vital is maintaining supportive spaces for social engagement. These services need to be specialized for low income and low literacy children, youth, adults and the collective. This type of training can generate adoption among un- and under-served populations. Productive access, training in the production of content, and the practice creating valuable social networks to produce can affect positive change. Under- and un-served populations and places also need a virtual social network infrastructure that supports productive social institutional systems and structured and designed to intervene in digital divide problems.

Finally, under- and un-served categorizations entail more than technology capacity and should also include human- and place- based social and economic factors. Institutional indicators of infrastructural capacity that enable the ability to manipulate the productive function of technology also need to be taken into account in the distribution of public resources and provision of institutional services to benefit from broadband.

A definition of access is distinctly about the capacity to produce, consume and exchange valuable information vis-à-vis a networked digital technology based system of information distribution and tele-communication to meet goals. Literacy that integrates social and technical skills to participate and prosper within an economy and public institutions that now demand it, is an essential component of attaining benefits from broadband access. Thus, public institutions and community mechanisms meant to prepare disadvantaged populations and low income

places for development need to upgrade and integrate technology into their productive function to prepare populations to participate in the society that is continuously integrating technology to conduct living and business activities. The under and under-served populations and places do not disappear but do operate outside the mechanism that creates advantage. While people and places may survive outside the formals comptetive spheres of society, they will at best, lack the capacity for mobility.

Blanca Gordo, PhD
Center for Latino Policy Research (CLPR)

Location:
Shorb House
2547 Channing Way, 3rd Floor
Berkeley, CA 94720-5670

Mailing Address:
Center for Latino Policy Research â€“ ISCC
2420 Bowditch Street, #5670
Berkeley, CA 94720-5670

510-642-6903 (phone)
510-643-8844 (fax)
e-mail: gordo@berkeley.edu
http://clpr.berkeley.edu/