NEW AMERICA
FOUNDATION

Policy Backgrounder
Community Wireless: Overview of Current Policy Debates

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Background: Low-cost, high-speed, community-based wireless broadband networks are cropping up across the country—revolutionizing public communications, spurring economic development, and bridging the digital divide. They blanket entire towns, cities and counties in rural and urban areas and serve as mobile communications systems for public safety agencies in communities nationwide. While the vast majority of these broadband providers are small commercial Wireless Internet Service Providers (WISPs), a growing number are sponsored by local governments and nonprofit community groups.

There are several issues pending at the FCC and in Congress that hold great implications for the success or failure of community wireless networks. The following key debates are discussed in this Policy Backgrounder:

1. **Open Spectrum** – What all community wireless networks—commercial (WISP), municipal and community nonprofit—have in common is the *unlicensed spectrum* they use to transmit signals. Expanding unlicensed spectrum in low frequencies would serve as "rocket fuel" for community wireless networks and the expansion of low-cost broadband access to all Americans.

2. **Municipal Wireless** – The authority of municipal and other local government entities to establish wireless broadband networks for public access is under attack at the state and federal levels. Despite the lack of competition in wired broadband offerings and the plethora of social and economic benefits provided by community wireless, powerful incumbent telecommunications corporations are lobbying to make municipal wireless offerings illegal.

3. **Network Neutrality** – Establishing multiple broadband paths to the home by fostering community wireless broadband networks on unlicensed spectrum would serve to fend off plans by incumbent wireline broadband providers to control the quality and choice of content available to consumers over the Internet.

OPEN SPECTRUM

What It Is

- Unlicensed, or open spectrum, refers to segments of the airwaves that have not been licensed by the government for exclusive use by one company or other entity. (For example, TV and radio stations have an exclusive license to broadcast on a particular 6 MHz "channel" of spectrum in their local market; or cell phone licenses, most of which were purchased at auction for their exclusive use.)

- Technologies such as WiFi, which are used to provide broadband wireless data access over small areas, transmit signals over unlicensed open spectrum (e.g., you don't need a license to set up a wireless internet network in your home or office).

- Unlicensed frequency bands are shared, with no protection against interference. Prior to the WiFi boom, they were referred to as the "junk" bands – and are stilled shared by an estimated 300 million consumer devices such as cordless phones, baby monitors, garage door openers and microwave ovens.

- WiFi networks are relatively inexpensive to deploy, because the equipment is mass-produced and utilizes unlicensed spectrum, which can be shared by anyone for free.

- Multiple WiFi nodes can be set up in a "mesh" architecture to efficiently spread wireless broadband access over a large area.

The Opportunity

- Currently, the amount of spectrum allocated for unlicensed, open access is miniscule compared to what is devoted for licensed, exclusive use.

- As a general rule of thumb, lower-frequency spectrum is higher-quality spectrum, because these airwaves travel farther and can better penetrate through obstacles like walls and trees.

- Very little of the most valuable "beachfront" spectrum – those frequencies that easily penetrate obstacles such as walls, trees and precipitation, as TV signals do – are allocated for unlicensed sharing (see enclosed fact sheet on "Rhetoric and Reality of Progress in Allocating Unlicensed").

- The segment of unlicensed spectrum that is currently usable for WiFi is in relatively high frequency (in the 5 GHz band) – which is useful for fixed location, line-of-sight transmissions, but not very useful for mobile or "last mile" broadband connections (particularly where there is a need to propagate a signal through trees, walls or other obstacles).

- Opening up **more spectrum for unlicensed use in lower frequencies would make spreading wireless broadband access cheaper and easier**. Fewer WiFi access points would need to be installed to cover larger areas -- and coverage quality would improve because signals would be better able to go through obstacles (i.e., there would be fewer "dead spots" without access).

- Currently, every region in America has great amounts of low-frequency spectrum that is sitting **empty and unused**. These are the unused TV channels.

- Opening more low-frequency spectrum – such as the unused TV channels – is therefore the "rocket fuel" needed to facilitate and scale up community wireless networks.

- Advancements in technology would allow WiFi and other wireless broadband devices to sense which TV channels are unused in a given area, and use only those channels without interfering with adjacent TV channels used by broadcasters. These devices would be subject to strict technical rules and testing to ensure that they would not disrupt television signals and cause harm to those who rely on over-the-air television

Pending Bills / Regulations

- **FCC:** In 2004, the FCC initiated a Notice of Proposed Rule Making (NPRM) that proposed opening unused TV channel spectrum, on a market-by-market basis, for unlicensed wireless broadband use. This would be of particular benefit to rural and remote areas, which have many unused TV channels, and are in most need of affordable broadband access.

    - **FCC Docket 04-186**

    ➔ This regulation has **stalled at the FCC** due to claims by TV broadcasters that allowing unlicensed open access to empty TV channels would interfere with adjacent channels occupied by TV broadcasters, preventing viewers from watching those channels. NAF and a coalition of over 20 public interest groups, community wireless providers and technology companies filed multiple sets of comments in this proceeding, urging the FCC to open up the currently fallow resource of empty TV channels for unlicensed wireless broadband, and rebutting the TV broadcast industry's technical claims of TV interference.

- **Congress:** Earlier this year, two very similar bills were proposed in the Senate Commerce Committee, both of which would both direct the FCC to complete this rulemaking process and open up empty TV channel spectrum. A House version of the bill was introduced in April.

    - Commerce Committee Chair, Sen. Ted Stevens (R-AK), has introduced the **American Broadband for Communities Act** (S.2332)

    - Senators George Allen (R-VA), Barbara Boxer (D-CA), John Kerry (D-MA) and John Sununu (R-NH) have introduced the **Wireless Innovation Act** (S.2327)

➔ Although still in committee, bipartisan support from members of the Senate Commerce Committee give these bills good prospects. NAF allies testified in support of the bills at a recent Committee hearing and continue to educate Congressional staff about the tremendous merits of these bills. These and other potential bills listed in this memo might be voted on in stand-alone manner, or they may get attached to a larger Telecom reform legislation. Rep. Jay Inslee is seeking GOP co-sponsors for a House bill.

- In the House, Reps. Marsha Blackburn (R-TN) and Jay Inslee (D-WA) introduced the **American Broadband For Communities Act** in April 2006

➔ The prospect of Congressional action may spur the FCC to complete the proceeding before legislation is even passed. Feedback and stories of actual wireless broadband providers utilizing unlicensed spectrum is critical in this campaign.

COMMUNITY / MUNICIPAL WIRELESS

What It Is

- Community groups, cities and towns across the country are setting up low-cost, high-speed wireless broadband networks utilizing technologies like WiFi that operate on unlicensed, open spectrum.

- These networks are relatively cheap and easy to deploy (and, as noted above, would be even more so with more low-frequency unlicensed spectrum), and offer the potential to bring wireless broadband connectivity to areas where it is currently unavailable or unaffordable.

The Opportunity

- Some of the many promising benefits of affordable, community-based wireless broadband access:
  - **Rural Access** – Wireless broadband can connect rural and remote areas where wired connections are unavailable or unaffordable. In a connected and more competitive world, affordable access to high-speed Internet connections will likely determine the business, educational, employment and cultural opportunities available in small town and rural America. Broadband wireless access has innovative applications to improve agricultural efficiency as well.
  - **Bridging Digital Divide** – By making broadband service available and more affordable – in some cases even a "free" municipal services – unlicensed wireless networks can bring the economic, educational and cultural opportunities of the Internet to those who previously did not have access. Commercial providers with a bottom-line motivation have neither the incentive nor requirement to provide access for all.
  - **Community Networking –** Community-based groups providing wireless broadband connectivity are setting up internal community web portals ("intranets") that facilitate social networking and community building. Such portals can be used to advertise community events, facilitate dialogue about local issues, etc. Examples are OneEconomy's Beehive, Southern California Tribal Digital Village, etc.
  - **Local Economic Development / Competitiveness** – Businesses large and small need broadband access to operate efficiently, to purchase inputs and to sell outputs at the best prices, worldwide. Affordable wireless broadband access can help attract businesses to a region—or prevent them from leaving. Even in large urban areas, such as New York City, thousands of companies lack access to the cable or DSL broadband access prevalent in residential neighborhoods. Public wireless access can also attract customers to retail and downtown areas to spur more economic activity.
  - **Opportunities for Small Business / Alternative to Large Wired Internet Providers –** Across the country, thousands of small commercial wireless Internet service providers have entered the market to provide low-cost broadband access using unlicensed, open spectrum. This has occurred primarily in rural areas where wired connections are unavailable or unaffordable. With access to unlicensed spectrum, small businesses can set up wireless internet services in communities for a relatively low cost. With more, higher-quality open spectrum, these low barriers to entry are an opportunity for small and minority-owned businesses to enter the Internet Service Provider market.
  - **Competition to Wired Services** – Unlicensed wireless broadband services provide competition for the dominant cable/DSL broadband providers like Verizon, Comcast and TimeWarner, as well as for licensed cellular phone operators like Verizon Wireless and AT&T. This not only helps bring down prices, but can also spur cable and telecom giants to upgrade their wired networks and provide enhanced services.
  - **Pervasive Connectivity** – Wireless broadband is not only a competitive substitute to wired broadband, but it is also an irreplaceable complement. Only wireless networks can provide ubiquitous connectivity to enable mobile communications and data services.
  - **A Haven for Net Neutrality** – Community wireless networks sponsored by nonprofits and local governments are most likely to preserve connectivity principles of "net neutrality." Open wireless networks – if they are of sufficient quality – can help put pressure on private broadband providers whose inclination will be to discriminate among applications, services and content providers that pay for priority delivery.

- **Local governments across the country—from small towns to large cities and entire counties—have set up or are announcing plans to establish citywide and regional wireless broadband networks.**

- In most cases, the governments issue a request for proposal (RFP) and solicit bids from private sector wireless providers. These RFPs outline requirements for service quality, coverage and pricing. (Contracts are in some ways similar to franchise agreements with cable companies).
    - Many **cities plan to utilize shared revenues with the winning bidders to finance digital divide programs**, which would provide subsidized Internet access, computer equipment and/or training to low-income communities
    - **Citizen participation is essential** in any municipal wireless RFP and contract award process, particularly because some cities are adopting business models that could result in an inferior form of public broadband (compared to competing commercial offerings).

The Threat

- **The nation's large telecom providers have been vehemently opposed to municipal and regional wireless broadband efforts** for fear that low-cost wireless broadband access will cut into their revenues from wired broadband offerings.

- They have lobbied at both the state and national levels to pre-empt local governments from offering telecommunications services, claiming that these networks amount to unfair taxpayer-subsidized competition with the private sector, and that competition will cut into their profits and **slow** the expansion and upgrade of their broadband networks.

- In reality, most municipal broadband networks use no taxpayer money whatsoever (capital costs are underwritten by the winning bidder), and municipal networks have often forced dominant providers to expand to areas that they had not previously served.

Pending Bills / Regulations (adapted from www.freepress.net)

- **State Level:** At present, 15 states have already passed laws restricting the ability of municipalities to provide broadband services, six states have successfully fended of such legislation, and two states, Indiana and Ohio, have such legislation pending (see list and details at http://www.freepress.net/communityinternet/=states).

- **Federal Level:**
    - **The Good** – In the Senate, Sens. Frank **Lautenberg** (D-N.J.) and John **McCain** (R-Ariz.) have introduced S. 1294, the **Community Broadband Act of 2005**. This bill would specifically permit municipalities to offer low-cost broadband service. If this bill passes, it would overturn all state legislation prohibiting municipal broadband systems.

      ➔ This bill is still in committee. NAF and allies have been compiling success stories of community and municipal broadband projects, and are working to educate committee members and staff about the merits of this bill (and the dangers of those listed below).

    - Also in the Senate, Byron Dorgan (D-SD) and Gordon Smith (R-OR) have introduced a bill, the **Universal Service for the 21st Century Act**, which would create a 'Broadband for Unserved Areas Account,' that would be used to **provide grant funding for qualifying community broadband projects**.

    - **The Bad** – In the Senate, Nevada Republican John Ensign has introduced **The Broadband Investment and Consumer Choice Act, S. 1504**, a bill which would preempt local governments wishing to offer broadband services to citizens. They would first have to ask the private provider for permission. Existing municipal projects would be grandfathered in, but would not be able to expand services.

    - **The Ugly** – In the House, Texas Republican Pete Sessions—a former SBC executive whose wife still works for the company—has introduced **H.R. 2726**, a bill which would prevent any city in the country from providing their citizens with Internet access if a private company offers service nearby. Ironically titled the **Preserving Innovation in Telecom Act of 2005**, this bill would do just the opposite. Even in cities where a private provider serves just 10 percent of the residents, a municipality would be barred from helping those without access. If a private service provider is overcharging residents, the bill would prevent local governments from offering a low-cost alternative.

NETWORK NEUTRALITY (AKA "INTERNET FREEDOM")

What it is

- "Network neutrality" is the idea that all Internet users are entitled to access content and services, or to run applications and devices, of their choice. This is the open, end-to-end architecture of the Internet as it developed thanks to common carrier regulation.

- When the Internet first developed over copper telephone lines, with users dialing in through local telephone exchanges, networks were neutral due to the "common carrier" regulatory obligations placed on telephone providers—that is, telephone providers are required to connect any users on a non-discriminatory basis – and allow consumers to attach their own devices (phones, computers) to the circuit-switched telephone network.
    - This ensured that any would-be Internet user could connect with any Internet Service Provider (ISP), who would in turn connect the user to the Internet at large. As a result, the early days of the Internet were characterized by vigorous competition between service providers, who competed on the basis of both price and quality of service.

- With the rise of cable as a broadband Internet provider, these dynamics shifted. Cable TV networks are not subject to common carrier obligations. Moreover, the FCC chose to designate broadband Internet services as "information services," a regulatory designation that means cable broadband network operators are not required to let users connect with any Internet Service Provider or access any content/services and run any devices/applications.
    - In June 2005, the Supreme Court upheld the FCC's decision to designate cable broadband services as information services not subject to common carrier obligations as part of the crucial *Brand X* case. This opens the door for cable, fiber and other broadband providers to kill net neutrality, unless Congress acts to ensure it.

The Threat

- Large cable and telecom providers that own the wired broadband Internet pipes into homes and businesses are trying to section off the Internet—creating a "fast lane" for certain preferred content and applications, while delivering other content and applications at slower speeds, degrading the content, or blocking it entirely. The companies that own broadband pipes into the home and office want to charge certain Internet content and application providers for faster delivery to users who rely on them. They intend to favor their own or affiliated services or content by delivering it at faster speeds or simply by blocking competing services.
    - For example, Time Warner, one of the country's largest cable providers, could favor content produced by AOL or Warner Brothers (also owned by Time Warner). Or AT&T could block their Internet customers from using a competing Internet phone service instead of AT&T's own Internet phone offering.
    - This isn't just a threat, it's actually happened: In 2004, a North Carolina Internet Service Provider blocked its DSL customers from using an Internet phone service that competed with its own. In 2005, Canadian telephone giant Telus blocked its users from accessing a website sympathetic to the Telecommunication Workers Union during a labor dispute.
    - Both Verizon's and AT&T's CEO's (as well as the CEO of BellSouth, which recently was purchased by AT&T), have expressed interest in making certain Internet content and application providers pay for use of "their" pipes.

- In the future, services like TV and telephone will be delivered through the Internet over broadband pipes. This stifles both consumer choice and the ability of producers of new content, services and applications to serve people on a level playing field.
    - **Access to alternative and community media is threatened** – they will be less able to get attention and be accessed by all. The Internet has the potential to be an extraordinary playing field where a noncommercial or independent news/media service could start up and provide significant alternatives to mainstream media companies- but without net neutrality, upstart and independent media sources could be marginalized.
    - New and innovative applications and content—search engines like Google, streaming video, podcasting, Internet phone services—could never have been developed or become popular if the Internet didn't offer free and non-discriminatory delivery. Under the current structure of the Internet, anyone can be an innovator.

- In a world of consolidation, in which the wired broadband connections into homes and businesses are owned by a small handful of large companies, with very little competition and consumer choice, the temptation to discriminate grows.

The Opportunity

- Increasing access to **wireless** broadband Internet access has the potential to serve as an antidote to the threat of losing network neutrality.

- Local governments, community groups and small Wireless Internet Service Providers can bypass dominant wired broadband providers that do not respect net neutrality and lay another broadband pipe to homes and businesses by setting up open, neutral, affordable high-speed wireless broadband networks. This would allow consumers to access the content and applications of their choosing, and would provide a competitive threat to the large incumbent providers of wired broadband pipes, forcing them to remain neutral as well.

- Yet again, access to high-quality low-frequency open spectrum is critical to fostering the development of community, municipal and commercial wireless broadband networks.
    - **Network neutrality over wireless networks is not a foregone conclusion. In cases in which a municipality contracts with a single wireless broadband network operator, it must take caution to ensure that the operator allows open access to all service providers and does not discriminate** against any content or applications. Public comment in hearings is crucial to ensuring that municipal wireless projects require net neutrality.

Pending Bills / Regulations

- While fostering the deployment of open, high-speed wireless broadband networks is a *de facto* way of ensuring net neutrality in both wireless and wired broadband networks, Congress has begun to take on the issue through legislation:
    - Sen. Ron Wyden (D-OR) has introduced the **Internet Non-Discrimination Act of 2006**, which prohibits broadband network operators from deliberately blocking, degrading, or slowing any Internet content.

- In addition, although the debate so far has focused entirely on wired Internet providers, the New America Foundation is developing proposals to ensure that net neutrality obligations are extended equally to *wireless* Internet providers. Since Internet access will increasingly be mobile and pervasive – and because wireless network operators are using the public airwaves – it will be increasingly critical that they adhere to public interest obligations with respect to net neutrality.