



BROADBAND LEGISLATION AND STIMULUS (Better bang for the Buck)

If you give a hungry man a fish, he may eat for a day, if you give him a fishing pole and teach him how to fish, he may eat for a lifetime.

While it may be true that in our current economic situation feeding individuals and families directly might become in itself a necessary objective, funneling stimulus funding through our current system of subsidizing telecommunications services will do nothing more than fatten the very incumbent network providers who are responsible for the current market failures. To truly reform the system, the Obama Administration must ensure that the reforms, once enacted, intentionally and accountably facilitate new and robust telecommunications business models which allow entities dedicated to bridging the “Digital Divide” to thrive in a complex and hostile telecommunications industry.

As Adjunct Professor of Law at the University of Texas, I have worked with a team of law student volunteers to develop the economic concepts and legal framework required by these new models, specifically in the context of providing service to low-income individuals and families. We have also been fortunate to gain the support of Professor Jeff Andrews of the Department of Electrical Engineering’s Wireless Networking Group, who has prepared us to deploy the most appropriate, cost effective, and advanced possible technologies. Together we have developed a sustainable nonprofit business, named USFon, which directly provides voice and broadband data services to Section 8 housing residents.¹ As an Eligible Telecommunications Carrier (ETC) in the state of Texas, USFon’s voice services are eligible for USF subsidy, and we in fact are currently providing subsidized services to Foundation Communities, an Austin-based nonprofit organization that provides high-quality affordable housing to low-income individuals and families. We have discovered by experience what we believe are the three main impediments to establishing cost effective and quality service to Section 8 facilities:

First, standard telecommunications retail subscriber business models focus *on revenue per user* and not *utility to the user*. This bias ultimately creates the observed “red-lining effect” on investment by incumbent providers of service. Historically used “Carrot and Stick” strategies to motivate incumbent network providers to service underserved or un-served markets simply do not work. Very often markets go un-served because the incumbent has purposely chosen not to serve them as a matter of business practice. The Carrot, meant to bridge the “Digital Divide” by merely fattening the incumbent’s bottom line, does not motivate the incumbent to provide optimally engineered solutions that utilize the most appropriate and advanced technology. To the contrary, it instead reinforces their decision to maintain their current business models. Nor does the Carrot provide for the basic network rights for the served individuals, such as are provided for under the umbrella of Net Neutrality. Furthermore, what little Stick there is invariably faces legal challenges that involve constitutional “takings” issues when it is applied. There are also practical regulatory enforcement problems related to the relative size and

¹ One suggested reform of USF is to allow a wholesale relationship between non-profit Service Providers and Section 8 properties so that it may provide service to all residents of a Section 8 location on a wholesale basis and not have to have individual billing relationships with each user.



capabilities of the outmanned and often captured administrative legal system. I have spent my entire business career battling incumbents over issues of access to wasting network assets such as their massively unused fiber inventory and to “equal competitive rights” for new technology with regard to the signaling, routing and rating of traffic. While I have had many successes, I have also suffered many setbacks at the hands of a sophisticated incumbent litigation apparatus, and sometimes complicit regulatory legal institutions. I do not see any quick or cost effective way to adjust the behavior of the legacy incumbents when it comes to solving the issue of fixing the “Digital Divide”. Instead, I advocate subsidizing new models of telecommunications service providers such as USFon. In particular I believe that we should confer special rights upon these designated service providers (DSPs)² that are dedicated to bridging the “Broadband Divide”. A new type of service provider, insulated from the capture and backward technology ways of the old scheme, has the best chance solve our broadband problems, mainly because it can be built with modern network goals embracing the concepts of an open internet and net neutral management, and will not plan to control the user or dictate what they do with the access they receive. I will detail these special rights below.

Second, wholesale and efficient relationships between NSPs and property owners of low income properties are discouraged under current Section 8 rules, and the current USF rules. We can target solutions to this issue vary narrowly.

Finally, the physical plant (wiring , connectors, outlets, distribution boxes, etc.) at a Section 8 housing facility are in general old and in poor condition. This poses a significant technical problem for providing broadband services to tenants. After discussing the rights I believe are necessary for DSPs, I will discuss possible solutions to this problem.

Legislative Objectives and Rights for DSPs:

1) Provide to DSPs the right to use the existing broadband infrastructure owned by incumbents (Cable, Wireless or LEC) who serve more than 50,000 customers.

A DSP is shall be allowed to purchase at any eligible incumbent facility, defined as within 1,000 meters of a potential lateral build of lit or dark fiber,³ a committed fiber based Ethernet access to the public Internet, where the Internet access is provided at an minimum 10 Mbps rate for \$50, and for \$10 for each Mbps of committed bandwidth greater than 10 Mbps. Each such facility shall be assigned at least one, and possibly

² In order to be designated a non-profit service provider the company must either (1) Currently meet or be seeking to obtain 501(c) (3) tax status, and currently have been qualified to be an ETC Service provider by any state PUC/PSC or by the FCC through an application. We suggest that there can also be room for some limited for profit groups if they limit salary to executive and employees and no other provider is willing or able to provide broadband -- however any for profit entity should also have an absolute “CAP” on any subsidy eligible to be received and should not be granted the above “Technical Rights”. There are several economic, fraud protection and competitive reasons for this --

³ This also explicitly includes any location where fiber based equipment is currently deployed or has been deployed within the last five years. We expect a game of “where is waldo” – happy to give you personal history here.



many, statically routed Internet Protocol (IP) addresses. At the election of the DSP such services can also be provided over terrestrial transport technologies other than fiber.

Additionally, the DSP may order and use as an input in its offerings any current telecommunications or broadband service (residential or business) from any other provider at any location. For such retail services purchased from the incumbent, any use reduction or modification in broadband or application availability or service quality which is not explicitly advertised by the incumbent or explicitly present in the standard service agreement presented by the incumbent to its customers will be considered a prohibited network management practice. Further any stated business restriction on resale or use will be considered null and void as it applies to the DSP. The DSP will have recourse to challenge and receive pre-set and material liquidated damages from the incumbent for such prohibited practices.

2) Provide to DSPs Explicit Interconnection Billing/Compensation Rights:

All ILECs must allow for phone numbers supported by the DSPs to be “bill and keep” regardless of selected routing of the call. This explicitly recognizes the public good related to the services of the DSP and that the DSP is not obligated to subsidize the profits of other carriers in the US through any inter-carrier compensation scheme.

3) Provide to DSPs Explicit Signaling Rights and Related Interconnection Technical Rights

Upon request, an ILEC who has more than 100,000 customers or who is the largest Tandem Switch Provider of the LATA⁴ must establish within 30 calendar days either a direct SIP peer or a direct SS7 interconnection as a peer (meaning all SS-7 signaling is part of interconnection and does not require a third party SS7 provider) for the mutual exchange of voice traffic and the ILEC must provide tandem functionality at a flat rated charge of \$100 per month per DS-1 for the LATA. As a peer the ILEC must engage in bi-lateral routing through the tandem at the signaling layer (i.e. must be at a bill and keep relationship) with any DSP at a single point of interconnection at designated location of the DSP's choosing. The resulting routing shall be bi-directional on a LATA wide basis. Any such chosen location of the DSP shall be deemed appropriate as long as it is within 5 miles of an existing fiber route or fiber presence of the provider or any of the provider's affiliates. While this requirement relates to non-broadband services, is necessary to provide basic and advanced telephone services to underserved markets. Each day past the 30 day request will result in a material Liquidated Damage payable by the ILEC to the DSP.

5) Provide to DSPs Special Technical Rights related to use of ISM and White Space Wireless Frequencies.

⁴ As measured by Minutes



A DSP may petition the FCC on a case-by-case basis to exceed the currently allowed Effective Isotropic Radiated Power (EIRP) statutory limitations for point-to-point links utilizing ISM or White Space frequency bands. This will allow the DSP to bridge in special cases un-served locations to the facilities that it purchases from the incumbents. These petitions shall have a mandatory two week review cycle.

6) Provide to DSPs Electric Service and Pole Attachment Rights

A DSP shall be allowed to order service and create a demarcation to any utility pole for any communication service. Further, in much the same way as a common street light, the DSP equipment will be allowed to draw power from pole power, if available. The DSP shall be able to order this power un-metered and at pre-set rates, just as in the case of street lights in many municipalities today. Such rates will vary from \$5 per month to \$20 per month depending upon the equipment installed.

7) Provide to DSPs Ease of Regulatory Expansion and Approval

A DSP shall be deemed to be an eligible ETC in every state in which it applies automatically upon receipt of certification in one particular state. Furthermore, the DSP shall be allowed to apply any ICA deemed reasonable by the FCC as an ICA for each and every incumbent with which it must interact. As a guide to a suitable ICA, the FCC shall establish no less than one model ICA for DSPs within the first 60 days of the program.

8) Amend HUD broadband policies.

Require the wholesale provision of broadband services from incumbent network operators at pre-approved rates to “HUD Approved Non-Profits”. This simple change in policy will provide a direct solution for Section 8 Broadband services. Furthermore, many property owners are apathetic in regards to Broadband services, so creating a way for the DSP to deal directly with HUD may be preferable.

Solutions to the Physical Plant Problem

Solution 1: Allow a HUD Approved housing related non-profits to provide service and invest in infrastructure and manage network elements consistent with their “Special Rights” described above;

Solution 2: Provide target grants directly to DSPs, and follow on the grants with both a modification of HUD policies to allow for wholesale delivery of broadband, and targeted reform of USF to better target useful investment and further provide direct subsidy for infrastructure. The establishing grants should be based upon specific building sizes and should include providing the initial full year of service. We recommend a declining cap-ex of \$200 per residential unit for complexes less than 50 units, to \$150 for 51-150 to \$135 for over 150 units. For example, if there is a 150 unit complex it gets a one time



right to assign a check for \$22,500 to a DSP for on-site infrastructure investment AND the first year of service.⁵ Further, HUD should incentivize the property owner by allowing a “this year only” tax credit based upon actual “used” broadband service at a property. The certification of use can come via the DSP. Our experience has shown us that broadband adoption rates will remain low unless the owners are sufficiently incentivized.

Solution 3: New technologies have been developed to overcome the issue of bad physical infrastructure. Specifically, wireless mesh technology can be deployed quickly and efficiently as compared to trying to use plant in poor condition or trying to install new plant. Wireless mesh technology allows a Section 8 property to receive service from two or more wireless stations at the facility. The concept of a “mesh” is applicable in that if one of the wireless stations fails, the other(s) in the vicinity of the apartment will be able to provide the service.

USFon would be pleased to share the technology it has developed with other DSPs. While much of it has been developed on a “shoestring” and with volunteers, solely because there is no money other than personal funds and equipment myself and my companies and students have given to the project, it nonetheless employs the best current engineering practices for producing robust carrier grade technology. Of course, if a substantial source of revenue were made available to USFon, its growth would be rapid and largely an issue of execution. Such an effort would obviously require a substantial hiring opportunity.

I am happy to further discuss this project and my direct experience on these issues.

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⁵ Assuming a 90% occupancy rate this equates to paying in advance \$13.88 per month per room for broadband for the entire year.