

**Switzer, Donna**

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**From:** Dan Kalmick <dkalmick@gmail.com>  
**Sent:** Monday, September 21, 2020 3:54 PM  
**To:** CITY COUNCIL; supplementalcomm@surfcity-hb.org  
**Subject:** Councilmember Delgleize's Item on Internet  
**Attachments:** 9\_21\_CC Meeting Broadband for Low Income Families.pdf

Please see that attached white paper that includes solutions to overcoming barriers to internet access in HB for low income residents

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**SUPPLEMENTAL  
COMMUNICATION**

Meeting Date: 9/21/2020

Agenda Item No.: 24/20-1883

# Background, Analysis and Solutions to Internet Access for Low Income Household in Huntington Beach

By

Dan Kalmick

## Background:

There are three contributing factors to a family not having sufficient access to the internet at home. They are:

- Cost
- Physical Availability of High-Speed Internet
- Strength of WiFi Signal Within the Home

With the onset of the pandemic both children and adults have been forced to educate and work from home. This has put a strain on once casual use of the internet at home, which until now has primarily been used for entertainment purposes. Video conferencing through platforms such as Zoom have shown that slow internet to the home and an asymmetric speed (substantially slower upload speed than download) have become a major issue for residents working from home. The asymmetry of the speed wasn't necessary an issue since most families primarily downloaded information (streaming video) but with video conferencing, families are now sending video to the internet which requires much higher bandwidths both in the home and out to their internet providers.

A basic HD video feed requires 1-5Mbps per stream. With Zoom and multiple streams and multiple users in the home, the bandwidth requirements steadily increase.

## Analysis of Barriers to Internet:

### Cost:

In Huntington Beach there are two primary carriers of wired internet to homes: Frontier and Spectrum. Frontier offers two services, a Fiber Optic to the Home (FTTH) called FIOS and a DSL service over a poorly maintained legacy copper network. FIOS for new customers starts at around \$60 a month after taxes and offers far more internet speed than even a small business would require (500Mbps/500Mbps). Their DSL offering which barely qualify as "Broadband" (defined by the FCC as 25Mbps download / 3 Mbps upload) starts at around \$45 a month. Spectrum, the coax cable provider provides asymmetric internet speeds with teaser deals starting around \$45 a month for a reasonable connection but the upload speed on these connections max out around 10Mbps for their starter plans. There are other providers in Huntington Beach, but they use the same Frontier and Spectrum infrastructure and offer slightly better pricing, but not by orders of magnitude.

A recent study showed that most low-income families cannot afford more than \$10 a month for internet access.<sup>1</sup>

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<sup>1</sup> <https://www.newamerica.org/oti/reports/cost-connectivity-2020/executive-summary>

#### Availability:

While a FTTH service like FIOS is the gold standard for internet to the home, Verizon's (now Frontier) deployment of FIOS was not uniform and there are many communities that were passed by for a number of reasons that are irrelevant to this discussion. Spectrum is generally available in all areas but in some Multitenant Dwellings there are contracts for DirecTV service to the exclusion of Spectrum leaving only Frontier DSL as the only wired internet option. This availability issue can also become an issue for families requiring higher bandwidth due to multiple people working or schooling from home.

A discussion of cellular options like Verizon Wireless, AT&T Mobility and T-Mobile/Sprint is warranted at this point. But as with the discussion above, strength of signal can hinder the ability for these connections to work in the home. Additionally, many low-income families prefer to use pre-paid data packages of third party MVNO's (Mobile Virtual Network Operators, like Tracfone, Mint Mobile, etc.) There can be issues with MVNO due to lack of priority on the main carrier's network which can lead to connectivity issues on busy towers. Data on cellular networks is still expensive and many "unlimited" data plans only allow a finite amount of data at high speed but allow unlimited at a severely degraded speed.

#### WiFi in the Home:

As a 25 year veteran of designing and implementing information technology systems for small businesses (and the first IT call for most of my family, some of my friends, and even some of you on the Council), I've found that many of the "internet issues" people experience are actually the construct of their home network. Routers provided by ISPs, cheap and/or old wireless routers, placement of said wireless devices and the construction of the home all play a role in "having good internet." Most homes over 1000 sqft or that have more than 1 story require a second hard-wired wireless access point to have a seamless internet experience at home. The challenges are that most people don't have ethernet cable running in their walls (most barely have coax TV in their walls) and then the configuration of the second access point can require a skillset the general public doesn't possess. Some residents will turn to 'repeaters' or 'extenders'; sometimes they work, but they halve the total bandwidth of your network because of their need to store and forward packets. Cost begins to come into play while building sustainable home networks as does interference in some denser communities where there isn't enough 'airtime' for all devices to send their data.

#### Summary:

Cost, availability, and home network infrastructure can all play a role in not having sufficient internet access for a family to be successful working or schooling from home. And money is the cornerstone of all of these issues: Not being able to afford decent speeds, not living in a community that Verizon installed FIOS in because of the initial infrastructure cost, and not being able to afford decent or modern internet equipment or an IT professional to wire your home and configure additional wireless access points.



### Short Term Solutions:

#### Cost:

Provide ongoing or one-time payments to qualified residents to subsidize the cost of wired internet access into the home. Consider waiving Utility Tax (UUT) for qualified low-income families.

#### Availability:

If only DSL is available and upload speed is not sufficient, consider providing LTE hotspots, subsidized service and waiving UUT as stated above.

#### Home Network Infrastructure:

Consider bulk purchasing new network equipment for qualified low-income families. Several companies, like Ubiquiti, offer low-cost high-grade equipment that is extremely simple to setup and provides excellent wireless coverage.

Consider creating a basic networking guide and primer for adding additional network components. And providing training classes on basic network configuration and optimization from both a network side and physical location of equipment in the home.

Consider reaching out to local vendors for discounted bulk ethernet cable (Beach Wire and Cable for instance) and ask for volunteers to help make custom cable lengths for folks to be able to provide additional access points in their homes.

### Longer Term Solutions:

Use SCE data for CARE/FERA, Census and other datasets to visualize low income or underserved communities to leverage City assets to provide internet connectivity to residents. Use surplus City owned fiber optic infrastructure to provide backhaul networking for wireless access points on City owned streetlights. This could be paid for with CDBG money and provide an enormous community benefit to those families who are each individually paying for internet, when they could share a community wireless access point on the light pole outside their home. Modern technology allows for multiple families to access the same access point without degradation of service (same technology that sports stadiums or convention centers use). The money those residents saved on internet cost will be put right back into the economy.