

Good Morning. I'm Joe Witmer, counsel to Chairman Gladys M. Brown at the PUC. I'm honored to be asked about rural broadband. My comments reflect 25 years of work but are not the views of Chairman Brown or the PUC.

Broadband has two parts: availability (is it there) and affordability (can consumers afford it). Affordability arises because of the rates charged; it exists in rural and urban areas. Since today is about rural availability, I'll limit my comments to that.

I will make 7 points and one example in 10 minutes, so you have time to ask questions. They are Bricks and Clicks, Last and Middle Miles, Market and Policy Pricing, Costs, Platforms, & Duties. These are real notes in the broadband song you hear everywhere today.

Broadband means the networks needed to provide Basic Internet Access Service or BIAS. BIAS is internet service. BIAS helps citizens communicate or get information, promotes businesses growth, including agriculture – the biggest business in Pennsylvania.

First, BIAS consists of bricks and clicks. Bricks are the physical networks on the ground to provide BIAS. Clicks are the services, voice-data-and video, you get from the bricks. When someone talks to you, listen closely to see if they are talking about bricks or clicks or both.

The bricks are owned mostly by two industries: cable and telco. They own over 90% of the last mile bricks that sell BIAS to consumers. They are the only Internet Service Provider (ISP) on their bricks due to FCC rules.

Second, the bricks are called last mile and middle mile. Last mile refers to the line that runs from a consumer's premises to the telephone company's central office or the cable company's head-end. Middle mile connects providers to each other, including transport.

The third point is that last and middle mile bricks for serving everyone are expensive to build and operate, especially in rural areas. The FCC has said that a 10-30 Mbps network costs about \$50B while a 100 Mbps network costs about \$350B. The FCC gave away about \$4.5B for that last year. Pennsylvania dispensed around \$34M. At that rate, it will take the FCC anywhere from 12 to 87 years to build the bricks to provide BIAS clicks.

The brick costs consist of the initial capital expense (cap ex) and the ongoing operating expense, including transport (op ex). These are far higher in rural areas, including Pennsylvania, because there are fewer consumers served over greater distances. That is why rates can be higher or service quality lower, or both.

The fourth point is the rate a consumer must pay to get BIAS. BIAS rates vary based on how costs are recovered. Recovery can occur using a Policy Pricing approach, the traditional one, or Market Pricing, the new one.

Here's an example. It costs \$300 to serve rural Pennsylvania and \$100 to serve urban Pennsylvania. Policy pricing would total the cost, \$400, and divides by the two classes so everyone pays \$200. Market pricing has consumers pay their own costs, \$300 or \$100.

Market pricing has arisen, in part, because of competition and pricing flexibility. One will see competition, pricing flexibility, and higher quality if the cost is \$100 but the rate is \$200. One sees less of these if the cost is \$300 but the rate is \$200.

This brings me to the fifth point. BIAS platforms are not alike despite what you've heard. Satellite can provide BIAS, but capacity constraints mean BIAS might not be able to serve everyone who wants it. BIAS over wireline is preferred because it offers virtually unlimited scalability. BIAS over wireless networks is not equal to wireline according to statements by industry and findings by the FCC.

That is why the FCC believes that consumers need wireline and wireless BIAS. Rural Pennsylvania needs both not one to the exclusion of the other. The FCC said that in 2016 and again in 2018 under President Trump.

This raises the sixth point, why do industry or public interest advocates make competing statements? Their duties differ.

BIAS providers owe a duty to maximize value for shareholders. They have no public interest duty except when it is required.

BIAS advocates owe a public interest duty to ensure service for all. This can include, but is not limited to, the BIAS providers' private duty. These can conflict.

Universal service, a requirement of state and federal law service be available to all, is an example of that. It is also the final point.

Section 254 of federal law requires comparable rates for comparable service in urban and rural areas. Chapter 30 also requires universal service.

However, a provider who agrees to sell BIAS to all at the expense of shareholders violates their duty. A provider who serves only a portion of a rural population where there is a margin meets that duty.

Advocates who insist that BIAS be available to all meets their duty. Advocates who agree that BIAS is required only where there is a margin may violate their duty.

Since BIAS is subject to federal universal service and CRP is looking at that, the hard issues about bricks and clicks, last or middle mile, pricing theory, rates, fiduciary duties, and cost recovery must be addressed.

The FCC is doing that with the Connect America Fund Phase II for wireline BIAS and for wireless BIAS in Mobility Fund Phase II.

Pennsylvania did that with Chapter 30 when we funded broadband using local rates. Those speeds have been overtaken by time, technology, and consumer needs.

Our legislature and administration are looking at ways to address BIAS, including the recent \$35M initiative in Governor Wolf's Broadband Office under Mark Smith.

I filed a detailed presentation with sources to elaborate on these points. Thank you.