

“Broadband IS Electric Power Plant”

TVA could build a FTTH network for less than the cost of new generating capacity it says it needs – and the fiber would save enough electricity to make the new plants unnecessary. The CEO of a municipal utility in Kentucky explains why.

By Billy Ray ■ *Glasgow Electric Plant Board*

Twenty years ago we proposed a grand solution to many of Glasgow’s problems when we started construction of the first municipally owned broadband network in the US. That solution has worked well for many of our problems in Glasgow, but now we dream of expanding upon what we have learned here to further enhance our network in Glasgow while solving problems for our state and our region.

Many of these problems are related to energy. The costs of electric power, natural gas, gasoline and diesel fuel are spiraling upward and that is impacting everything in our lives. TVA is increasing electric power rates and promising more of the same in the future as it struggles to build new generating plants to meet the growing demand for electric power. The numbers are staggering. The agency is about 2,000 megawatts short of the capacity it needs right now to meet demand. It is looking to nuclear power for the new generation units since the outlook for additional coal-fired generation is murky, at best. It projects the cost of building new nuclear units at somewhere between \$2,000 and \$4,000 per kilowatt. This translates into more than \$18 billion over the next 10 years.

At a recent meeting of TVA officials and the distributors of TVA power, where these figures were discussed along with some preliminary plans for actually reducing our demand for electric power, I had an opportunity to compare what we know about building advanced broadband networks to the amount of money TVA is looking to spend over

the next ten years on concrete, steel and nuclear reactor vessels. The comparison ignited a blinding flash of inspiration in which I saw a single thread connecting many of our problems. That thread is a fiber optic cable, and here is how I think it could solve our problems.

FIBER VS. POWER PLANTS

We are doing a test project in Glasgow where a portion of our old coaxial cable-based broadband plant is being converted to the latest fiber-to-the-home (FTTH) configuration. We think this is the be-all and end-all network configuration that will serve the homes connected to it for 20, or more, years without fear of obsolescence. Further, our experience shows that this advanced network can be accomplished for about \$2,000 per home connected.

Now let’s return to TVA’s forecast of \$2,000 to \$4,000 per kilowatt for new nuclear generation capacity. To be abundantly conservative, let’s assume that it can build new capacity for \$2,000 per kilowatt. That would mean it is willing to pay the same amount per kilowatt of new capacity as we know it would cost to establish FTTH broadband to a home. If TVA is looking at spending \$18 billion, that same money would get FTTH to nine million homes. Curiously, that is about the total number of customers TVA serves over the seven-state region.

If TVA had an unlimited-capacity data connection to every home, it could use that connection to control thermostats on heating, air conditioning, water heating, freezers, refrigerators, washing

machines, clothes dryers and dishwashers. That sort of control would easily allow it to shave one, probably two, likely even three to four kilowatts of demand off its peak demand. So, spending that money on broadband networks for every home and business in the Tennessee Valley region would likely *double* or *triple* the capacity improvement TVA is looking to get through building new nuclear plants!

If TVA built FTTH instead of more reactor vessels, it would be increasing its net capacity by actually reducing demand during peak times. Since this same amount of money would double or triple the anticipated net capacity impact of simply building more units, it could actually shut down a filthy coal unit or two instead! There is no more earth-friendly way to add capacity to an electric system than by acting to reduce demand. No new fuel is needed for this solution. No new operating costs are added. No future nuclear fuel disposal costs are added. This is the most “green” energy that exists.

At the same time, everyone would get an advanced broadband connection with infinite capacity and speed for free! In addition, widespread use of broadband could have meaningful impact on the use of other fuels. More shopping online, more telecommuting, more movement of the message instead of the messenger would reduce other forms of energy consumption, and all of these reductions would bring immediate benefits to the region.

INVESTING IN THE REGION

What would our region look like with nine million homes connected to a robust FTTH network? Well, for starters, employment would skyrocket. Folks would be needed in all sorts of manufacturing plants to make the cables, electronics, hardware, and software to provide all of the plant necessary to accomplish this undertaking. Scores of folks would go to work building the networks. Hundreds of cities and towns in our region connected with FTTH would also bring all sorts of new businesses. Major Internet retailers would want to locate servers in our region to tap the wealth of bandwidth. With those businesses would come software and hardware engineers and the corresponding increased demand for an educated workforce.

True, the construction of new nuclear plants would employ a lot of folks as well. But the FTTH solution would spread that employment across hundreds of cities and towns instead of one or two sites. George Norris, who brought TVA into

Broadband networks could create more new generating capacity than nuclear plants.

existence 75 years ago this April, once said, "A government in the truest sense is only a method to bring to humanity the greatest amount of happiness." It seems to me that TVA could bring happiness to nine million homes more effectively with ubiquitous FTTH networks than with a few more nuclear reactors.

There is work to be done. While there is a fair amount of experience out there for solving peak demand issues by using a telecommunications medium to go out and turn off water heaters and other loads, I don't believe there is any experience with the idea of totally controlling loads. By that I mean using the robust bandwidth of FTTH to install temperature sensors in homes and businesses and advanced controls that would allow a master load-management program to actually go out and tell certain loads to run...that would allow the

utility to preheat or precool homes and businesses in line with the weather forecast, when it has the capacity, so it can more easily coast through the peak temperature times.

TVA could use this sort of capability in the same way it uses its pumped storage generation capability today – to increase load factor through storage of BTUs at millions of homes and businesses, instead of just at Raccoon Mountain Pumped Storage. What they are missing is that broadband IS electric power plant! **BBP**

About the Author

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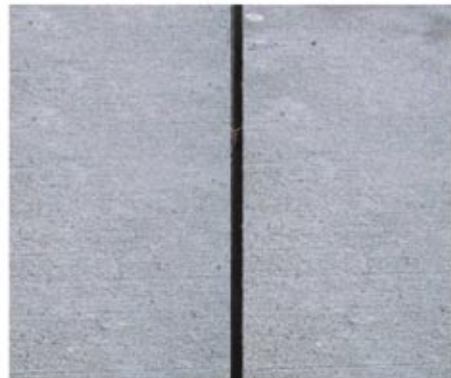
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the hard way?



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rigid

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