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# The Nuts and Bolts of Broadband

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# The Nuts and Bolts of Broadband

“Broadband” generally refers to any Internet connection faster than dial-up. The FCC currently defines it as download speeds of 25 Mbps or more and upload speeds of 3 Mbps or more.

DSL and cable options run over copper telephone wires and television cables respectively. They can achieve 25 Mbps, but cannot compare with fiber optic cable, which has tens or hundreds of times the capacity. Fiber optic cable is comparatively expensive to install and expensive to repair; the actual costs vary greatly depending on what infrastructure is already in place and whether the installation is overhead or underground.

There are two steps in fiber-to-the-premises installation: first, laying the distribution network, and then, going back and connecting specific houses or businesses that have signed up for service. To build an underground fiber optic network, it is necessary to lay hollow pipes (conduit) that the fiber optic cables will run through. In South Hillsboro, construction workers are digging trenches for this and other underground installations. In already populated Sandy, the method of choice was to use an underground boring machine that drills a chain of rods through the ground; the conduit is hooked onto it and pulled back through the hole, allowing workers to cross streets and driveways without cutting trenches. Another option, one that will be used where possible in Hillsboro, is to use existing overhead utility lines.

One of the cost considerations for a municipality creating an ISP is relatively new: a dearth of available IP addresses. Until 2015, it was still possible for an ISP to request as many IP addresses as it needed and receive them for free. But the organizations that assign IP addresses have now run out of new numbers to assign. A new provider now has to buy IP addresses from another organization with extras.