

## Project Update

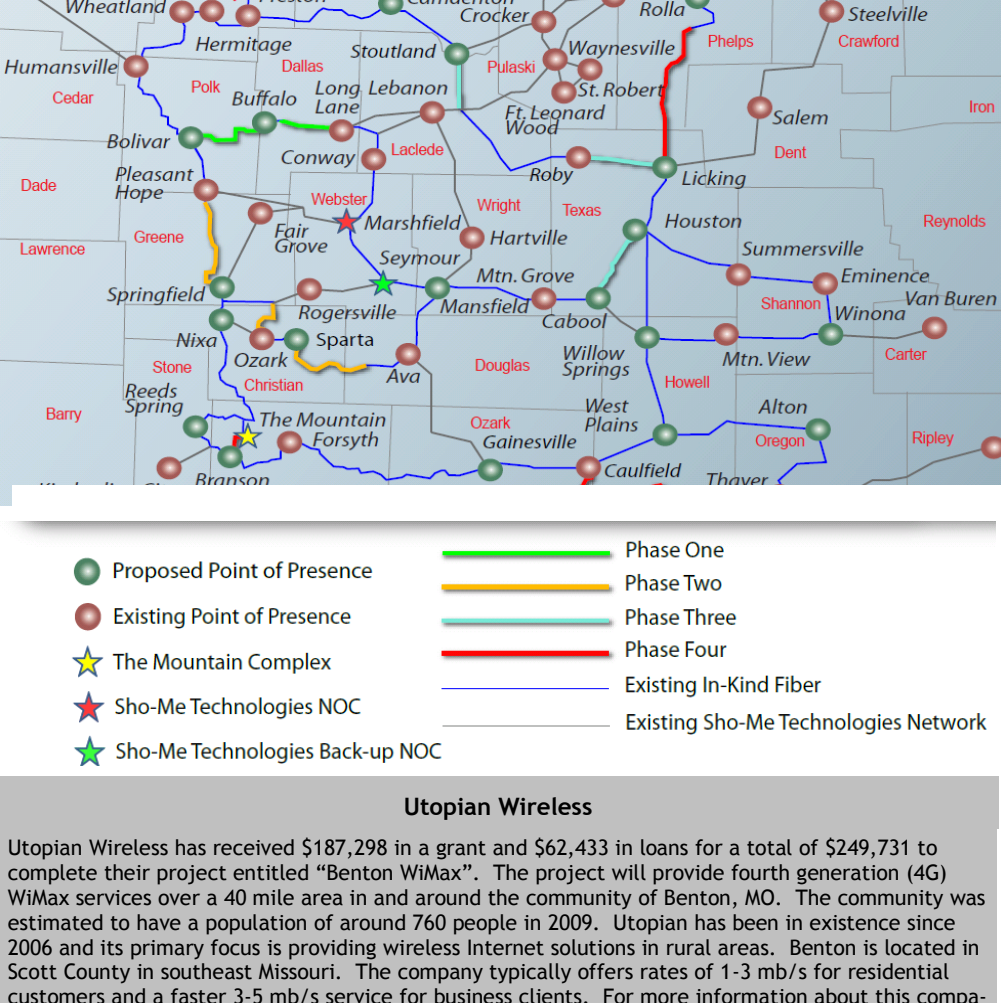
Weekly Update

October 31, 2011

This week's construction updates are as follow:

- Jefferson City to California: 34.6 miles of the 39 miles of innerduct construction are complete
- Vienna to Linn to Hermann: 60.34 miles of the 70 mile build are complete

This week we completed the Reed Springs and Tusculumbia telecommunication shelters. These facilities will also be "open access" to the Sho-Me MO network. It was also announced that Sho-Me would begin "blowing" the fiber optics into the completed backbone routes we have finalized between Sedalia and Warsaw. Once the fiber has been installed and spliced, we should be able to use the network to carry new circuits and broadband. Below is information about another project taking place in Missouri. We have also included some information regarding the different mediums used to carry broadband to the end premise. The question of how to get broadband into the premise is one we get from time to time and we wanted to summarize some of the available solutions. Please let us know if you have any questions.



### Utopian Wireless

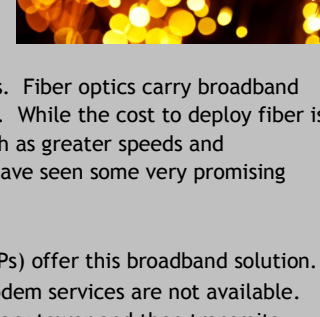
Utopian Wireless has received \$187,298 in a grant and \$62,433 in loans for a total of \$249,731 to complete their project entitled "Benton WiMax". The project will provide fourth generation (4G) WiMax services over a 40 mile area in and around the community of Benton, MO. The community was estimated to have a population of around 760 people in 2009. Utopian has been in existence since 2006 and its primary focus is providing wireless Internet solutions in rural areas. Benton is located in Scott County in southeast Missouri. The company typically offers rates of 1-3 mb/s for residential customers and a faster 3-5 mb/s service for business clients. For more information about this company and the services they offer, please visit their website by clicking [here](#).

### Types of Broadband Delivery

The push for broadband is very important in today's world. With the debut of new technologies, it is becoming more crucial for citizens to have good, reliable and fast Internet connections. Below are some of the options for broadband service. While not all of these solutions are available everywhere, the push to expand these services is increasing and that will create more options and competition.

- **DSL**—A Digital Subscriber Line is a solution offered by the telephone company. This service is carried over the same copper line that is used for telephone service. It is made possible by sending the broadband signal using higher frequencies not used for the phone service. There are a few different variations of DSL. Traditional DSL services can offer speeds up to 6 mb/s, but newer DSL technologies are being developed that have speeds of up to 50 mb/s.

- **Cable Modem**—This solution, provided by the cable company, uses the cable infrastructure and provides a good broadband alternative to DSL. Advantages of using a cable modem are that broadband speeds can range up to 100 mb/s and the distance for service from the cable head-end is much greater than what can be offered by the telephone company with DSL.

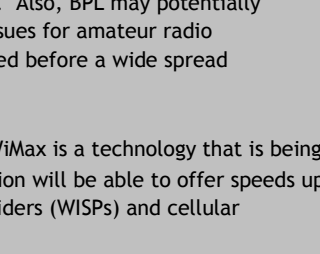


- **Fiber Optics**—This is the solution that is offered by Sho-Me Technologies and many of the other Recovery award recipients. Fiber optics carry broadband via glass fiber strands and the signals sent are carried via light. While the cost to deploy fiber is very high, there are some great advantages to the product such as greater speeds and reliability. Many of the existing fiber to the premise projects have seen some very promising results.

- **Fixed Wireless**—Many Wireless Internet Service Providers (WISPs) offer this broadband solution. Fixed Wireless is a good option in areas where DSL or cable modem services are not available. In this situation, as WISP attaches their equipment to a stationary tower and then transmits broadband using microwave frequencies. Speeds for this service can be as high as 40 mb/s. While this can be a solution in areas with sparse populations, it typically requires line of site to work therefore areas with hilly terrain can prove to be a challenge for this technology.

- **Mobile Wireless or Cellular Broadband** - An emerging technology, this is a broadband solution that is becoming more popular. Large wireless cellular providers such as Verizon Wireless and AT&T are offering these services for the mobile phones they provide, but also are working to provide these solutions for the home. There are two technologies used by these wireless providers. Global System for Mobile Communications (GSM) and Code Division Multiple Access (CDMA) are the two technologies that are bringing broadband to America. The latest version, which is 4G, is offering speeds up to 12 mb/s, but this is expected to increase as the demand for the technology increases.

- **Satellite**—In many instances around the country, there are no broadband solutions. When this is the case, you often have to turn to a satellite solution. These satellites are low earth orbiting and can offer broadband speed up to 2 mb/s. Satellite is not always the fastest solution, it can be affected by weather, and it has a higher price tag, however it is a viable solution for very rural locations and premises without any other options.



- **Broadband Over Powerlines (BPL)**— This solution is an emerging technology which is still being enhanced. BPL provides broadband over the power infrastructure. The solution is not widely available due to the many hurdles that must be overcome to deploy such a system. Power grids prove to be a noisy environment which can cause interference. Also, BPL may potentially pollute the radio spectrum, which would cause interference issues for amateur radio communications. Many of these issues will have to be addressed before a wide spread Broadband Over Powerlines solution can be debuted.

- **WiMax**— Worldwide Interoperability for Microwave Access or WiMax is a technology that is being deployed to offer fixed and mobile Internet access. This solution will be able to offer speeds up to 40 mb/s and is being used by Wireless Internet Service Providers (WISPs) and cellular providers to serve rural areas.

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