

## **Broadband USA Applications Database**

**Applicant Name:** Trident Internet Systems, Inc.

**Project Title:** Broadband Wireless Hampshire County, WV BWHC

**Project Type:** Last Mile Remote

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### **Executive Summary**

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The Broadband Wireless Hampshire County project (BWHC) is a collaborative effort between Hampshire County, WV and Trident Internet Systems, Inc. to provide innovative broadband services to businesses and consumers throughout rural Hampshire County. The project represents a unique opportunity for county residents to utilize the latest broadband technologies to reach this very rural county in West Virginia. The project represents an investment of close to \$8 million for its first three years including the cost of customer premise equipment. Hampshire County is located in the far north eastern corner of West Virginia and about 15 miles west of Winchester, Virginia the largest urban area. It is part of the Potomac Highlands, Mecca to outdoor recreation and scenic wonderland in West Virginia and just outside the Washington Metro 50 mile safe zone. Hampshire County is seated in the 2nd Congressional District and has a population of 22,574 . There are approximately 12,511 housing units in Hampshire County, 1424 firms and 9065 households which are currently underserved in the availability of broadband service according to the criteria set by NOFA. The specific service area consists of 5 contiguous census tracts numbered from 9682 to 9686 with average population of 4500 per tract. The BWHC project is supported by public entities such as the County government as well as private organizations such as the Chamber of Commerce. Both parties feel this project can contribute to the well being of county residents and give them a new, better and more affordable alternative to underserved and unserved with more bandwidth. The project also has the support and assistance of the Hampshire County Office of Emergency Services which is providing premium tower space on all county owned towers for our equipment. They are also making available all firehouse towers for dissemination of our signal. Under the Recovery Act, Broadband Technologies Opportunities Program, BTOP and BIP we see the prospect of using Federal funding available to make all of Hampshire County wireless. BTOP's "Last Mile" project will benefit Hampshire County by means of being an infrastructure project with predominant purpose of providing broadband service to end users and the public sector. Based on the census figures, more than 75% of Hampshire County falls within rural areas that are underserved. No more than 50% of households in Hampshire County have access to facilities based, terrestrial broadband service at greater than the 3 mbps minimum speed. Trident Internet Systems, Inc. has been in the Internet ISP business since 1996 and has been a WISP since 2004 providing service to the Washington DC Metro area. As far as network non-discrimination and interconnection requirements, we abide by all the items as set forth in the NOFA and provide unencumbered and open access to all our business and non-business customers. Our acceptable use policy spells out all our regulations in the use of our services and is provided to all our customers upon contract signature. The service we are proposing to provide is wireless broadband connectivity using various frequencies to the county. Since Hampshire

County has a rugged terrain with lots of trees and rolling hills, our architecture dictates a mix of diverse equipment and technologies to meet these requirements. In the first place we plan to bring bandwidth to the county using microwave links from Winchester, VA to the east of Hampshire County. This backhaul feed initiates from Winchester from a tower where our provider has ample bandwidth. The feed gets relayed to Shawnee Land, Virginia a distance of approximately 15 miles away where another link shoots the signal to Shank West Virginia on route 50 in the middle of Hampton County a distance of 20 miles away. The plan also calls for a link from Shawnee Land to the North East point of the county where another county tower receives the signal and covers the North East quadrant of the County. In addition, from Shank we create a microwave link to Romney to a county tower. Therefore we use a minimum of nine towers in our design to cover the Service area. In the above design we plan to use the 5.8 GHz unlicensed frequency to carry over 200 mbps of bandwidth from Winchester all the way to Romney. WA and distribute the bandwidth throughout the county. Each tower will be retrofitted with a minimum of three 120° sectors with two types of radio. Each sector will have a overlay of WIMAX 3.65 GHz radios as well as state of the art 450-650 MHz UHF non-line of sight access points. With this strategy, we hope to cover all subscribers whether they are located in an open area or in a wooded no line of sight zone. Our backbone will be redundant at all points with 99.99% SLA and reliability. In addition to providing data, we are proposing VOIP services reselling SIP services to county residents so they would have an option to get voice service in addition to Internet services. The subscriber units (SUs) used are small and compact with integrated antenna for short distances and external dish or antennas for farther distances. The installation is quick and easy and can be performed in less than one hour. Two different subscriber units will be used namely a WIMAX SU or a 450-650 UHF MHz SU. The UHF subscriber unit also has WiFi capability to provide in-house and out of premise WiFi connectivity without the need for a router. Trident is uniquely qualified, experienced and positioned to deliver such a network to Hampshire County, as it has been in WISP business for over five years and is providing Internet connectivity to over 1200 end-user customers and business subscribers. The current Trident network in Washington, DC metro area has a capacity of over 5 gigabits/sec with 5 POPs in the DC Metro Area and collocated in Tyson's Corner N+1 Redundant data center with ample bandwidth and power. In addition to connectivity service, it has hosting operations in Vienna, Virginia. Trident operates unlicensed 5.3GHz and 5.8GHz spread spectrum frequency on point to point and point to multi-point links with very little interference in the DC Metro urban area. Operating in this urban area has provided ample experience in managing a wireless network with interferences that could arise in an urban area. Trident has designed, planned and implemented the current network and plans to do the same in Hampshire County, VA. For more information visit our web site at [www.trident.net](http://www.trident.net). The cost of the planned infrastructure includes all equipment to bring bandwidth to the County, purchase of microwave bridge equipment, routers, switches and all access points as well as subscriber units for over 56% of county households by end of the third. The cost of the SU will be covered by Trident in the fourth and fifth years. By the fifth year we expect to have reached about 10,130 household representing over 91% of the county household residents. The above costs include all engineering, installation and project management costs for installation of the equipment for the three years from start of the project and completion of network and subscriber build out .The subscriber projections show forecast subscribership of capture of an average of 3% of the households in the County per quarter. Trident intends to use local personnel in the county for installation the of the SUs. We anticipate hiring of local

staff of about ten people to support the users in the county. Since Hampshire County is strategically located very near Washington, DC, it is quite attractive to the county as expressed by county officials to provide state of the art technologies to attract businesses and residents to the county. We anticipate that by enabling the county with this capability, we can be the catalyst for new businesses and activity that could create new jobs in the county. In conclusion, we think that we have designed a state of the art project for Hampshire County which will help county resident and business and increase the use and penetration of broadband in the county significantly. Our approach is especially unique since we are planning to use the recently released and available white space 450-650 MHz UHF spectrum, which enables much wider use of wireless technologies in non line of sight situations. Trident is qualified and is committing to make this a successful project if the infrastructure costs are granted.