Executive Summary

Webpass proposes to design and build a new 100 Mbps 24 GHz point to point wireless Ethernet bridge. This technology will allow other providers to build effective networks to accomplish the goal of bringing broadband to unserved and underserved areas. Webpass has spent several months creating requirements for a new device to address the shortcomings of existing systems. Webpass holds a unique position, we have commercially deployed all of the commercially existing 24 GHz wireless Ethernet bridges available. This hands on experience puts us in a unique position to provide a product with superior value. The new wireless Ethernet bridge provides several benefits to Internet companies; 1. increased wireless throughput 2. reduced operational costs (no recurring monthly charges & no license fees) 3. increased use of a interference free unlicensed spectrum 4. reduced equipment costs 5. increased domestic design and manufacturing capabilities

Existing Problem

The current market for wireless Ethernet bridges is robust and growing in the 5.3, 5.4, and 5.8 GHz (5.x) unlicensed bands and in the licensed bands. There are several manufacturers of quality devices that deliver services up to 50 Mbps in the 5.x spectrum. However the effective throughput of these devices is deteriorating. The 5.x spectrum is attracting too many wireless devices which has raised the noise floor to unusable levels in many areas. The FCC requirement for radar avoidance software (DFS) on current models removes 5.3 and 5.4 bands from consideration for high uptime links because the ethernet bridges must change channels or shutdown whenever a radar event is detected. You can not sell and commercial Internet service with equipment designed to turn off for events beyond the operator's control. Finally the wide bean width of 5.x signals, and flat panel antennas, makes the signals almost uncontrollable in urban areas. You simply can not get a tight enough beam width to ignore the multiple sources of interference in the band. Existing equipment manufacturers have not utilized the 24 GHz spectrum. Equipment designed for this spectrum is prohibitively expensive, well over three times the cost of equipment designed for 5.x or 2.4 spectrum bands. Additionally the number of vendors offering equipment in the 24 GHz band is very limited. As of this writing, only three reputable manufactures exist to our knowledge and only one is a domestic producer. Existing equipment manufacturers are focused on the licensed spectrum. Equipment is ready available for licensed bands, but this equipment has several drawbacks. First and foremost is the additional cost required for the license. Secondly the equipment is not interchangeable, meaning if one end of the link fails, you can not swap out for a identical piece without help from the manufacturer. So unless you want to have spares for each and every wireless link in your network you take the risk of outages. Finally the cost of the units is 3 to 4 times the cost of equipment designed for unlicensed 5.x bands, slowing the growth of profitable network operators. The cost of wireless Ethernet bridges is the greatest expense incurred by wireless
Internet Service Providers. In Webpass' case, we spent more on wireless Ethernet bridges last year than anything else. Wireless bridges cost more than anything else required to operate our business, more than wages for the entire company, more than insurance, more than office leases, more than everything. Webpass proposes to solve this problem by building a new wireless Ethernet bridge based on the three principals. First the system must be modular. Second the system must use as many off the shelf parts as possible. Third, the system must be based on open source software. Following these principles we have created a outline for a system that can be developed in approximately six months. The system will utilize a Linux board, a Mini PCI radio, and a frequency conversion board. Linux provides the operating system and the flexibility to add software to the product in future revisions. MiniPCI radios provides flexibility to utilize radios based on any standard (802.11, 802.16, etc) that have linux drivers. The frequency conversion board moves the radio output from 2.4 or 5.x to 24 GHz on the transmit side and reverses the operation on the receive side. The three parts are interchangeable. As radio manufacturers increase the throughput on radios through new standards or increased modulation schemes, those radios can mate into the new wireless Ethernet bridge system. Costs Engineering costs are $297,024 for engineering a new 24 GHz frequency conversion board and $102,600 for prototype materials, testing and FCC certification. Webpass has already invested a significant amount of internal engineering effort to conceptualize the final design and test several off the shelf components for compatibility with the modular design approach. The focus of this application is for a grant to supply the $399,624 of engineering costs. The final unit cost per 100 Mbps wireless Ethernet bridge is budgeted at $2500 and will retail for approximately $5000. Benefits The addition of a low cost high bandwidth wireless Ethernet bridge to the existing marketplace improves the overall effectiveness of the broadband stimulus. Less expensive wireless equipment lets network operators increase the amount of territory they can profitable service. Operators will have a high throughput option, without spectrum license costs or specialized equipment. The stated goal of the broadband stimulus is to bring Internet access to underserved and unserved areas, our proposal creates equipment that can leverage budgets to provide a bigger network footprint. If you have $10,000 dollars you could buy one existing 24 Ghz wireless Ethernet bridge or two of the 24 Ghz wireless Ethernet bridges we are proposing. Specific BIP and BTOP Answers The proposed project does not address a specific geographic area, rather we are proposing a solution that will make it easier for network operators to purchase and finance high capacity networks. Therefore any discussion of number of households passed, benefits to community organizations, interconnection obligations, network drawings is absent from this application. Instead we submit that all network operators will be more profitable with a high capacity license free wireless link option available. Having the equipment available makes building networks possible. Jobs. Approval of our application will provide immediate employment opportunities in our business area. Webpass has obtained several proposals for the engineering work required from domestic engineering and product realization companies. These companies will retain or add staff to accomplish the design goals. Secondly Webpass will immediately hire three new employees, a network engineer, a project manager, and a software designer. In all of the proposals Webpass has secured, Webpass is required to direct the project and provide technical guidance. These three employees will work at our office in San Francisco. Once the radio is operational, Webpass will require staff to market and sell the equipment in the marketplace. Immediate Impact. Webpass has performed all of the information gathering and initial design stages for this project. We have contracts in hand and can immediately begin this project once
funding is received. Qualifications Webpass is a locally owned profitable small business based in San Francisco. Webpass began operations in 2003 and we have always been profitable and debt free. Without any outside investors we have grown our business from $21,000 in sales in 2003 to $800,000 in 2008, and $750,000 in sales this year to date. Webpass has earned a minimum sales growth of 50% each year of operation. Webpass has been profitable each and every quarter of operation. These financial results are the envy of our industry, most Tier 1 ISP are still losing money 10 or 15 years into their existence and wireless companies have an even poorer track record for profitability. Webpass is an exception because of our conservative business strategy. Webpass Quick Facts 1. Webpass operates in San Francisco and Oakland 2. Webpass' network includes over 70 wireless Ethernet bridges from 7 leading manufacturers 3. Webpass has hands on experience with over 10 different wireless ethernet bridges 4. Webpass understands the features required to reliably operate a commercial wireless Ethernet bridge better than some manufacturers. 5. Webpass has no debt 6. Webpass is and has always been profitable 7. Webpass has 5 full time employees 8. Webpass has successfully designed specialized Linux devices for other network tasks 9. Webpass provides residential customers with symmetrical 45 Mbps or 100 Mbps connections Conclusion Our application is to build a new wireless Ethernet bridge to facilitate greater deployments by other companies. Webpass understands the existing marketplace, has experience with all 24 GHz wireless Ethernet bridge manufacturers, and has a process in place to quickly develop the new equipment. We can have equipment available on the market within 6 to 9 months at a retail price point well below the existing manufacturers. Finally there are several areas of the application that do not apply. For example the mapping section, congressional district section, and questions about end user pricing do not apply to our proposal. Please ignore these sections as we could not leave them blank on the online application so we simple used the entire United States as a reference. Thank you for your consideration.