

Implementation Plan for the Grover Beach Municipal Network

Prepared in collaboration by the following:

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Digital West
the City of Grover Beach and
the Grover Beach Improvement Agency**

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IMPLEMENTATION PLAN FOR THE GROVER BEACH MUNICIPAL NETWORK

In February 2010 the Council / Agency Board adopted the Technology Master Plan that recommended the development of the Grover Beach Municipal Network ("Network"). As established in the Plan, the "ultimate vision" identified the implementation of a broadband system that would incorporate the deployment of a municipal fiber network extending throughout the City. A part of this vision called for the City to develop into a major telecommunications hub in California with direct access to Asian markets. Through an innovative approach to municipal broadband and public-private partnerships, the City will develop and attract new and existing high-tech businesses that will in turn become the foundation of a strong economic base.

In order to successfully implement the plan, a number of key concepts need to be kept in mind:

- The City must establish a Point of Presence with Pacific Crossing that will eventually provide access to the trans-Pacific cable owned by Pacific Crossing at its landing point here in Grover Beach;
- The City will need to recognize the implementation of the Network as a key engine for economic development and ultimately the creation of jobs;
- Although the ultimate vision indicates deployment of the system should occur throughout the City, actual implementation will most likely occur in phases and over a period of years; and
- Finally, in order to be fully successful, the system must be adequately financed and then operated in a cost-effective manner capable of ensuring initial capital and operational cost investments are repaid within a reasonable amount of time.

In the spring of 2011 the Improvement Agency Board retained the services of two consulting firms to assist with the development of the Implementation Plan, MuniServices, LLC, and Digital West. MuniServices specializes in assisting cities with municipal finances and Digital West is a local firm with expertise in technology and broadband systems. Through the late spring, summer, and on into the fall, staff worked with the consulting team to develop the Implementation Plan. The attached reports from the respective firms are the result of these efforts and comprise the Implementation Plan.

Implementation Plan

MuniServices: MuniServices was tasked with developing a series of recommendations that addressed several issues associated with the structural and organizational format for the Network. These issues and recommendations are outlined in Exhibit A and entitled "Grover Beach Broadband Report: Research, Findings and Recommendations". Specific issues addressed with recommendations found in the report included:

- Recommended business structure of the Network
- Recommended internal and external partnerships
- Timing and phasing of implementation
- Potential market share evaluation

In completing their work, MuniServices completed a survey of local business. 340 businesses received a questionnaire and 109 responded for a 32% success rate. Additionally, MuniServices reviewed the operations of several jurisdictions from across the country that had experienced

different degrees of success/profitability or non-profitability. These contacts and responses served as the basis for the following recommendations and are outlined in the report from MuniServices.

1. Business Structure Recommendations

- ***A focused fiber optic network servicing the industrial areas of the City and the commercial areas along West Grand Avenue where potential market is most dense.*** The fiber system should be combined with a wireless system that would cover the remaining areas along West Grand Avenue where business density is less intense, as well as the surrounding residential areas. The systems should be implemented in such a way as to afford easy connection to adjoining communities.

This type of structure should provide for maximum potential system revenue with the lowest infrastructure investment. As verified with the results of the local business survey, the potential for a greater market share exists in the South Industrial Area, the South 4th Street area, and northward from West Grand Avenue along Front Street. Implementation of the fiber optic system in these areas will build on the existing backbone installation at minimum cost. The wireless system will be available to serve the adjoining areas on an interim basis.

- ***The Network should offer both retail and wholesale services.*** Retail services entail the direct sale of products to the end user. Wholesale services entail the lease of fiber or wireless capacity to an Internet Service Provider who in turn sells services to the end user. The Network should offer services as soon as possible on a retail basis in order to reach a cash flow position as soon as possible. MuniServices recommends that the South Industrial area and the area on Fourth Street are best suited for the Network to provide retail Internet directly and provide phone and TV services either through a vendor or non-exclusive basis through an ISP. Wholesale services should be offered predominately in residential and low subscription rate commercial areas of the City. The Network would initially offer wholesale services along areas of West Grand Avenue and the adjoining residential areas.
- ***The Network should operate as an open system where any and all ISPs are encouraged to provide service systems.*** Providing an open system will ensure the tendency for ISPs to develop their own networks will be avoided and overall system usage will be encouraged.

2. Internal and External Stakeholder Relationship Recommendations

Internal Relationships

- ***Establish the Network as a separate utility within the City's Administrative Services Department.*** It is recommended the City establish a separate enterprise utility within the City's Administrative Services Department to own and operate all aspects of the Network. The City has a well-established system in place that currently operates the Sewer and Water Enterprise Utilities for the City. Utilizing the existing systems would assist in lowering operational costs for the Network while also providing the City with an additional revenue source.

The City Council would act as the governing board for the Network, setting policy, developing the budget, and providing guidance with the assistance of in place staff.

- **As a partner, the City would establish ordinances requiring the developers of new construction or substantial building renovation to extend the Network's infrastructure system.** This requirement would ensure that the Network's infrastructure is extended the same as other elements of City infrastructure.
- **As a partner, the City should consider requirements to mandate the transfer of third party constructed wireless towers to the City with a lease abatement term.** This recommendation is intended to be a financing measure by encouraging ISPs to construct and dedicate broadband infrastructure to the City.
- **As a partner, the City should consider a City connection fee or impact fee.** This recommendation should be implemented only subsequent to obtaining an operating breakeven cash flow for the Network. The implementation of a connection fee would be advantageous as a revenue source once the Network was established.

External Relationships

- **Establish Relationship with Pacific Crossing.** This relationship is considered key to the ultimate success of the Network. Digital West, the consulting partner, has secured consent from Pacific Crossing to initially collocate service equipment necessary for Network startup. Pacific Crossing is currently a wholesaler of international bandwidth. Once the Network reaches sufficient size or is capable of delivering a client base needing access to Asia, the collocation with Pacific Crossing will make this next step a reality.
- **Identify the ISP providers interested in providing non-exclusive services within the City of Grover Beach by utilizing a "request for qualifications" process.** This recommendation is intended to serve as a financing measure by identifying prospective ISPs who would be willing to install broadband infrastructure which could be dedicated to the City.
- **Establish a contractual relationship with an installation maintenance vendor.** The installation and maintenance of a fiber system is critical to the system's success.
- **Establish a partnership with the Grover Beach Chamber of Commerce.** This relationship would facilitate the expansion of telecommunications and knowledge within the business community.
- **Establish a high-tech sector.** This would be a marketing component focused on attracting users who require the highest speed Internet services possible and would be available for both United States and Asia connections. This would represent the basis for a strong ongoing economic development program.

3. Timing and Project Management Phasing

The survey completed by MuniServices of jurisdictions with broadband systems noted that jurisdictions with financial profitability issues related to their broadband systems were due to

the inadequate phasing of the system. Frequently the cost to install infrastructure far outweighed the revenue opportunities. Consequently the following phasing recommendations are offered for the Grover Beach Municipal Network:

- **Phase I:** On a retail basis, provide Fiber to the Premise (FTTP) services to businesses located in the industrial zoned sections of the City (and other areas where conduit has been installed) and provide wireless Internet services that cover the entire West Grand Avenue commercial corridor area. The intent is to initiate services to those businesses that can benefit from retail services as quickly as possible with a minimum amount of initial investment.
- **Phase II:** On a wholesale basis, provide wireless and fiber to Internet connection to ISPs on a non-exclusive basis to serve residential, commercial, and industrial users. The coverage area would be throughout the existing infrastructure service area and predefined expanded service areas where ISPs would install additional wireless towers at their expense and dedicate the facilities to the City. This should be done in a way that provides an attractive discounted connection cost to be ISPs, but does not provide the ISP with an exclusive arrangement.
- **Phase III:** On a retail and/or wholesale basis, provide ultra-high speed service connectivity to Asia as soon as there is demand sufficient to justify the additional incremental connection costs.
- **Phase IV:** The Network should be phased so as to permit the extension of service both inside and outside the community on FTTP and Fiber to the Home (FTTH) basis as quickly as there is excess funding sufficient to cover the cost of the infrastructure extension.

4. Potential Market Evaluation

MuniServices completed an assessment of the City's business community to determine interest in obtaining higher speed and greater connectivity to the Internet. It was the intent of this effort to determine if the implementation of a broadband network could be successful financially. Based on the assessment, it appears that there is a strong potential that the Network could be financially successful, provided it was phased properly and the client base was actively sought and nurtured.

Members of the implementation team, including representatives from MuniServices and Digital West, developed a business survey to use as the assessment tool. (*Please see Exhibit C*). The survey was developed to collect basic information regarding the business, the current level of connectivity to the Internet, interest in improving the level of connectivity, and finally interest in economic development efforts.

The survey was mailed to a list of 626 businesses located in the primary industrial areas of the community and the commercial core area along West Grand Avenue. These areas would equate, geographically, to Phase I of the implementation plan. The survey was successfully delivered to 340 businesses. From the 340 deliveries, the City received 109 responses for a surprising response rate of 32%. The responses indicate that businesses are currently paying a minimum of \$20 per month, with the maximum at \$550 per month. The current average is approximately \$72.22.

A number of the survey participants indicated a willingness to pay more for high speed Internet and 14% indicated they would be willing to pay at least twice the current rate for a higher speed connection. This would equate to an average rate of \$82.33 per customer.

Using the information gained from the survey and focused on Phase I, MuniServices has estimated an initial potential revenue base of **\$22,230** per month is available for the Network. This is based on an average subscription fee of \$82.33 per month x 90, which is the number of Internet users in the sample of 109 respondents, multiplied by 3, which is the ratio of respondents to total businesses in the selected area. The actual ability of the Network to achieve full market share will likely be effected by several factors outlined in the MuniServices report. As you will note in the budget prepared by Digital West, achieving market share sufficient for the Network to become profitable is expected to take approximately four years to obtain.

In preparing this report, the team took a conservative approach to evaluating the market and participation. Initial contingent markets, including potential residential as a result of using the wireless infrastructure, have not been factored into the equation. Also it is likely that positioning the Network so that it can begin delivering services and connecting to areas immediately adjacent to but outside of the Network / City area will add significant strength to the revenue potential.

Digital West: Digital West was tasked to create a budget for the implementation and operation of Phase I of the Grover Beach Municipal Network. *(Please see Exhibit B for the Digital West Report.)* Phase I remains the same as first identified in the City's adopted Technology Master Plan and was also the focus of much of MuniServices' analytical efforts. As noted in Figure 1 of the Digital West Report, the area encompasses: the south industrial area located between Farroll Road and Highland Avenue, South 4th Street from Highland Avenue to West Grand Avenue, the area along Front Street north of West Grand Avenue, and the West Grand Avenue commercial core.

1. Capital Costs

As also indicated in Figure 1, shadow conduit has been installed with most recent City street projects. Fiber will now be installed in the existing conduit lines and then fiber and conduit will be installed to serve the industrial areas of Phase I and some portions of West Grand Avenue. Approximately 7,000 linear feet of conduit will be laid with a total of \$192,500. Additionally, getting connectivity to the customer's laterals and Customer Premise Equipment (CPE) will need to be installed. The cost for the laterals is estimated at \$82,500 and \$45,000 is estimated for CPE. As the Network gains strength, the CPE costs could be ultimately borne by the customer. Incorporating these costs as a capital cost of the Network will act as an incentive for customers to join the Network early on. The total for non-recurring fiber network costs amount to \$320,000 and are displayed on page 4 of the Digital West Report.

The remaining area of Phase I including areas along the commercial core of West Grand Avenue and a portion of the south industrial area will be served with wireless connectivity. Initially it is estimated that three wireless access points will be needed. These are depicted on Figure I. The cost is \$10,000 per unit for \$30,000 total. The advantage of incorporating the wireless capacity is that it will be relatively easy to add customers with relatively low

capital investment. CPE costs for wireless customers are estimated to be an additional \$45,000.

Perhaps the most important capital cost the Network will incur will be the establishment of a Point of Presence (POP) within the Pacific Crossing building. The equipment within Pacific Crossing will interface the Network where the Network will connect with a third party transit provider (Level 3, AT&T, etc.) to be determined at a later date. The POP consists of a network equipment rack supplied with adequate power from Pacific Crossing. The rack is being installed by Pacific Crossing as a part of their efforts to work with the City of Grover Beach. Establishment of the POP will allow an easy transition to the use of the transPacific fiber to Asia once the customer base warrants this service. The total cost for the POP is estimated at \$66,500 and is depicted on Table 2, found on page 5.

Total capital costs for the implementation of Phase I are estimated at \$461,500.

2. Operating and Recurring Costs

Operating and Recurring costs fall into two categories: (1) Costs associated with maintaining the Point of Presence with Pacific Crossing, and (2) the operating costs for the system. These costs are more explicitly outlined on pages 7 and 8 of the Digital West Report. As noted, a major differentiator for the Network will be the Point of Presence within the Pacific Crossing building. Monthly recurring costs associated with the POP at the Pacific Crossing building is \$6,800.

Operating costs for the system are relatively basic. Direct costs for the City to operate the system are approximately \$5,000. This will include staff costs for operating the system, including the enrollment and billing of customers and limited supervision of this activity. It should be pointed out this does not include City overhead, which could increase this cost estimate by approximately 15%. It is recommended that the system be managed and maintained by a qualified engineer responsible for monitoring the performance of the system and making changes to equipment and software as necessary. It is estimated a part time network engineer will cost \$4,000 per month.

An active marketing program for the Network is considered to be a priority and an ongoing cost of the system. According to Digital West, completion of Phase I of the Network will place the City in a unique position on the digital highway and becomes an important economic development tool for the City. In order for the Network to achieve its full potential and the access to Asia, an active marketing program is recommended. Marketing should target companies needing direct access to Asia via Pacific Crossing's transPacific fiber network. The cost for this marketing program has been estimated at \$2,000 per month.

Digital West has estimated a monthly financing cost of \$4,400 per month will be sufficient to cover the cost of borrowing the \$461,500 in capital expenditures and an initial \$250,000 for initial operational costs through year 4, at which time the system begins to show a profit. (Please see Cost Spread Sheet on Pages 9 and 10 of the Digital West Report.)

Total monthly recurring / operating costs for the Network are estimated at \$22,200.

3. Revenues

Digital West based the revenue estimates on the work completed by MuniServices. It is estimated that Phase I will be able to achieve revenues sufficient to cover all operating costs in year 4 of the system. *(Please see pages 9 and 10 of the Digital West Report.)* In order to cover costs, the Network will need to have approximately 270 customers paying an average rate of \$82.33 per month.

In year 4, the system will achieve revenue cost balance with revenues reaching slightly more than \$22,200.

The cost projections assumed by Digital West indicates that the system could conservatively continue to add customers on a slow but steady pace over and above the 270 required to achieve full cost balance. In year ten, the system would consist of approximately 498 customers. The cumulative revenue for the ten-year period is estimated at **\$2,877,927** and the overall cumulative costs estimated at **\$2,101,500**. The positive cumulative cash flow for the ten-year period is estimated at **\$776,427**.

Conclusions

Based on the work completed by MuniServices and Digital West, the following observations are offered:

The establishment of the Grover Beach Municipal Network provides a sound economic development tool for the City. If phased and financed appropriately, there is a solid base of customers that would be willing to take advantage of the increased speed and connectivity made available by the Network. Establishing the Point of Presence within the Pacific Crossing building will position the Network to take advantage of the potential transPacific connection and will become a differentiating point from other systems currently offered. The Network would also be well positioned to take advantage of further expansion opportunities to the surrounding communities. With careful stewardship and management, the Network could carry out the vision established by the Grover Beach City Council when it adopted the Technology Master Plan for the City.

Exhibits:

- A. Grover Beach Broadband Report: Research, Findings and Recommendations (Oct 2011)
- B. Digital West Report: Broadband Deployment, Phase 1 Budget (Dec 2011)
- C. Business Survey

Presented to the
City of Grover Beach, California



*Grover Beach Broadband Report:
Research, Findings and Recommendations*

Prepared by MuniServices, LLC

October 10, 2011

Executive Summary

The City of Grover Beach enacted a Technology Master Plan on February 16, 2010, establishing the technology infrastructure vision for its City's future. The findings in this report reflect the Plan vision and goal guidelines, by providing the City Council and staff relevant research and analysis that determines the current usage level of broadband technology within the City by businesses, the business community's needs, and the potential broadband utility business revenue from existing businesses. This report also analyzes the characteristics of other local jurisdictions providing broadband services to their business and/or residential constituencies and those common practices resulting in profitable and non-profitable systems.

▪ Section I Recommendations

- **Section I-a: Business Structure Recommendations.** MuniServices' recommendations are based on the City's physical and economic attributes as related to the survey research, as described in Section I. The report describes our recommendations which include a phased approach with the use of fiber optics utilized initially, and only in the industrial areas.
- **Section I-b: Internal and External Stakeholder Partnerships/ Recommendations.** While some local jurisdictions have developed systems primarily using internal resources, the common practice is to develop "relationships" with private sector companies, other governmental jurisdictions, and internal departments to minimize cost and timing, and maximize potential broadband related services revenue. This section provides recommendations for potential and positive relationships Grover Beach could explore.
- **Section I-c: Timing and Project Management/ Phasing.** The lack of properly planned and implemented phasing is the primary reason cited in our research (see Section II) that resulted in "non-performing" or financially failed systems. This section provides a recommended phasing-in approach for the City, with the first being on a retail basis, and to provide Fiber to the Premises (FTTP) to businesses located in the two industrial zoned sections of the City, and provide wireless internet services that cover the entire West Grand Avenue Commercial Corridor on a retail basis.

▪ Section II Research

- **Section II-a: Business Community/ Industrial Areas Usage Needs Analysis and Findings.** This report builds on a 45 point questionnaire (prepared in collaboration between MuniServices and City staff) and the responses collected from selected businesses within the industrial areas including: the industrial area south of Farroll Road, the area along South Fourth Street, and the area north of West Grand Avenue on Front Street of the City and the West Grand Avenue Commercial Corridor, as defined by City staff. This section reviews the survey criteria and provides the analysis needed to determine the internet needs and potential selected market expenditures for businesses based in the industrial areas and the West Grand Avenue Commercial Corridor. Those responding to the survey indicate a perceived need for higher speed internet services, a need for a higher level of reliability, and

a willingness to pay more to obtain those results. Section I describes other key system issues to examine in order to fully determine the entire marketplace and potential revenue system.

- **Section II-b: Practices and Results of Local Jurisdictions.** Several local jurisdictions throughout the United States have attempted (with varying results, successes and cost) to provide broadband internet services to their community. Research evaluating broadband and internet services provided by selected jurisdictions was completed to determine which common practices utilized might lead to success, and which should be avoided. A common theme for success of those communities researched is a plan of “phasing” in installation of services. Phasing was found to be critical for maintaining financial viability, while managing the expanding of infrastructure at a pace that goes beyond short term financial viability. This section details the experiences of other jurisdictions, and the physical and economic conditions in each City researched.
- **Appendix:** For reference purposes, this section describes the scope of services, detailing the steps that were completed and utilized in the production of this report and its ultimate findings.

Definitions

- **Wholesale Service Model:** In this model the jurisdiction contracts with the Internet Service Provider (ISP) to lease fiber or wireless; the service provider then sells its products to end users.
- **Retail Service Model:** In this model the jurisdiction sells products directly to end users.
- **Fiber Optic Connectivity:** The utilization of fiber optics cable to connect end users to the internet and therefore the various potential products.
- **FTTP:** Fiber To The Premises in the insertion of fiber, usually in the public right of way, to a location adjacent to the building to be potentially served
- **FTTH:** Fiber To The Home is the installation of fiber to the building, residential or business, that is to be potentially served
- **Wireless Connectivity:** The utilization of wireless technology to connect end users to the internet, and the various potential products. This is optimally accomplished by connecting one or more transmission locations to the main internet connection point by utilizing fiber optics cable.
- **Direct Profitability:** The revenue received from the sale of services using the jurisdiction's broadband system is adequate to a) cover all operating expenses and b) amortize the initial startup cost, including interest. Some jurisdictions received grants to cover the associated startup cost, and not required to return the initial installation cost.
- **Direct & Indirect Profitability:** In addition to the direct profitability criteria, some jurisdictions received substantial operating savings, usually through reducing their telecommunication costs or reducing operational costs, such as meter reading. These savings are considered in the calculation of indirect profitability.

▪ **Section I-a: Business Structure Recommendations**

- The City of Grover Beach's potential savings from enhanced internet capabilities is much smaller than most of the comparison jurisdictions researched for this report, in part due to fewer government facilities completely contained within the City.
- The school district serving the City of Grover Beach covers communities beyond the City limits with most of the administrative offices, service facilities and upper grade school campuses being located in other jurisdictions; at present there are no public colleges within the City limits. Without substantial governmental cost savings as a financial foundation, the system operating costs need to be supported solely by system subscription revenue.
- When evaluating the results of the below described business survey, it became evident that geographically most of the high volume and potential high speed users are in the industrial areas south of Farroll, 4th Street and Front Street. Some of these users stated in their responses that they currently need and or would benefit from the higher internet speeds that a fiber optic network would provide. Most of the users in the West Grand Avenue Commercial Corridor stated that they are either satisfied with their current internet access speed or believe that their current user needs are met by their current ISP. While the wholesale model minimizes the cities operating costs and its demands on City staffing it also reduces the overall potential revenue for the City's portion of the system revenue. While phasing of the network is appropriate initially, the implementation of the network should be done in such a way that the network can be readily expanded to adjoining communities within the city and in adjacent cities as user demand justifies such expansion.
- **Recommendation:** A focused fiber optic network servicing the industrial areas of the City, the commercial area along the West Grand Avenue Commercial Corridor and the majority of the adjacent residential areas should provide for the maximum potential system revenue for the lowest infrastructure investment. The fiber installation would be FTTP, but the customer would be responsible for the cost of extending the fiber to and throughout the structure. The city or one of the approved ISPs could then charge a "Connection Fee" to complete the FTTH for requesting subscribers. As a result, this should significantly reduce the percentage of businesses that want to connect in comparison to FTTH.
- **Recommendation:** We believe that the wholesale model should be utilized predominantly in residential and low subscription rate commercial areas of the City. The wholesale model would include most of the West Grand Avenue Commercial Corridor and the residential portion of the City covered by the first wireless tower(s). The City should investigate the interest of existing ISPs (either incumbents or wireless providers) through the SOQ/RFP process to determine potential wholesale revenue potentials as well as attempting to

secure infrastructure funding opportunities. This would significantly reduce the City's cost and reduce the risk of competing directly against incumbents systems.

- **Recommendation:** The City could initially offer internet services on a retail basis to reach a breakeven cash flow position as soon as possible, and to be able to demonstrate adequate service user demand. This should maximize the City's negotiating posture with ISPs,. We recommend that for the industrial areas of the City and along Fourth Street that the City provide retail internet directly and provide phone and TV services either through a vendor or on a non-exclusive basis through an ISP.

- **Recommendation:** Our research has indicated that limiting the services that any ISP can provide or limiting the number of ISPs that are allowed to utilize the system is detrimental to the systems long term success. The reasons are as follows: a) limiting the services encourages/forces ISPs to setup their own networks, and b) the lower level of competition that restrictive access creates reduces the overall system usage. We recommend that the system developed by the City be an open system where any and all IPS' are encouraged to provide their service over the network. Our recommendation includes offering access to the ISP providers that are currently operating within the Grover Beach market.

- **Section I-b: Internal and External Stakeholder Partnerships and Recommendations**

- **Internal relationships**

- **Establish a separate enterprise utility within the City's Finance Department:** For both the City's limited retail and the wholesale system administration it is recommended that the City establish a separate "enterprise utility" within the City's finance department. The enterprise activity would function like a separate entity with a separate fund and expenditure accountability. As the required scope of the utility covers a wide spectrum of activities, with each activity being relatively small, it is recommended that the new utility consider contracting with other City departments to minimize operating costs. For example, Administrative Services could provide billing services to the enterprise because they already perform that function for the water and sewer enterprises.

The City Council would act as the governing board for the entity; setting policy, developing the budget and providing guidance.

- **Establish City ordinances for new construction or substantial building improvements:** The purpose of this ordinance is to require public right of way and building installation of fiber optic cable at the developers cost for future current or uses. These fiber optics improvements should be dedicated to the city at the time of construction. This is also intended to be a financing measure by encouraging the construction and dedication of broadband infrastructure to the City.
- **Establish City ordinances to mandate the transfer of third party constructed wireless towers to the City with a lease abatement paying off the construction cost over several years:** This is intended to be a financing measure by encouraging ISPs to construct and dedicate broadband infrastructure to the City. This or other ordinances should also discourage any wireless transmission or cell tower on non-City property with all such towers being connected to the City fiber network were possible.
- **Consider establishing a City connection fee or impact fee.** This should be done only subsequent to obtaining an operating breakeven cash flow. These funds could be utilized to reimburse city costs associated with installation and provide funds for future expansion.

- **External relationships**
- **Identify the ISP providers interested in providing non-exclusive services within the City of Grover Beach by utilizing a “request for qualifications” process:** This process should include the ability to identify potential vendors who are interested in providing telecommunications and other electronic information services in the City of Grover Beach. Consideration should be given to the development of a list of approved ISPs and the conditions under which the City intends to proceed with approving broadband infrastructure installations. This recommendation is intended to serve as a financing measure by identifying prospective ISPs who would be willing to install broadband infrastructure which could be dedicated to the City.
- **Establish a contractual relationship with an installation maintenance vendor(s).** The installation and maintenance of a fiber system is critical to the systems success. At least in the initial phases this is best done on a contractual bases. The use of contractor verses internal staff should be periodically reviewed.
- **Establish a partnership with the Grover Beach Chamber of Commerce:** This relationship would facilitate the expansion of telecommunication uses and knowledge within the business community. This is intended to be a risk avoidance measure by maximizing the demand for broadband utility services.
- **Establish a relationship with Pacific Crossing:** This relationship is considered key to the ultimate success of the network. The network would utilize the existing Pacific Crossing facility for the installation of city and ISP equipment to service. Initial discussion with Pacific Crossing have been successfully completed and initial cost estimates for the colocation of facilities has also been identified. Pacific Crossing is currently a wholesaler of international band width. Once the Network reaches sufficient size or is capable of delivering a client base needing access to Asia the colocation with Pacific Crossing will make this next step a reality..
- **Establish a high-tech sector:** This would be the market segment focused on users who user needs would require the highest speed internet services possible and would be available for both US and Asian connections. This sector could provide maximum practicable assistance to new and growing high-tech businesses and serve as a primary economic development business attraction tool for business needing the highest speeds possible and who would benefit from being located in the City of Grover Beach with a need to establish a direct connection to Asia.

▪ **Section I-c: Timing and Project Management/ Phasing**

- From our research it is clear that the number one reason for financial failure by the local jurisdictions that have financially failed (not-profitable) to produce a break-even utility enterprise is the lack of adequate phasing. Therefore it is our recommendation that the City of Grover Beach only consider a phased in implementation approach in the following manner:
- **Phase I:** On a retail basis, provide FTTP to business located in the industrial zoned sections of the City (and other areas where conduit has been installed) and provide wireless internet services that cover the entire Grand Avenue Commercial Corridor area. In the event that the city secures an ISP that will install the necessary towers, to be dedicated to the city, to serve the entire Grand Avenue Commercial Corridor area as well as adjacent residential users then these areas could be served on a wholesale bases. The intent is to secure revenue that is substantial enough to meet operating expenses as quickly as possible. This phase would only utilize domestic connection capacities. Pacific Crossing connection capacities should only be implemented after a substantial user has been identifies. This is intended to be a risk avoidance measure by minimizing the infrastructure cost, the internet connection cost and the system operating cost while maximizing the per connection fee revenue.
- **Phase II:** On a wholesale basis, provide wireless and fiber internet connection to ISP's on a non-exclusive basis to serve residential, commercial, and industrial users throughout the coverage area of the existing infrastructure service area and predefined expanded service areas where ISP's would install additional wireless towers at their expense and dedicate the facilities to the City. This should be done in a way that provides an attractive discounted connection cost to the ISPs but does not provide the ISP with an exclusive arrangement. This phase should also include connecting cell towers that are placed on city property to the network at the cell operator's expense with temporarily discounted system connection fees as an incentive to the ISP's to partner with the City. To the extent possible all existing cell tower agreements should be renegotiated and all new insulations should comply with the above.
- **Phase III:** On a retail and/or wholesale basis, provide ultra high-speed service connectivity to Asia when there is significant demand to justify the additional incremental connection costs. This is intended to be a risk avoidance measure by minimizing the infrastructure cost timing until revenue is identified to justify the expenditure.
- **Phase IV:** As internal broadband utility excess funding becomes available extend the FTTP/FTTH facilities throughout the City. This is also intended to be a financing measure to meet the ultimate goal of having an innovative community with 100% FTTH.

Section II-a: Business Community/ Industrial Areas Usage Needs Analysis and Findings

The survey: City representatives together with MuniServices developed a survey questionnaire mailing to assess the City's business community and industrial area broadband and internet needs. The questionnaire included questions, approved by the City, related to economic development and business retention. City economic development information was also included with the questionnaire.

Survey target: A list of potentially active businesses in the industrial centers and the West Grand Commercial Corridor by utilizing the City's business license listing, the City's sales tax listing, and a third party business listing was concurrently developed by MuniServices. This resulted in a list of 626 potentially active businesses within selected areas.

Mailing: An identical survey mailing was completed over two mailings. MuniServices first mailed the City-approved cover letter, questionnaire, and a stamped return mail envelope to 626 businesses within the City of Grover Beach. The second mailing to the businesses that did not respond to the first mailing, including a re-mailing to businesses for which the post office was unable to successfully deliver the first mailing was also conducted.

Response and results: The 626 mailings resulted in the successful delivery of the questionnaire to 340 businesses, of which 109 businesses responded. The return rate was 32% of actual delivered questionnaires to active businesses.

Key findings of usage and needs

- **Active internet connection:** Based on 109 returned questionnaires, 90 or 83% of the businesses currently have an active internet connection.
- **Monthly costs:** For the 74 that responded to question regarding what their monthly internet charge currently is, the total monthly internet connection cost is \$5,344 which averages \$72.22 per month, a minimum of \$20 per month and a maximum of \$550 per month.
- **Willingness to pay for services:** Of the survey participants that responded to the question regarding their willingness to pay more for high speed internet service and that have a current internet connection, 14% indicated that they would be willing to pay at least twice their current rate for a higher speed connection, which would equate to an average rate of \$82.33 per month.
- **Revenue potential:** For the served areas of the industrial areas south of Farroll, 4th Street and Front Street along with the Grand Avenue corridor the results indicate the total market revenue potential from current internet users could be as high as \$22,230 per month which is based on the average subscription fee of \$82.33 per month times 90, which is the number of internet users in the sample of 109 respondents, multiplied by 3, which is the ratio of respondents to total businesses in the selected area. The city's broadband utility's portion

of the total market potential would have to be adjusted by the additional factors discussed below, but would be conservatively about \$4,500 to \$11,000 per month on a retail basis and \$2,000 to \$5,000 on a wholesale basis. Neither of these would include any revenue from the adjoining residential portions of the city.

Further research required to determine the entire market and potential revenue system

The potential portion of the market that a City network would secure was beyond the scope of this study. The questionnaire results established the approximate total current internet revenue in the industrial areas and the West Grand Avenue Commercial Corridor. The potential market for the balance of the businesses activated and the residential market could not be determined by the initial and second mailing process.

The following key issues known to-date should be evaluated to determine the potential system revenue.

Existing ISPs, either incumbents or wireless providers interests. City should investigate the retail interest of these ISPs through the SOQ/RFP process to determine potential revenues to the city as a wholesale provider. This could significantly reduce the City's installation and operating cost as well as reducing the risk of having to compete directly against the incumbents.

- **Factor of the incumbent ISP's reaction to the City's entrance into the market.** In several of the researched jurisdictions (see Section I) the incumbent ISP significantly increased their bandwidth and/or reduced their service costs, thus changing the revenue potential within the jurisdiction. A similar situation could develop in Grover Beach with AT&T, Verizon or Charter Communications. This risk to the city exists in both the retail and wholesale models
- **Residential usage current and future demand.** As of this point the determination of the residential market has not been quantified. There are several methods of determining the potential residential revenue including applying national trends per household, surveying city e-mail customers, and mailing a sample group of residents.
- **Market share that the City's enterprise could potentially secure.** The researched jurisdictions indicated that a market share of 25% to 50%, of the total market is a reasonable estimate.
- **Retail to wholesale revenue ratio.** The estimated reasonable portion of the total market that the City might expect to capture from ISPs who utilize the city's fiber network. The research to date is inconclusive, but indicates a range of 20% to 50% of the retail market fees could be obtained by a wholesaler for the use of its fiber infrastructure.

Section II-b: Practices and Results of Other Jurisdictions

Research of other local jurisdictions that provide broadband services to their business and/or residential constituencies was necessary to understand common practices for success and failure. MuniServices researched 26 local jurisdictions that were composed mainly of small to medium sized jurisdictions with the majority of them in non-urban areas. Eleven of these were not included in the report for various reasons, including they sold or disbanded their involvement, a private company constructed and owned the network for an extended period of time, the system was too new to have sustainable results, the information available was not complete enough to draw meaningful conclusions, legal restraints prevented comparable results, etc. For analytical ease, the remaining fifteen jurisdictions were aggregated by service mix (primarily wholesale/retail), profitability, and direct or indirect.

Wholesale service model

For the wholesale service model the jurisdiction contracts with the Internet Service Provider (ISP) to lease fiber or wireless; the service provider then sells its products to end users. In this case the jurisdiction provides the middle mile infrastructure. In general, profitability was enhanced by controlling infrastructure and operation expenses maximizing project implementation phasing and focusing on high volume internet usage areas. It is our recommendation that a phased in approach is necessary and the use of fiber optics should be utilized initially only in the industrial areas. For comparative purposes some of the jurisdictions researched focused their implementation effort on high density commercial areas, and high density residential areas. It should be noted, the City of Grover Beach does not contain the same business and residential density to make this a viable option. Indirect revenue opportunities in the form of jurisdictional normal operation expense reductions were experienced by several of the jurisdictions that were researched. This also is not a possibility for Grover Beach.

Successful jurisdictions usually maintained an open system, meaning that no individual vendor was given an exclusivity agreement to provide any of the services. In general for those jurisdictions researched, overall profitability was inhibited by several factors, including the lack of adequate implementation phasing which resulted in insurmountable initial and/or operation costs.

Summary of researched jurisdictions

Local jurisdictions with *profitable* broadband services (see descriptions below):

- Danville, Virginia (population 43,000/ rural)
- Santa Monica, California (population 88,000/ urban)
- Palm Coast, Florida (population 75,000/ rural)

Local jurisdictions with *non-profitable* broadband services (see descriptions below):

- Glenwood Springs, Colorado (population 10,000/ rural)
- Ashland, Oregon (population 21,600/ rural)
- Provo, Utah (population 105,000/ rural)

- **Danville, Virginia** (population 43,000; rural; wholesale; profitable) has paid the initial cost of the first phase of implementation and is now funding expansion out of operating income. The City of Danville provides FTTP (fiber to the premise) with the ISPs leasing non-exclusive use of the fiber system and installing FTTH (fiber to the home) for residential and commercial customers. Danville receives a portion of the ISPs revenue.

- **Santa Monica, California** (population 88,000; urban; wholesale; profitable) utilized phasing implantation first to connect governmental buildings, and then to connect high density commercial and residential structures. The City leased dark fiber (fiber that is not being used) to major internet providers to help them complete the internal service connections. The system as developed and implemented created internal cost savings. The City is currently able to pay for the installation, operations, and some expansion of the network. Although given Santa Monica's current substantial savings and revenue, the City is moving slowly and incrementally in their service expansion.

- **Palm Coast, Florida** (population 75,000; rural; wholesale; profitable) utilized implementation phasing first to known subscribers, which included the City's internal buildings and departments and also other governmental users. The City expanded service to include existing and new cell towers and then expanded to residential and commercial users through an open ISP (non-exclusive use) system. The City of Palm Coast has in place established city ordinances that make it very difficult for new cell or wireless towers to be built on non-city owned property.

- **Glenwood Springs, Colorado** (population 10,000; rural; wholesale; non-profitable) has a system that was not implemented with a phased in approach or plan, and unable to establish and reach an adequate revenue level to meet and cover operating costs. City of Glenwood Springs entered into several partially exclusive agreements with local and national ISPs that restricted the City of Glenwood Springs from being able to generate significant revenue to meet the initial and ongoing operating expenses.

- **Ashland, Oregon** (population 21,600: rural; wholesale; non-profitable) system implemented by the City to-date is not profitable. The City is not intending to begin paying on the initial project investment until 2024. The City did not utilize a phased-in approach, and having difficulty establishing adequate revenue to meet operating expenses. The City of Ashland system uses fiber which is underground in the street and coaxial cable to connect to the

residential homes to which service is provided. The combination of fiber and coaxial cable may prove to be obsolete prior to commencing repayment for the initial investment as projected for 2024.

- **Provo, Utah** (population 105,000: rural; wholesale; non-profitable) is restricted by state law from providing retail broadband services. The City of Provo's system was developed as a closed system, and they entered into a joint venture with a local ISP. The system was not implemented as a phased in project and the City was never able to establish enough revenue to meet operating costs. As a result the City sold the system at a loss, and is still secondarily responsible for the initial debt offering costs.

Retail Service Model

For the retail service model the jurisdiction sells products directly to end users. Our research has concluded that similar to those jurisdictions that implemented a wholesale phased-in implementation approach model, jurisdictions that implemented a phased in retail model had a higher degree of profitability, and a higher degree of overall success. These jurisdictions enhanced their success by controlling infrastructure and operation expenses, while maximizing implementation phasing. These jurisdictions focused their system development on high volume internet usage areas as well as high volume retail usage areas. Several of the local jurisdictions exhibited substantial savings in terms of operating costs by including neighboring local jurisdictions within their system area. The successful jurisdictions usually maintained an open system where the jurisdiction did not maintain exclusive use of the system, and also leased usage to other private sector ISPs.

In general, system/network fiscal profitability was inhibited by several factors. The lack of an adequate implementation phasing plan resulted in insurmountable initial and/or operational costs for some local jurisdictions. In addition, infrastructure competition was created with other ISP's operating in the jurisdictions as a result of not letting these ISP's lease space on the City network and forcing the ISPs to establish their own systems. This dynamic can lead to competitors installing superior systems that render the local jurisdiction system obsolete or inadequate with time. The end result is a lost ability to maintain a competitive position in the marketplace.

Local jurisdictions with *profitable* broadband service offerings (see descriptions below):

- Kutztown, Pennsylvania (population 5,000/ rural)
- Wilson, North Carolina (population 47,000/ rural)
- Cedar Falls, Iowa (population 38,500/ rural)
- MiNet, Oregon (population 16,000/ rural)

Local jurisdictions with *non-profitable* broadband services (see descriptions below):

- Lafayette, Louisiana (population 120,000/ urban)
 - Salisbury, North Carolina (population 34,000/ rural)
 - Loma Linda, California (population 20,000/ urban)
 - Lompoc, California (population 41,000/ rural)
-
- **Kutztown, Pennsylvania** (population 5,000; rural; retail; profitable) has successfully reached a financial positive cash flow and is repaying its initial financial investment. The city service includes phone, internet and television options, and they also lease fiber capacity to several small phone and security companies. The City utilized its electrical utility as a vendor for administration and right-of-way aspects of the project. The City focused on residential service and after nine years, which included an investment of \$8,000,000 completed the system within their jurisdictional boundaries. The City began the process by first providing service to governmental facilities, and thereafter utilized their savings, and those savings gained from providing service to other government entities to justify the initial operating outlay and associated costs of the system. The City may consider expansion to other jurisdictions in the future. Currently the City of Kutztown has a 49% market share, which is considered substantial.
 - **Wilson, North Carolina** (population 47,000; rural; retail; profitable) has reached a financial positive cash flow with its system and started repayment of its initial financial investment. The first phase included the City facilities and school facilities within the City limits. The City provides direct connection for businesses that have more than one physical location or facility within the jurisdiction. Within two years the City of Wilson expects to have a complete FTTH system in place.
 - **Cedar Falls, Iowa** (population 38,500; rural; retail; profitable) has reached a financial positive cash flow and has begun to repay its initial financial investment through the savings realized by the city operating its own system. The City of Cedar Falls initially installed a coaxial cable system, and is now in the process of upgrading the system to FTTP with the in-building to the coaxial cable. The existing system is cash positive and when coupled with the system savings, the City of Cedar Falls will be able to repay the \$17,000,000 FTTP system cost.
 - **MiNet, Oregon (population 16,000; rural; retail; profitable)** is a Joint Powers Authority (JPA) open to all county jurisdictions. The cities of Monmouth and Independence, Oregon, cooperatively created the Monmouth-Independence Network (MiNET), a publicly chartered business. The MiNET mission is to establish, operate and maintain broadband facilities and systems for the use and benefit of the two cities as well as subscribers, either inside or outside of Monmouth and Independence. The system has reached a financial positive cash flow position and has completed repayment of its initial investment from operating

revenues from the system. The system utilized a phased in approach and began by first connecting governmental facilities, schools and a local state university within the two cities. The implementation approach utilized resulted in a substantial telecommunication savings, which in turn provided revenue to repay bonds that funded the FTTH system installation throughout the two cities.

- **Lafayette, Louisiana** (population 120,000; urban; retail; non-profitable) provides services to residents and businesses. The City did not disclose whether they are meeting operational costs or functioning in a cash positive or negative scenario from revenues derived from service subscriptions. The system was funded through an \$110,000,000 voter approved bond. While the construction of the system was a phased approach, the bond obligation was not. The repayment of the bond appears to be coming from sources other than the subscriptions.
- **Salisbury, North Carolina** (population 34,000/ rural; retail; non-profitable) has system costs that are currently \$500,000 more per year than the revenue generated. The City issued \$39,000,000 in COP's (certificate of participation) that are tied to the general fund. The system appears to have been constructed in one phase and had larger upfront costs. The system is a "closed system" and only City of Salisbury provided services can be utilized by users of the system.
- **Loma Linda, California** (population 20,000/ urban; retail; non-profitable) has current revenue streams that only cover approximately one-half of the system operating costs. Loma Linda setup a Redevelopment Agency (RDA) to fund the system and built the system in one phase. The current system management acknowledges that a mistake made was not using a phased approach in the system's development which resulted in substantial front end revenue losses. As of today, this remains status quo.
- **Lompoc, California** (population 41,000/ rural; retail; non-profitable) system revenue does not cover the operational costs. This system is an FTTP, with the "place" being wireless transmission towers. While the system was originally intended to provide enhanced internet speed and reliability to the community, the goal has not been met in terms of the actual results. When the City began development of its system, the local ISPs responded by investing in the upgrade of their own systems. The City's system was not phased, and operational-wise vastly inferior to the systems that were upgraded and operational by the local ISPs. The City was left to compete only with dialup providers at the very bottom of the market, and they were only able to secure a very small market share. It now appears that the \$23,000,000 installation cost will have to be repaid from some other revenue source.

Appendix

MuniServices Scope of Services

Phase A: Preliminary Scope of Work (Mailing)

1. Identify the businesses in the city selected survey area utilizing city business license, city sales & use tax records, and third party listings.
2. Prepare for the cities approval a questioner to be utilized in the survey.
3. Mail the survey to businesses on the identified listing in three passes as specified below:
 - a. Mail to all of the identified businesses.
 - b. Two weeks after the first mailing, mail to all of the identified businesses that did not respond to the survey or to which we received the survey back from the post office as undeliverable mail.
 - c. Two weeks after the second mailing, mail to all of the identified businesses from whom we did not receive a response or which were returned by the post office as undeliverable.
4. Provide the City with the results of the survey for each responding business.

Phase A: Deliverables

1. Prepare for the cities approval the survey questioner.
2. A listing of the business entities that were mailed a copy of the survey and the source(s) from which each of these businesses was identified.
3. The results of the survey for each responding business.

Phase I Preliminary Scope of Work (Research)

1. Identify local jurisdictions that are providing or are in the process of developing the capacity to provide high speed Internet access to its businesses and/or residential communities. Research the following structural aspects as identified in our research of other local jurisdictions related to high speed Internet access activities to serve as a basis for consideration by the City of Grover Beach in order to help determine an appropriate organizational structure:
 - a. Structure of the local jurisdiction operating municipal subdivision and the structure of the venture, if any.
 - b. Business structure of the venture, if any.
 - c. The portion of the high speed Internet access the jurisdiction is providing (mid mile, last mile, etc.).
 - d. Venture partners public or privet sector including the responsibilities and involvement of each entity in the venture.

2. Provide City with a research report for each jurisdiction researched.

Phase II Preliminary Scope of Work (Evaluation and Recommendations)

1. Provide the City with recommendations on the business structure, venture relationships, and possible legal structures to discuss with their legal counsel for the portion of the network within City limits. These recommendations should address the following:
 - a. Evaluation of the merits for the City Council to serve as the Board of the Directors for the utility/enterprise within the City limits.
 - b. Work with the City of Grover Beach to ensure that there is value from the opportunity provided by the global crossing landing in the City of Grover Beach to justify the expense, and evaluate the associated revenues in order to justify the associated financial investment in this project.

Phase II –Deliverables

1. MuniServices will provide a report to the City that includes:
 - a. Recommendations on the business structure, venture relationships, and possible structures to discuss with legal counsel for both the portion of the network within the City limits.
 - b. Electronic presentation describing the findings and recommendations.
2. MuniServices will present the report to the City Council.



DIGITAL WEST

The City of Grover Beach Broadband Deployment

Phase 1 Budget



December 14, 2011

1 Summary

The City of Grover Beach asked Digital West Networks, Inc. to create a budget report for implementation of Phase 1 of the Grover Beach Municipal Network. The budgetary analysis based on the City's "Technology Master Plan" prepared by Digital West and the "Grover Beach Broadband Report: Research, Findings, and Recommendations" prepared by MuniServices.

The objective is to detail capital expenses for the implementation of Phase 1 of the network and 2-year cash flow report that includes monthly operating expenses. The capital and monthly recurring expenses were determined by Digital West while monthly recurring revenues and number of potential customers were determined by MuniServices.


1.1 Fiber conduit

"Shadow conduit" refers to conduit pipes that have been buried in trenches and do not have fiber running through them. Many times the conduit is not connected to a network, but is laid in anticipation of eventually being connected and having fiber run through it.


The City placed shadow conduit in sewer upgrade projects in the southern industrial area as well as along Grand Avenue between 2nd and 4th Avenues. The objective of Phase 1 implementation is to strategically place fiber conduit connecting shadow conduit to create a continuous fiber network in the southern industrial area extending to Grand Avenue and Front Street. The conduit on 2nd Street will connect to shadow conduit on Front Street put in place by Forde Properties.



Figure 1 - Fiber Conduit Placement*

- *Blue lines = conduit to be placed
- *Yellow lines = shadow conduit
- *  = wireless access point

1.2 Wireless

Wireless backhaul and access points will be strategically placed in conjunction with the fiber conduit in order to increase the range of the network while keeping infrastructure costs down. Wireless connectivity increases the number of potential customers using the network during Phase 1 operations. City Hall will also be connected to the network via a high-speed wireless connection and will be used as an access point for the surrounding businesses indicating a desire for connectivity. This will eliminate current Internet access expenses for City Hall and the Police Department. See Figure 1 for placement of access points represented by this icon .

2 Capital Expenses

There are two categories of capital expenses required for Phase 1; placement of fiber conduit and network access equipment. There are six sections of new conduit that need to be put in place that will connect four sections of shadow conduit (3 city owned, 1 private).

2.1 Fiber Conduit

Based on Digital West’s recent local experience placing fiber conduit we estimate the cost per foot to be \$27.50¹. To complete the proposed Phase 1 network will require the placement of 7,000 feet of conduit and fiber at a total cost of \$192,500.

To get connectivity to customers lateral conduit and fiber equipment must be placed at each customer premise. Laterals cost up to \$5,000 each depending on several factors and customer premise equipment (CPE) cost up to \$3,000 each. Based on research conducted by MuniServices and feedback from a constituent survey 15 laterals are needed during initial construction of the network at a cost of \$82,500 and CPE’s at \$45,000 for fiber and \$45,000 for wireless. It has yet to be determined how much of the customer connectivity costs should be borne by the customer and how much by the City.

Conduit Location ²		Potential Clients	Linear Feet	Conduit	Laterals	CPE	Totals
A	Pacific Crossing to Huber	3	450	\$12,375	\$16,500	\$9,000	\$37,875
B	Barka connecting shadow	1	350	\$9,625	\$5,500	\$3,000	\$18,125
C	4th Street	1	3,300	\$90,750	\$5,500	\$3,000	\$99,250
D	Highland Avenue	3	1,250	\$34,375	\$16,500	\$9,000	\$59,875
E	2nd Street - Front Street	6	650	\$17,875	\$33,000	\$18,000	\$68,875
F	Griffin to Huston	1	1,000	\$27,500	\$5,500	\$3,000	\$36,000
Totals		15	7,000	\$192,500	\$82,500	\$45,000	\$320,000

Table 1 – Non-recurring fiber network costs

2.2 Wireless Connectivity

Three wireless backhaul and access points have been identified as part of Phase 1 network implementation. Two of the access points will be placed on the fiber network and one at City Hall is wireless only. Digital West deploys a wireless system at a cost of \$10,000 per unit which would bring the City’s cost for wireless deployment to \$30,000. Wireless access points are a cost effective to expand the reach of the network at a much lower cost than running fiber. For budgetary purposes it is estimated each access point would result in 10 additional customers for broadband services.

In order to meet the assumed uptake of 270 customers, additional access points will need to be added to the network as demand requires. This may be handled through a third-party service provider or by the City.

2.3 Pacific Crossing Point-Of-Presence (POP)

The network will have a point-of-presence in the Pacific Crossing building on Huber street. Conduit will be run from the building and connect to the shadow conduit junction on Huber street. The fiber network will come to ground at the POP where it will then connect to the outside world through a third-party transit provider (Level3, AT&T, etc.) to be determined at a later date.

¹ Labor is based on public works prevailing wage rates.

² See Figure 1 above for location of conduit

The POP consists of an network equipment rack supplied with adequate power by Pacific Crossing. The rack is being installed by Pacific Crossing as part of their efforts to work with the City of Grover Beach. The rack needs to be built up with routers and switches and have a crossover connection to the City’s transit provider. Estimated cost for equipment and labor to setup the rack is \$66,500 which includes 2-routers, 2-switches, and 120-hours of engineering services.

POP Equipment	QTY	Cost	Extended Costs
Router	2	\$20,000	\$40,000
Switches	2	\$5,000	\$10,000
Misc.	1	\$7,500	\$7,500
Labor - Hourly	120	\$75	\$9,000
Total POP Equipment			\$66,500

Table 2 – Non-recurring POP equipment costs

Monthly Recurring Revenue and Expenses

2.4 Revenue

Based on MuniServices survey of local businesses, the Phase 1 network can achieve \$22,230 monthly recurring revenue based on 270 customers paying an average of \$82.33 for a higher level of broadband services than is currently available to them.

Revenue does not commence until the network is ready to deliver services. It should reasonably take 12-months from the start of the project to begin collecting revenue. In order to achieve cash flow positive revenue, including making finance payments, the network needs to reach 280 customers.

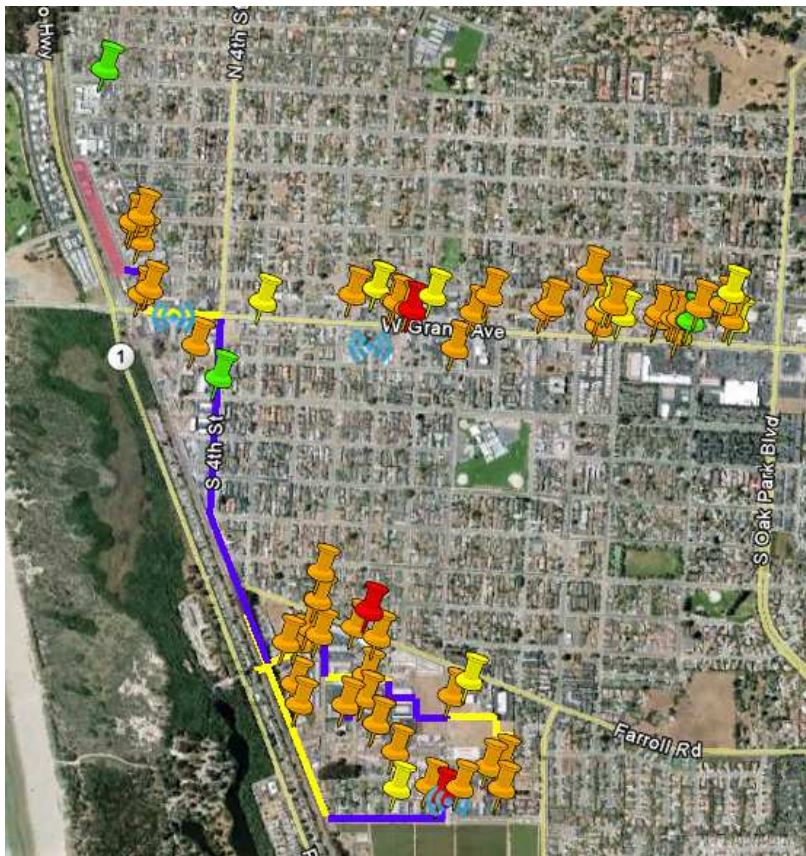


Figure 2 - Location of survey respondents

2.5 Monthly Recurring Expenses

Prior to the City lighting up any portion of the fiber network, a point of presence (POP) must be created at the Pacific Crossing building which will require capital expenses and incur monthly recurring charges to begin.

Based on feedback from Pacific Crossing and usual commercial rates for transit, the monthly recurring costs for the POP is estimated as follows:

Description	Monthly Recurring Cost
42U full equipment rack with 30A power	\$3,500
Crossover connection to service provider	\$300
Monthly transit costs for 100 Mbps ³	\$3,000
Total Monthly Recurring Costs	\$6,800

Table 3 – Monthly Recurring Point of Presence Costs

2.5.1 Trans-Pacific Fiber to Asia

Having the lowest latency hop to Asia from North America is a significant differentiator for the City of Grover Beach and can be a magnet for companies looking to build data-centric facilities wanting to focus on Asian markets. It will take time to find these companies and build or lease the appropriate facilities for their needs.

An expense line item has been included in this budgetary analysis for marketing to find companies interested in re-locating to Grover Beach. Also, rather than make long-term recurring expense commitments for trans-Pacific fiber, it is recommended that the City wait until it has a paying customer before contracting for the trans-Pacific bandwidth.

2.5.2 Operating expenses

Marketing Expenses – Completion of Phase 1 of the Grover Beach Municipal Network places the City in a unique position on the digital highway, a position that can be leveraged to the City and its constituents advantage through economic development. Digital West recommends that the City dedicate at least \$2,000 per month at the beginning of the project to market this advantage. Marketing should be target companies needing direct access to Asia via Pacific Crossing’s trans-Pacific fiber network.

Network Engineer - The network must be managed and maintained by a qualified network engineer who is responsible for monitoring performance and making necessary changes to network operation hardware and software. An expense line item was added to the budget at \$4,000 per month ongoing. This function can be outsourced to a qualified vendor or individual but it is important to have 24/7 support available, however this is most likely not a full time position.

City Operational Expense - MuniServices recommends the city leverage internal resources to operate the network. These responsibilities include new customer sign up, monthly billing and customer service. A city operational expense line item has been added to the budget at \$5,000 per month starting when the network is operational in Month 12.

Finance Costs – A budget line item was added for principal and interest (P&I) payments on monies used for capital and operating expenses. In this model, P&I does not become payable until the network achieves positive cash flow greater than the P&I amount which is estimated to be in Month 47. The budget (Capex plus Opex) requires \$711,000 with principal and interest payments of \$4,400 is based on a 20-year term at 4 percent interest.

³ Based on currently available commercially transit accounts

Description	MRC
Pacific Crossing Colocation	\$3,500
Crossover to transit	\$300
Transit Costs - 100 Mbps	\$3,000
Marketing	\$2,000
Network Engineer	\$4,000
City Operational Costs	\$5,000
Finance Costs	\$4,400
Total MRC	\$22,200

Table 4 – Monthly Recurring Costs

Customer Installation Fee - When customers sign up they will need to have client premise equipment installed by a certified professional typically at a cost of \$150 per device. An expense line item has been added per new customer in the budget. It is cost effective to contract the work out to a qualified vendor or individual. This fee can be passed on to the customer or can be absorbed by the city as a marketing strategy to get customers on the network. This amount is variable depending on the number of new customers brought on per month. It shows up as a line item on the cash flow projections spreadsheet and does account for \$69,000 in expenses from Month 12 through 46 of Phase 1.

3 Conclusion

Based on this report and budgetary assumptions total Capital Expenses (Capex) for Phase 1 implementation of the Grover Beach Technology Master Plan will be \$461,500 of which \$289,000 is for the network backbone and \$172,500 is directly related to client connectivity (laterals and CPE's).

Once Phase 1 is completed and monthly recurring expenses begin cash flow will require an additional \$250,000 for Operating Expenses (Opex) before the service hits positive monthly cash flow – estimated to be in Month 35.

Description	Expense
Fiber Conduit	\$192,500
Laterals	\$82,500
Fiber & Wireless CPE's	\$90,000
POP Equipment	\$66,500
Wireless Equipment	\$30,000
Operation Costs	\$249,806
Total Phase 1 Expense	\$711,306

Table 5 - Total Phase 1 Capital and Operational Expenses

3.1 Cash Flow Spreadsheet – Annual Recurring Revenue and Expenses Through Year 10

Revenue	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Totals
New customers	0	162	84	36	36	36	36	36	36	36	498
Total Customers	0	162	246	282	318	354	390	426	462	498	
Monthly Recurring Revenue (MRR)	\$0	\$85,953	\$208,954	\$262,303	\$297,870	\$333,437	\$369,003	\$404,570	\$440,136	\$475,703	\$2,877,927
Monthly Recurring Costs (MRC)											
Connectivity											
Colocation	\$7,000	\$42,000	\$42,000	\$42,000	\$42,000	\$42,000	\$42,000	\$42,000	\$42,000	\$42,000	\$385,000
Cross Connect	\$600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$3,600	\$33,000
Transit	\$6,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$36,000	\$330,000
Transit to Asia	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sub-total Connectivity	\$13,600	\$81,600	\$81,600	\$81,600	\$81,600	\$81,600	\$81,600	\$81,600	\$81,600	\$81,600	\$748,000
Marketing	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$240,000
Operations											
Network Engineer	\$12,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$48,000	\$444,000
City Operational Costs	\$5,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$545,000
CPE Installation	\$0	\$40,500	\$21,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$9,000	\$124,500
Total Operations	\$17,000	\$148,500	\$129,000	\$117,000	\$117,000	\$117,000	\$117,000	\$117,000	\$117,000	\$117,000	\$1,113,500
Total MRC	\$54,600	\$254,100	\$234,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$2,101,500
Total Monthly Recurring Cash Flow	(\$54,600)	(\$168,147)	(\$25,646)	\$39,703	\$75,270	\$110,837	\$146,403	\$181,970	\$217,536	\$253,103	\$776,427
Cumulative MR Cash Flow	(\$54,600)	(\$222,747)	(\$248,394)	(\$208,691)	(\$133,421)	(\$22,584)	\$123,819	\$305,789	\$523,325	\$776,427	

3.2 Cash Flow Spreadsheet – Annual Capital Expenses Through Year 10

Capex	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Totals
Conduit											
PC1 to Huber	\$12,375	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$12,375
Barka connecting shadow	\$9,625	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,625
4th Street	\$90,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$90,750
Highland	\$34,375	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,375
2nd Street - Front Street	\$17,875	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,875
Griffin to Huston	\$27,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,500
Total Conduit	\$192,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$192,500
Laterals											
PC1 to Huber	\$16,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,500
Barka connecting shadow	\$5,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,500
4th Street	\$5,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,500
Highland	\$16,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,500
2nd Street - Front Street	\$33,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$33,000
Griffin to Huston	\$5,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,500
Total Laterals	\$82,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$82,500
Client Premise Equipment	\$0	\$90,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$90,000
Backhaul - Access Points	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$30,000
POP											
Router	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,000
Switches	\$10,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,000
Misc.	\$7,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,500
Labor - Hourly	\$9,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,000
Total POP	\$66,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$66,500
Total Capex	\$371,500	\$90,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$461,500
<i>Cumulative Capex</i>	<i>\$371,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	<i>\$461,500</i>	
<i>P&I Payment on Loan</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$8,726</i>	<i>\$52,357</i>	<i>\$52,357</i>	<i>\$52,357</i>	<i>\$52,357</i>	<i>\$52,357</i>	<i>\$52,357</i>	<i>\$322,866</i>
Total Expenses	\$426,100	\$344,100	\$234,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$222,600	\$2,563,000
Cumulative Expenses	\$426,100	\$770,200	\$1,004,800	\$1,227,400	\$1,450,000	\$1,672,600	\$1,895,200	\$2,117,800	\$2,340,400	\$2,563,000	
Cash flow	(\$426,100)	(\$258,147)	(\$25,646)	\$39,703	\$75,270	\$110,837	\$146,403	\$181,970	\$217,536	\$253,103	\$314,927
Cumulative Cash	(\$426,100)	(\$684,247)	(\$709,894)	(\$670,191)	(\$594,921)	(\$484,084)	(\$337,681)	(\$155,711)	\$61,825	\$314,927	

CITY OF GROVER BEACH
COMMUNITY HIGH SPEED INTERNET NEEDS
CONFIDENTIAL SURVEY

Exhibit C

1. Please provide your current business information below:
 - a) Business Name _____
 - b) Contact Name _____
 - c) Number & Street _____
 - d) City, State Zip _____

2. Additional business contact information for the primary contact and the business:
 - a) Contact Email Address _____
 - b) Business Website _____
 - c) Contact Phone _____

3. What internet / telecommunication **services** do you currently use?
 - a) Internet connectivity (Yes/No) _____
 - b) Internet data rate _____
 - c) Number of voice lines _____
 - d) Video or video conferencing _____

4. What type of internet connection are you currently using? _____

5. Regarding your current internet connectivity, if any, please select one of the following:
 - a) I do not need an internet connection at my business location _____
 - b) My current internet connection is adequate for my needs _____
 - c) My current internet connection is somewhat slow _____
 - d) My current internet connection is extremely slow _____
 - e) Additional comments _____

6. What is the cost of your current internet connection? _____

In order to meet your businesses optimal internet connectivity needs, what is your expectation of the required monthly fees?

- a) I do not need an internet connection at my business location _____
 - b) No more than my current fee _____
 - c) About twice my current fee cost _____
 - d) More than twice my current fee cost _____
 - e) Additional comments _____
- _____

CITY OF GROVER BEACH
COMMUNITY HIGH SPEED INTERNET NEEDS
CONFIDENTIAL SURVEY

7. Would your business benefit from the availability of increased speed of your internet connection? If yes, please specify: _____

8. What was your reason for locating your business in Grover Beach?

9. Number of employees at this site? _____
10. Do you have expansion, downsizing or relocation plans/desires within the next several years? Yes__ No __
11. Would you like information on how the City's Economic Development Program might assist you? Yes__ No __

MuniServices Contact Information

Questions/Clarifications: Doug Kitchen

Phone: 800-800-8181 Ext.5512

E-Mail: Doug.Kitchen@MuniServices.com

Return of Questionnaire

Mail: In the included postage paid envelope

MuniServices LLC
32107 West Lindero Canyon #233
Westlake Village, CA 91360

Fax: 559-312-2960

E-Mail: Doug.Kitchen@MuniServices.com