

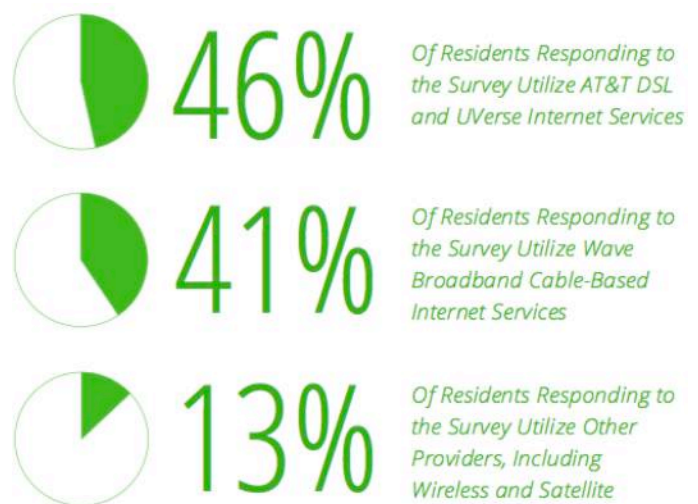
5. Broadband Community Profiles West Sacramento



A. Residential

The residential broadband market in West Sacramento is served by two primary providers, AT&T of California, the incumbent local exchange carrier and Wave Broadband, the local cable provider. Fixed wireless providers also provide coverage in West Sacramento, including DigitalPath and Succeed.Net. Initial data collected from surveys indicates that 80% - 90% of residential customers utilize either the local exchange carrier or the cable company for their broadband Internet services. Approximately 10% of residential customers utilize fixed wireless, satellite and other competitive providers. From the research conducted, wireline residential broadband services are provided via copper broadband infrastructure, either through copper cable plant owned by the local exchange carrier or coaxial cable plant owned by the local cable company. No fiber-to-the-home providers were identified in West Sacramento. Wireless services are provided through terrestrial fixed wireless systems and 3G and 4G mobile wireless carriers such as AT&T, Verizon and Sprint.

Broadband Internet download and upload speeds reported by the majority of residents surveyed were commensurate with cable and DSL services in the region. Samples were collected from 198 residential broadband subscribers across West Sacramento. Some 57% of respondents reported download speeds greater than 10Meg. These speeds were generally reported in the most urbanized areas that had a high density of single-family or multi-dwelling units. A total of 33% of respondents reported download speeds less than 6Meg. Upload speeds were found to be considerably lower than download speeds, consistent with asymmetrical DSL and cable broadband services. Only 6% of respondents received upload speeds of over 10Meg while 2% received between 6Meg and 10Meg and

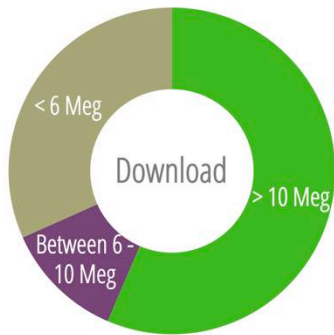


92% received less than 6Meg. Respondents reported general satisfaction with the speed and reliability of their broadband Internet services. Some 80% responded that their services were moderately to highly reliable while 67% felt that their services had sufficient speed.

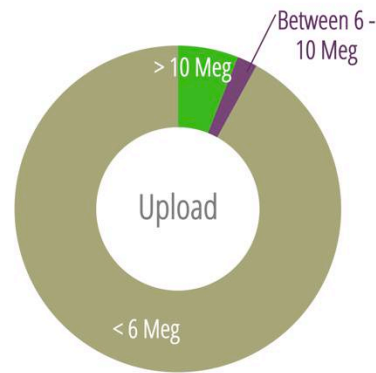
Measuring the pricing for services against the speeds of services that residents received indicated that there was a direct correlation between the prices paid for services and the amount of bandwidth ("speed") received by residents. The chart below illustrates the price of services residents in West Sacramento pay for services and the realized download and upload speeds for these services. It is important to note that the speeds reported are actual speeds recorded, which may be different from the speeds residents purchase from service providers in the area. In general, DSL and cable broadband services are sold with speed increments that define a maximum speed for the service, such as "Up to 10 megabits down and up to 1.5 megabits up." Actual speeds vary depending on the physical location of the service and how many subscribers are concurrently on the system.

Residential Broadband Services - West Sacramento Survey Data

Residential Broadband Download Speed Test Results



Residential Broadband Upload Speed Test Results



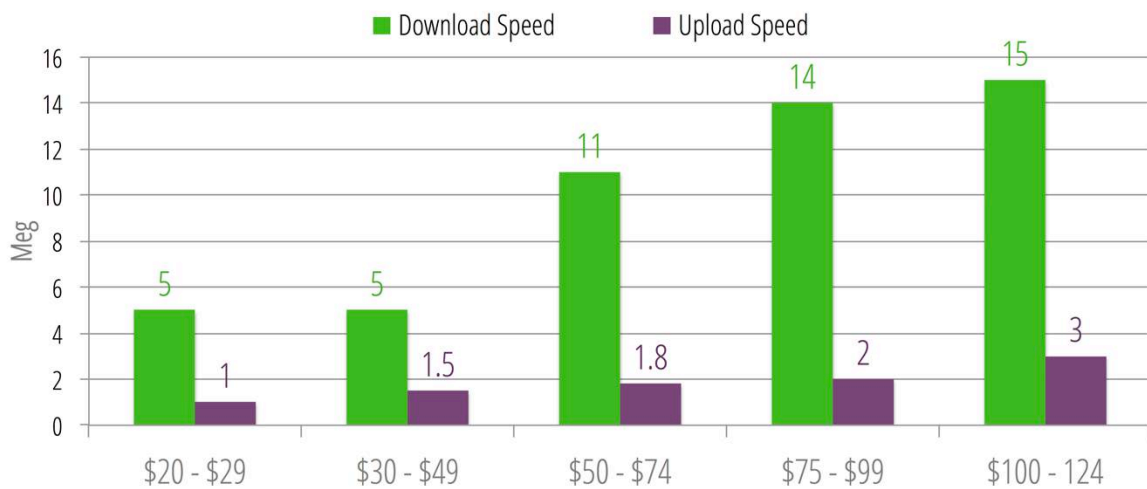
Reliability of Current Broadband Services



Speed of Current Broadband Services



Monthly Internet Costs Versus Speeds Reported



Business Broadband Download Speed Test Results

Business Broadband Upload Speed Test Results

Figure 5.1: Residential Wireline Broadband Availability By Speed (Download Speeds)

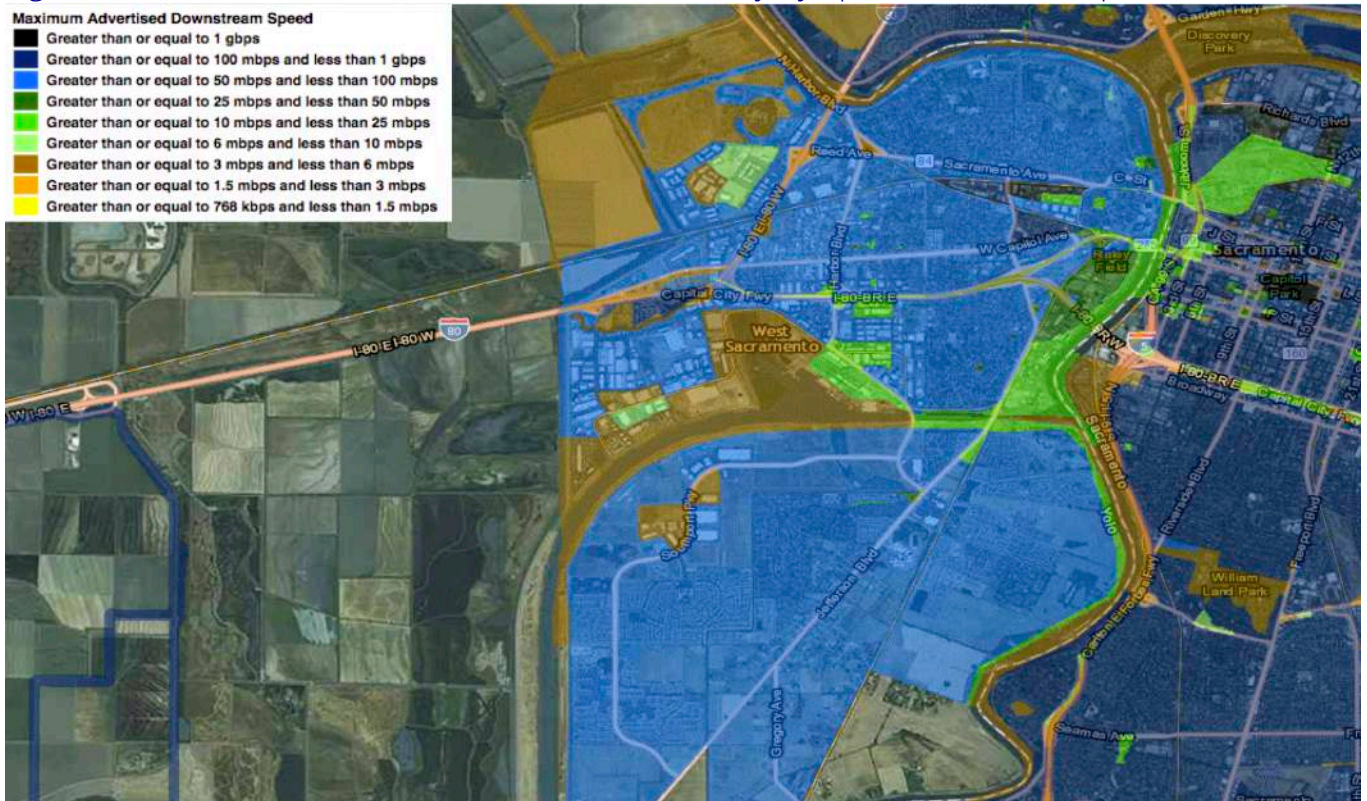
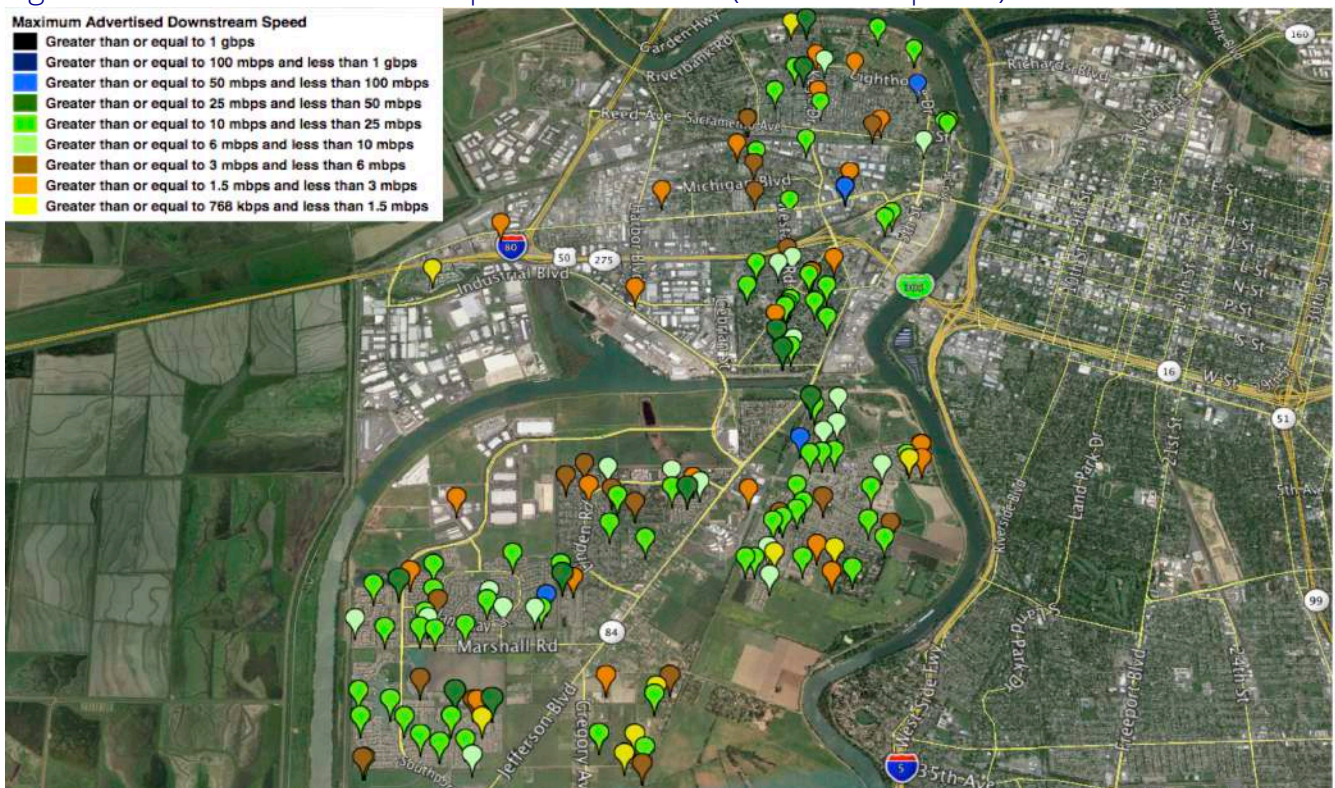
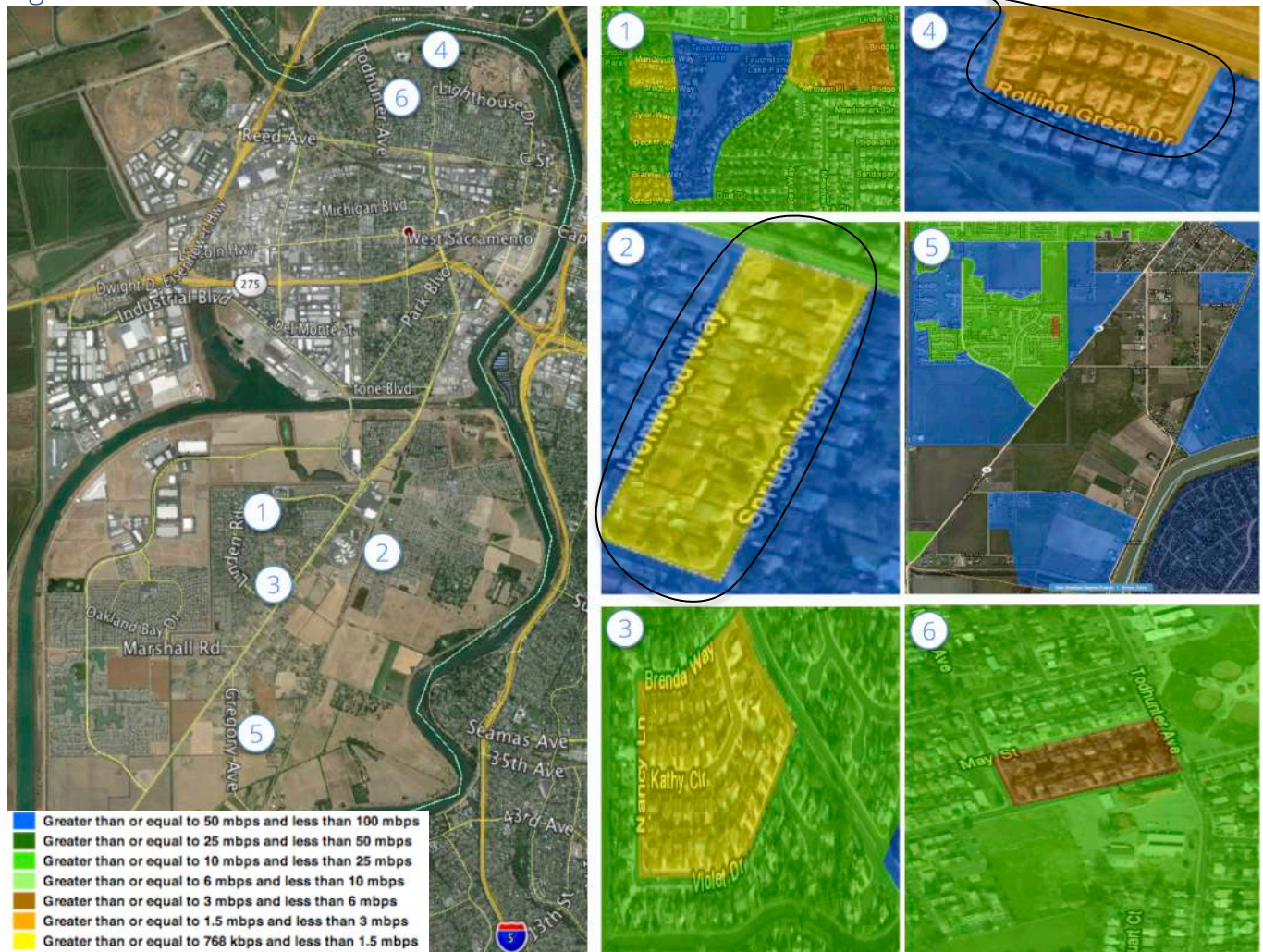


Figure 5.2: Residential Wireline Speed Test Results (Download Speeds)



Although West Sacramento is generally well served from a wireline broadband perspective, the City has several pockets that are classified as unserved or underserved per definition by the California's Public Utilities Commission.¹³ The largest area that is currently classified as unserved covers the Northeast and Southeast Villages of Southport. This area covers approximately 543 residents and 216 households. Survey data collected in this area indicates that 3G and 4G wireless is utilized as the primary means of broadband Internet connectivity. Residents reported receiving speeds between 1.2Meg and 12Meg on their wireless services from Verizon Wireless and Clear Wireless. For television, respondents all reported receiving service from Dish, DirectTV or HughesNET. A few respondents also reported using these satellite providers for their Internet connectivity.

Figure 5.3: Underserved Wireline Residential Broadband



¹³ In February 2012, the Commission adopted decision D.12-02-015, which changed the Commission's definition of areas that are underserved by broadband. The current definition states that underserved areas are offered broadband slower than 6 Meg download and 1.5 Meg upload. The previous definition was underserved areas were offered broadband slower than 3 Meg download and 1 Meg upload



1

Linden Park Area – Population 345, Households - 149

Small segments of underserved households in a residential area served by AT&T California and Wave Broadband. Wave Broadband reports serving zip code 95691 that covers this area. Per FCC Form 477 data, maximum advertised download speed greater than or equal to 768Kbps and less than 1.5Meg. Maximum advertised upload speed greater than or equal to 200Kbps and less than 768Kbps. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg download.



2

Lake Washington Blvd Area – Population – 644, Households - 215

Moderately sized residential underserved area served by AT&T California. Wave Broadband reports serving zip code 95691 that covers this area. Per FCC Form 477 data, maximum advertised download speed greater than or equal to 768Kbps and less than 1.5Meg. Maximum advertised upload speed greater than or equal to 200Kbps and less than 768Kbps. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg download.



3

Summerfield Park Area – Population – 385, Households - 119

Moderately sized residential underserved area served by AT&T California. Wave Broadband reports serving zip code 95691 that covers this area. Per FCC Form 477 data, maximum advertised download speed greater than or equal to 768Kbps and less than 1.5Meg. Maximum advertised upload speed greater than or equal to 200Kbps and less than 768Kbps. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg download.



4

Rivercrest Drive Area – Population – 149, Households - 56

Moderately sized residential underserved area served by AT&T California. Wave Broadband reports serving zip code 95605 that covers this area. Per FCC Form 477 data, maximum advertised download speed greater than or equal to 1.5Meg and less than 3Meg. Maximum advertised upload speed greater than or equal to 200Kbps and less than 768Kbps. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg. Fixed wireless available from Succeed.net greater than or equal to 100Meg and less than 1Gbps download.



5

Northeast/Southeast Villages – Population– 543, Households- 216

Moderately sized residential underserved area with no reported wireline local exchange carrier. Wave Broadband reports serving zip code 95691 that covers this area. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg. Dialtone service may be provided by the local incumbent local exchange carrier but no DSL capabilities have been reported in this area.



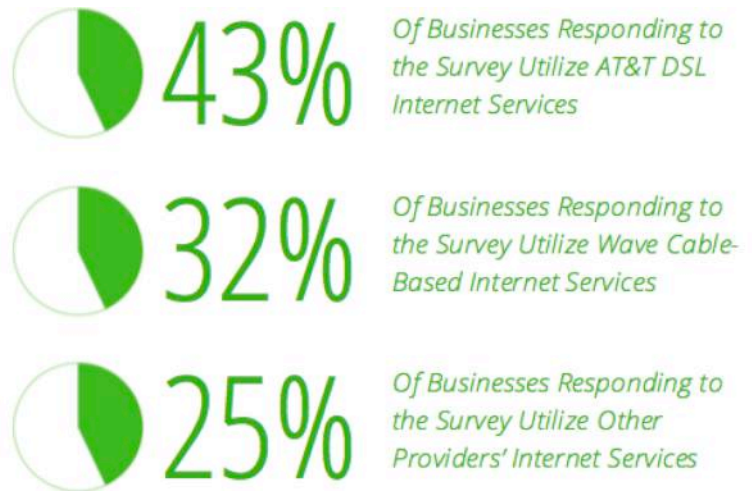
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Todhunter Ave Area – Population – 75, Households - 20

Moderately sized residential underserved area served by AT&T California. Wave Broadband reports serving zip code 95605 that covers this area. Per FCC Form 477 data, maximum advertised download speed greater than or equal to 1.5Meg and less than 3Meg. Maximum advertised upload speed greater than or equal to 200Kbps and less than 768Kbps. Fixed wireless available via DigitalPath, Inc. greater than or equal to 6Meg and less than 10Meg. Fixed wireless available from Succeed.net greater than or equal to 100Meg and less than 1Gbps download.

B. Business

Based on the results of the survey, businesses in West Sacramento primarily subscribe to DSL or cable based services provided by AT&T of California and Wave Broadband. 59 businesses responded to the business survey. A total of 43% of respondents reported utilizing AT&T DSL services for their businesses while 32% of respondents reported utilizing Wave Broadband cable services. The remaining businesses utilize alternative wireline providers, fixed wireless providers or 3G/4G providers.



Wireline services utilize the same copper cable infrastructure that is used to provide residential services. In general, these services are branded as “business class” and come with a higher quality of service that prioritizes business services over residential services. Pricing for DSL and cable based services ranges from \$49.99, for the lowest speed service to \$249.99 for the highest speed service.

Fiber-optic services are also available on an Individual Case Basis or “ICB”¹⁴ in certain areas of West Sacramento. In general, this suggests that there is no fiber-to-the-premise technologies being implemented in West Sacramento and providers deploy these services in a “point to point”¹⁵ configuration. Several businesses have reported using fiber-optic broadband, including the Sacramento River Cats and California Fuel Cell Partnership. Public organizations also utilize fiber-optic services from local providers. They are priced significantly higher than DSL and cable broadband services and are generally only utilized by larger businesses and government organizations in the area. As of the date of this Plan, neither AT&T nor Wave Broadband had responded to Magellan’s request to meet with them to gain further information on their fiber-optic services, pricing or maps.

For businesses included in the assessment, 33% reported receiving download speeds of 10Meg or above. Some 54% reported download speeds of less than 6Meg. A total of 85% of businesses reported upload speeds of less than 6 Meg which corresponds to a similar proportion of residential broadband users in West Sacramento – 92% of residential respondents did not receive uploads greater than 6 Meg. Businesses reported key issues with their current broadband Internet services, as 47% of

¹⁴ Individual Case Basis means that there is no standard service or rates attached to the particular telecom product. In the case of fiber broadband, ICB denotes that the services are available but each service will be specified individually in terms of the cost to provide the service and the its technical configuration.

¹⁵ Point-to-Point configuration denotes a fiber broadband connection that is built to a customer’s location off of the provider’s backbone fiber rather than through fiber-to-the-premise technologies that are more cost effective for the provider and end user.

respondents indicated that their current services were not sufficient to meet their needs. The majority of businesses cited speed and reliability of their current services as challenges to their daily operations. Some 45% of businesses reported speed as the key issue with their current service and cited access to online business applications such as accounting, cloud, videoconferencing and data storage as the reason why their Internet services are critical in their operations. Many businesses reported “slow downs” in their services that caused disruptions in video and telephone calls and loss of connectivity to online business applications. These issues impacted both commercial parcels and residential home-based businesses.

When asked why these businesses haven't upgraded their services, a significant amount of businesses cited cost as the number one reason, accounting for 39% of respondents. The next two reasons went hand in hand; 30% of businesses reported that services were not available to them and another 30% reported that they either unsure of what services they needed for their businesses or did not have the technical expertise necessary to upgrade their services. This indicates a possible education and adoption issue with West Sacramento's businesses if they are not informed of the options that are available in the market to them.

Cost is a key issue in the West Sacramento market. Demand for higher-speed services from the business community necessitates a less costly solution than is currently available. Businesses from various geographic locations in the city all report the same issue. In some cases, fixed wireless services may provide a cost effective alternative to fiber however, no businesses reported using fixed wireless

Businesses in West Sacramento want higher speed and reliability in their broadband services; however, their only option is a fiber-optic connection, which starts around \$1,000 per month for a 30 Megabit connection and is unaffordable for most businesses.

for their broadband needs. Fixed wireless may be a complementary broadband solution in some instances but depends on the propensity of businesses to rely on a wireless solution for their critical business needs. The absence of affordable, available fiber broadband infrastructure results in many businesses “living with” their current services, which results in less efficiency and competitiveness for these businesses. High-speed, reliable broadband is a differentiating factor for businesses. Without it, current businesses will continue to remain impaired and West Sacramento will have difficulty attracting new business to the area.

Comments from Businesses in West Sacramento:

Home Service Business – “Our provider is slow, unreliable goes down every day for minimum of 1/2 hour, we have no other options at our location.”

Real Estate Office – “Our current provider cannot provide high speed Internet service because we are too far away from their hub.”

Local Bank – “We work in the cloud, no Internet, no work. When issues occur, nothing gets done in our office.”

For West Sacramento, a key part of the City's economic development strategy should address the sufficiency of broadband services for its business community. This strategy should target key areas of the city to ensure affordable fiber broadband is available to the Bridge District, business parks, redevelopment areas and the downtown corridor. The below illustrate these target areas for high-speed broadband services, along with a description of the broadband needs.

Figure 5.4: Demand Areas for Expanded Broadband Services in West Sacramento



1

Port Industrial Park

The Port of Sacramento Industrial Park is located on Enterprise Boulevard south of the I-80/Enterprise Boulevard interchange with easy access to I-80, Business 80/US 50, I-5, and the Sacramento Metro Airport. Primarily small to medium sized organizations reported utilizing DSL and cable-based services. The high concentration of businesses and potential economic development opportunities make this a prime location for expansion of next-generation broadband.

2

Pioneer Bluff Area

South of I-80 along the waterfront, DSL and cable based broadband infrastructure was reported in the majority of the district. No fiber distribution was identified for small and medium business broadband needs, however several large businesses reported access in this area. More analysis should be completed to determine the need for fiber broadband services in the area.

3

Bridge District

This waterfront redevelopment area encompasses 125 net developable acres bounded by the Sacramento River on the east, former S.R. 275 on the north and U.S.50/Business 80 Capital City Freeway on the south. Raley Field is served with fiber broadband but no other fiber distribution was located in this area. Long-term planning for fiber broadband would enhance the redevelopment efforts for the Bridge District. The City already maintains a 4.5 mile conduit system in this area which could be leveraged in partnership with providers to deploy affordable, accessible broadband services.

4

Washington Specific Plan Area

The Washington Specific Plan Area is immediately north of the Bridge District and includes substantial Class "A" office space. Twelve-acres of this Plan Area have a planned unit development in place, permitting a mix of office, residential, and retail uses. Other riverfront properties in the Washington area are zoned similarly. No fiber broadband services were reported by businesses in this area, but only a few businesses provided information. More analysis should be completed in this area to assess the need for fiber broadband infrastructure.

5

Riverside Center

Riverside Commerce Center is a 75 acre, mixed use business park located at Interstate 80 and Reed Avenue designed for light industrial, flex and office space for leading edge, technology-focused companies. Businesses in Riverside Center all reported using DSL and cable based services and could potentially benefit from upgraded fiber broadband services, particularly for high-growth companies.

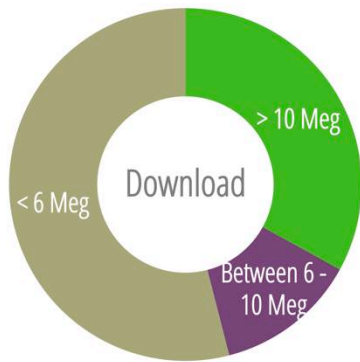
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Southport Business Park

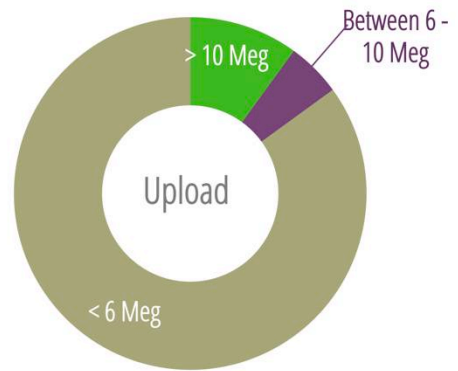
Southport Business Park is a new, 670-acre, master planned, mixed-use business park located near the US 50 / Harbor Boulevard interchange. Cable and DSL based broadband services are available in the Park. The Park is bordered by fiber infrastructure but very little fiber distribution is available within the Park to provide affordable broadband services.

Business Broadband Services - West Sacramento Survey Data

Business Broadband Download Speed Test Results



Business Broadband Upload Speed Test Results



Reliability of Current Broadband Services



Speed of Current Broadband Services



Why Haven't Businesses Upgraded



C. Community Anchors

Education

The majority of Washington Unified School District's sites are interconnected to one another with fiber connectivity supplied by local providers in the area. Generally these schools are equipped with the high-speed, reliable services they need to deliver online educational programs to their students. Schools continue to push more of their services to the cloud as blended learning incorporates a significant amount of new online applications. Therefore, it is important that the District has the future bandwidth necessary to grow these programs to ensure the best educational experiences for its students. In conjunction with the City of West Sacramento, the School District should evaluate the opportunities that a municipal broadband network could provide to further its mission in the local community; not only in supporting high-speed connectivity within its schools but also ensuring that broadband reaches its students in their homes.

Los Rios Community College in West Sacramento uses CENIC where possible; however, connectivity between the remote campuses is provided over AT&T Optiman fiber service. Los Rios reported that data needs for the college continues to increase exponentially and current bandwidth levels are insufficient and are currently constrained due to cost of services. Los Rios would welcome new cost effective methods for providing connectivity to its various sites.

Healthcare

Healthcare organizations in West Sacramento could derive significant benefit from expanded broadband capabilities. Local doctors' offices and clinics reported several issues with existing broadband services; also reported in other communities within Yolo County. CommuniCare's Salud Clinic currently maintains a T-1 to California Telehealth Network, which is insufficient for the volume of patient electronic data that runs across the link. CommuniCare is looking to upgrade this link to fiber but to date has been unable to do so.

As healthcare organizations move more of their operations online, broadband becomes a critical part of their daily business. Doctor's offices and clinics generally require reliable, high-speed connectivity back to their primary providers whether locally in West Sacramento or remotely in other regions. These organizations require greater broadband connectivity to enable electronic health records, Telehealth and virtual imaging applications. For West Sacramento, ensuring that the community's healthcare providers are equipped with these services has a direct impact on the quality of care patients receive from local providers in West Sacramento.

Local Government

The City utilizes a combination of fiber and cable connections for its connectivity needs. These services provide connectivity between municipal facilities to connect departmental resources to a common network. The City realizes that significant upgrades to its existing broadband services are critical to

support departmental and community needs over the next 10 years. Some examples of these needs include:

- **Public Safety**

The public safety departments are currently utilizing Verizon Wireless for their mobile data needs. The City expects public safety personnel will have an increased need or job demand to utilize more applications in the field to make better, faster decisions. At one point the City considered investing in a wireless mesh technology that the City would own and would provide faster wireless data to public safety users.

- **Cameras & Streetlights**

The City currently has many different camera systems in place, with additional needs every year. Some of these camera systems are connected via expensive T1 lines. The City would like to have cameras at all streetlight locations in the future, which would require extending fiber to each intersection. It would also be beneficial to standardize on one camera platform and connection method for both the City's security and streetlight cameras.

- **Fiber Plan**

The City's Department of Information Technology is in the beginning stages of creating a fiber plan to provide fiber to all City facilities to replace broadband and T1 line expenses. This would also include connecting the City's streetlights to fiber infrastructure.

- **Increased Internet Bandwidth**

As the City moves its server and services infrastructure to the cloud, Internet bandwidth will need to increase to support the internal demand of end users.

- **Future Facilities**

Over the next 5 – 10 years, the City will see various relocations of existing facilities to different areas of the city. Each of these moves pose communication problems depending on their new location and the services provided in that area.

The City has started the process of incorporating conduit into its capital projects such as the Bridge District improvement project. As more of these projects are completed, the City can potentially build interconnections between these conduit projects together to form a municipal network. This may provide the opportunity for the City to interconnect more locations together. Doing so would have multiple benefits. First, it would allow the City to develop a municipal fiber network to provide connectivity between its facilities, enabling significantly more capacity and reducing costs for its internal operations. Concurrently, this network could be utilized as a backbone for service providers to deliver more broadband into the West Sacramento area to serve business, residential and community anchor markets. In addition, Yolo County maintains several sites in West Sacramento, including the Arthur F. Turner Community Library,

D. Strategies & Action Items

Recommendation 1: The City should continue to develop its broadband infrastructure to reduce internal costs, expand capabilities and protect against future cost increases by:

- e) Developing a GIS-based map that identifies the City locations that should be interconnected including the City's current infrastructure;
- f) Installing conduit with all public projects;
- g) Expanding the City's capability in negotiating agreements for private providers to utilize the City's infrastructure for public benefit; and
- h) Coordinating with other local public agencies (i.e. WUSD, Los Rios Community College District, YCTD, Yolo County, Yolo County Housing, Yolo County Office of Education, etc.) as potential users of the City's infrastructure.

Timing: The City should begin the process of identifying areas for direct and joint investment in broadband infrastructure with other public agencies over the next 12 months.

Recommendation 2: The City needs to work with local broadband providers to ensure business corridors are equipped with the necessary broadband services to support the City's economic development needs as follows:

- d) Actively market and make any City-owned infrastructure available for use by broadband providers;
- e) Equip business corridors with City-owned broadband infrastructure in the areas identified in the Demand Areas for Expanded Broadband Services, as detailed in the West Sacramento Community Profile;
 - (1) Developing relationships with broadband providers who will utilize City-owned infrastructure; and,
 - (2) Making this infrastructure available to broadband providers on a non-discriminatory basis.

Timing: The City should work internally to institute the processes to incorporate broadband infrastructure into its planning over the next 12 months.

Common Action Items

Recommendation 3: Adopt General Plan policies that incorporate broadband as a public utility and create a policy framework to promote its deployment in public and private projects as appropriate. This includes:

- h) Tailoring the sample policies and standards (included in the appendix) to the City's specific needs and adopt them into local policy, codes and standards (including policies, dig-once, joint trenching, engineering standards, etc.);
- i) Incorporating broadband in the City's Development Impact Fee program and the City's Capital Improvement Plan (CIP) as appropriate and make a commitment to fund broadband infrastructure;
- j) Identifying opportunities to install broadband infrastructure in conjunction with public and private construction projects as appropriate;
- k) Developing a process so that Planning and Public Works coordinate with IT to identify projects that could install this infrastructure at reduced costs;
- l) As the City builds out its network, maintaining broadband infrastructure in the City's GIS system, requiring GIS-based as-builts and implement any other means for accurate documentation;
- m) Evaluating ways to streamline the broadband permitting processes within public rights of way to ensure broadband providers do not face unnecessary obstacles to building infrastructure; and
- n) Evaluating fees levied to broadband providers for constructing broadband infrastructure to ensure they do not discourage broadband investment.

Timing: The City should adopt General Plan policies and implementing codes and standards over the next 12 months. Implementation should be ongoing.

Recommendation 4: Coordinate with other agencies with facilities in the City (i.e. WUSD, Los Rios Community College District, YCTD, Yolo County, Yolo County Housing, Yolo County Office of Education, etc.) on a regular basis to leverage opportunities to reduce broadband construction costs by:

- c) Reviving the regular Utility Coordination Meeting attended by the cities/County (and potentially add the public agencies listed above) to facilitate the long-term planning of broadband infrastructure; and

- d) Coordinating on a regular basis to identify opportunities for joint construction, use and broadband infrastructure sharing between local agencies to lower costs and maximize public benefit.

Timing: The City should develop these collaborative programs with other public agencies over the next 3 months.