Legislation Details (With Text)

File #:	18-0416 **Version:** 1		
Type:	Gen. Bus. - Staff Report	**Status:**	Agenda Ready
		In control:	City Council Regular Meeting
On agenda:	10/9/2018	**Final action:**	10/9/2018
Title:	Receive the Fiber Master Plan Report and Consider Design/Construction as a Pilot Program (Information Technology Director Taylor). DISCUSS AND PROVIDE DIRECTION		
Sponsors:			
Indexes:			
Code sections:			
Attachments:	1. Fiber Master Plan, 2. Power Point Presentation		

Date	Ver.	Action By	Action	Result
10/9/2018	1	City Council Adjourned Regular Meeting	approved	Pass

TO:
Honorable Mayor and Members of the City Council

THROUGH:
Bruce Moe, City Manager

FROM:
Sanford Taylor, Information Technology Director
Stephanie Katsouleas, Public Works Director

SUBJECT:
Receive the Fiber Master Plan Report and Consider Design/Construction as a Pilot Program (Information Technology Director Taylor).
DISCUSS AND PROVIDE DIRECTION

RECOMMENDATION:
Staff recommends that City Council receive the Fiber Master Plan (Attachment) and consider the deployment of a Pilot Program within one of the seven Fiber Network zones.

EXECUTIVE SUMMARY:
Cities across the country improved broadband fiber infrastructure to enhance City services, prepare themselves for the digital future, provide access to high speed internet to their residents, and provide improved economic opportunities for their businesses and other stakeholders. Manhattan Beach is also considering this initiative and has engaged Magellan Advisors to assist with the development of a Fiber Master Plan (FMP) that provides a framework and pro-forma estimate for becoming a broadband, connected city as a core utility.

The proposed Plan and business model is based on reaching ever parcel in the city with high speed broadband at minimum speeds of 1 gigabyte per second (1gbps). It includes Residential Fiber-to-the

-Home (FTTH) connections, as well as connections to businesses, anchor institutions, City facilities and infrastructure. Like the City's Water and Wastewater Enterprises, the framework also recommends that the City implement a Full Retail Model, which includes management, funding and operation of the network, which will provide the most control over City Internet offerings.

The estimated cost of implementing the Fiber Master Plan is comprised of construction and cabling for $50,419,355, lateral service connections for $20,486,400 and miscellaneous equipment for $2,115,000, for a total estimated cost of $73,020,755. The Plan also estimates a 4-year build out and achieving a 40% residential subscriber rate and a 25% business subscriber rate. The payback of the system is approximately 20 years at these take rates, which is a conservative estimate based on other cities' experiences nationwide.

The attached Fiber Master Plan and supporting PowerPoint presentation provide additional in-depth information in support of this staff report. They also provide examples and context for many of the terms used in this staff report, including Broadband, Smart City initiatives, the Internet of Things (IoT), Dig Once policies, etc.

FISCAL IMPLICATIONS:
If City Council decides to proceed with implementation of the Fiber Master Plan, staff recommends that City Council test the FMP's financial assumptions by developing and bidding construction design plans and specifications within one of the seven zones identified in the report as a pilot program. Staff estimates that $300,000 will be needed to design an area large enough to validate competitive, construction pricing estimates, which represent the largest share of project's total price tag. Should the construction portion of the financial model be validated, then the City could proceed with full implementation of a broadband network, which would include engaging in a loan (or series of loans) to finance construction and operation of the citywide, Fiber-to-the-Home/Fiber-to-the-Premise network. Proceeds from subscriber enrollment would ultimately be used to pay back the debt service of the loan(s).

If City Council directs staff to proceed with the proposed Pilot Program, a funding appropriation will be requested at the time of design consultant selection and award by City Council.

BACKGROUND:
During its March 1, 2016 City Council meeting, Council requested that staff return with a presentation on the benefits of a municipal broadband network for the City of Manhattan Beach. Shortly thereafter, at the April 19, 2016 City Council meeting, staff presented an overview on the benefits of building a municipal broadband network that would address Smart City initiatives and also potentially provide a new revenue stream for the City. Shortly thereafter, , staff issued a Request for Proposal (RFP) for consulting services to develop a comprehensive Fiber Master Plan for the City of Manhattan Beach. Magellan Advisors was ultimately selected to assist with the Fiber Master Plan effort and awarded a contract by City Council on June 6, 2017. Over the past year, Magellan has been working diligently with the City to develop and finalize a comprehensive Fiber Master Plan for the entire City, with the goal of reaching every parcel with 1gigabyte per second (1gbps), high-speed, broadband service at competitive pricing and more reliable service.

DISCUSSION:
Across the country, local municipalities are investing in their own broadband networks to improve quality of life within and promote economic opportunities for their communities. The City of Manhattan Beach, working together with Magellan Advisors, explored the opportunity of investing in its own

broadband infrastructure. The resulting Fiber Master Plan examines the existing broadband offerings in the City and provides options for improving the current broadband services citywide for all residents and businesses. It analyzes and outlines the best potential routes and provides a business model to implement a broadband network that best meets the community needs and better serves local businesses.

Development of the Fiber Master Plan was guided by the following principles to ensure a thorough and highly effective process:

- **Meet Stakeholder Needs and Demands**: Provide residents and businesses with affordable and high-quality internet access and digital network services, providing not only direct value to residents and businesses, but also improving local government performance;
- **Enhance Quality of Place with Infrastructure**: Work closely with public, private, nonprofit, and for-profit entities to capitalize fully on those investments; and
- **Enable Quality of Life with Applications and Content**: Focus on applications to enable economic, environmental, personal, and social improvements, resulting in a higher number of Internet-of-Things (IoT) applications and services for residents; better position the community in the digital economy; enable business retention, growth and attraction; and support anchor institutions and essential services (libraries, schools, health organizations, etc.) within the entire community.

Broadband Study Methodology
Various methods were utilized to understand the current and future broadband needs of Manhattan Beach, which included:

- Internal and external stakeholder interviews
- Online surveys
- Community focus groups
- Anchor institutions outreach
- Business entities outreach

Interviews with City department representatives, anchor institutions and other stakeholders indicated a strong desire for better broadband choices and clear support for the City to provide an alternative solution. It is worth noting that while the residential stakeholder group provided positive feedback during a public meeting, low attendance by businesses and anchor communities did not result in substantial feedback to statistically represent this stakeholder group. However, the online survey responses received provided significant feedback from residents and businesses about their current broadband experiences. The City received 643 responses from Manhattan Beach households and 121 responses from local businesses. The results revealed that residents and businesses were dissatisfied with the internet costs and speeds offered by incumbent Internet Service Providers (ISPs) and strongly desired that an alternative solution be provided by the City.

The Fiber Master Plan development also included completing a current market assessment to better understand how the City might address the broadband needs and demands of the community. The assessment's goal included determining how well available products, services and offerings meet the community needs, as well as assessing the City's standing in comparison with other cities in terms of commercial broadband availability. There are two major broadband service providers servicing Manhattan Beach: Spectrum (Charter) Cable and Frontier Communications. The surveys and focus

group discussions revealed that about half of the participants: 1) feel that those two providers do not meet their internet needs in speed or price, and 2) expressed concerns related to limited or lack of providers' future improvement plans, lack of choice, high prices, contract constraints and potential throttling by the carriers (i.e., loss of net neutrality).

Network Design Considerations

Based on community and City staff input, the short- and long-term fiber optic network needs identified by stakeholders include:

- Affordability
- Fiber-to-the-Home (FTTH) broadband with minimum 1gbps service
- Business users with 1gbps or greater dedicated service
- City facilities with 1-10gbps service
- Anchor institutions (schools, libraries, medical and healthcare providers, public safety, and other community support organizations and agencies providing outreach, access, equipment and support services)
- Smart City applications and services
- Wireless/cellular backhaul (i.e., 5G)
- Future growth and expansion of public services
- Redundancy and reliability

The proposed fiber optic network divides the City into seven (7) zones (see Figure 26 on page 46 in the FMP) based on terrain, topography, existing assets in the public right-of-way and main traffic corridors. The selected deployment method is all underground via open-trench and/or micro-trenching as the best, long-term and most streamlined option when compared with aerial and other installation methods.

Network Business Model

In addition to building the fiber network, the initiative also includes alternatives for the management, funding, and operation of the network. After considering a variety of financial models used by other cities, the Manhattan Beach FMP recommends a Full Retails Solution as providing the most control over the broadband network and the potential revenue stream for construction, management and operations of the network.

Similar to the City's water and wastewater utilities, the Full Retail Model scenario is based on the assumption that the City builds, owns, maintains and provides full retail services to residents, businesses, and anchor institutions. The capital cost of the network includes:

- Core Network (construction and cabling)
- Laterals for residential homes and businesses (stakeholder connections)
- Cost to connect to the Point-of-Presence (POP) for internet access

If City Council approves implementation of a broadband network, the Fiber Master Plan proposes that the network buildout occur in phases over a 4-year period in alignment with the seven City zones. Completion of each phase will generate revenue to offset upcoming construction pricing, thus reducing the financial burden on the City.

The Plan estimates that the total cost to complete a fiber buildout that reaches virtually every parcel

in the City, including all business/commercial corridors, is $73,020,755. This includes construction and cabling costs of $50,419,355; lateral costs of $20,486,400 and equipment costs for $2,115,000. The Residential FTTH model anticipates an approximately 20-year payback on the system at a 40% take rate for residential services, which is a conservative representation of the industry standard. The model also projects the network will generate an estimated $6.12 million in annual revenue by 2024 (for complete financial pro forma, please see Appendix D, p. 81 in the FMP). Similarly, the Business take rate is expected to be 25% and generate approximately $1.2 million in annual revenue for businesses. By 2022, the model also predicts another $302,000 in annual revenue will be generated by cellular providers' use to connect to the City's dark fiber for network connectivity leases. These revenues will be used for debt service and to fund operations and maintenance of the network.

As the project progresses, the financial assumptions will be validated and updated with actual service rates and true market uptake after completing construction of each phase. Even though the model's estimated construction costs are conservative and based on other similar projects, they are not actual construction costs. It is important to note that the financial model does not include potential costs savings that may be achieved through grants (for example, traffic signal improvements), Dig Once policy and Joint Trench opportunities, and communications fees currently paid by the City to commercial providers that would be discontinued. It also does not include lease revenue opportunities through use of smart poles.

Management, maintenance and support of the network may be furnished by third-party vendors under contract with the City (i.e., staff augmentation) or performed in-house. The operational services that will be needed include network support and monitoring, customer support, marketing and outreach, billing and accounting, network backhaul, and network installations and upgrades. The model summary is outlined below.

- Total Number of Households: 15,000
  - Take Rate: 40% (6,000), and increasing over a 4-year period
  - Price: $85/monthly, 1gbps internet service only
- Total Number of Businesses: 1,000
  - Take Rate: 25% (250), increasing over a 4-year period
  - Price: $1,295/1gbps dedicated (10%); $399/1gbps non-dedicated (90%)
- Total Vertical Assets: 900 poles
  - Take Rate: 7% (63)
  - Price: $400/month lease backhaul
- Network Build
  - 4-year phased buildout
  - $50.5 million estimated for core build and cabling
- Subscriber Connections
  - Phased over a 4- to 5-year period, and then ongoing
  - $3,300/subscriber for last mile and equipment (conservative average)
  - $20.5 million at a 40% take rate
  - The model does not account for underground ready homes which will reduce the overall cost
- Operation Costs
  - All operations may be outsourced with the exception of the broadband manager.
  - $1.8 million/year estimated outsourced operation cost for customer support, network monitoring and maintenance, installations, network backhaul, upgrades

- Funding Assumptions
  - 20-year term
  - 2.5% interest rate
  - All funds borrowed; potential cost savings include Dig Once, grants, repurposed assets, etc.
- Reserve funds and funding levels (typical percentage rates for fiber-optic utility)
  - Established after the network is fully operational and servicing customers
  - Operating Reserve Fund: 0.5% of total operating expenses
  - Renewal Reserve Fund: 0.2% of total invested capital
  - Capital Expansion Fund: 0.2% of gross revenue

Broadband Network Proposed Next Steps

1. **Review and adopt the Fiber Master Plan:** City Council to review and provide direction on implementing the recommendations contained in the Plan; designate the broadband network as a City utility and consider initial funding and resources (e.g., CIP and General Fund), (October 2019).

2. **Implement public policies in support of the broadband network effort to control costs and create communication standards:** In addition to Dig Once, other policies include a Wireless Ordinance, Master License Agreement, etc. (ongoing, 2019).

3. **Develop a Pilot Program to test FMP assumptions:** Prepare a plan for the staging, budget, timeline, and implementation of the Pilot Design Construction Engineering Plan (design is estimated to cost up to $300,000); issue a Request for Proposal (RFP) for design and preparation of construction documents; release construction bid documents and obtain market pricing (Now through June 2019).

4. **Refine the Fiber Master Plan:** Based on the results of the Pilot Design Engineering Plan bid results, review the Fiber Master Plan and financial assumptions and make adjustments accordingly (June - July 2019).

5. **Report Pilot Program bid results to City Council:** The bidding results will be used to discuss and approve the next stage of the Fiber Master Plan implementation, including potential construction based on the received bids (August 2019).

6. **Develop an Implementation Plan for citywide broadband deployment and network management using the Fiber Master Plan and Pilot Program results:** If deciding to move forward, the Implementation Plan will also ensure other short-term and long-term initiatives are considered, including future use of security cameras, sensor networks, traffic cabinets, smart light poles, and other connectable devices within the Internet of Things (IoT) and Smart City applications (late 2019, ongoing).

7. **Proceed with the proposed Business Plan citywide:** The plan will offer a full retail broadband solution to resident, businesses, City facilities, anchor institutions and for backhaul from vertical assets; it provides a potential revenue to supplement construction and management costs of the network and provides the City with the highest level of control over broadband solutions (late 2019, ongoing).

8. **Issue a Request for Proposal (RFP) and select a firm to design and bid construction the entire network:** The design vendor will have not only relevant previous experience with fiber network design but also a clear understanding of the project's needs and goals (late 2019 - December 2020).

9. **Establish operating support systems of the network:** The City may consider a telecom-centric facility management system providing documentation, inventory, work orders, and other information relevant to the physical plant assets of the network; the cost of the system is included in the proposed capital budget (2021, ongoing)

10. **Issue an RFP for a multiyear Operations and Maintenance (O&M) contract to provide emergency fiber infrastructure support and expand the network if needed:** The contractor will maintain the infrastructure, respond to emergency fiber cuts and service outages, and provide a full range of services related to the network operations and maintenance (2020, ongoing).

In conclusion, staff recommends that the City Council approve the Fiber Master Plan presented and provide direction regarding Fiber Master Plan implementation, including consideration of allocating $300,000 for the deployment of a Pilot Program within one of the seven Fiber Network zones.

Upon Council direction, the RFP process for selecting a consultant to undertake the network design process of the Pilot area will begin.

PUBLIC OUTREACH/INTEREST:
The following public engagement' methods have been utilized to understand the current internet offerings and future broadband needs of the community:

- Posted a Broadband Study Survey Page on the City website
- Completed Mailing Campaign to Residents, Businesses and Community Anchor Entities (October-November 2017)
- Conducted Broadband Study Online Survey for Residents and Businesses/Community Anchor Organizations (October-November 2017)
- Broadband Study Business Focus Group (October 25, 2017)
- Broadband Study Residential Focus Group (November 2, 2017)
- Stakeholder Interviews
- Community Telecommunication Workshop (September 26, 2017)

ENVIRONMENTAL REVIEW
The City has reviewed the proposed activity for compliance with the California Environmental Quality Act (CEQA) and has determined that there is no possibility that the activity may have a significant effect on the environment; therefore, pursuant to Section 15061(b)(3) of the State CEQA Guidelines the activity is not subject to CEQA. Thus, no environmental review is necessary.

LEGAL REVIEW
The City Attorney has reviewed this report and determined that no additional legal analysis is necessary.

Attachments:

1. Fiber Master Plan
2. Power Point Presentation