



DATE: July 18, 2017
TO: Mayor and City Council
FROM: City Manager
SUBJECT Adoption of Final Fiber-Optic Master Plan

RECOMMENDATION

That Council approves the attached resolution (Attachment II) to adopt the Fiber-Optic Master Plan.

SUMMARY

The development of a fiber-optic network is a complex process that requires strategic planning to ensure the system is well designed, subscribed to, and managed. In April 2016, the City initiated the formulation of a Fiber-Optic Master Plan (Fiber Master Plan) to collect the data needed to analyze and recommend the most feasible path and business model to deploy a network with an initial emphasis on serving businesses in the Industrial Technology and Innovation Corridor. Staff presented the Draft Fiber Master Plan to [Council on January 24, 2017](#) and facilitated an additional discussion with the Council Technology Advisory Committee (CTAC) on April 3, 2017. The draft plan was revised based on Council and public feedback.

The final Fiber Master Plan is attached (Attachment III). Also attached is a Change Log documenting responses to comments and specific report revisions (Attachment IV).

BACKGROUND

Work Task IS3.C of the [Economic Development Strategic Plan \(FY 2014-2018\)](#) tasks staff to “explore a public/private partnership to secure broadband/fiber optic network in the industrial area.” To achieve this task, which is programmed over the duration of the five-year plan, Economic Development staff developed, and is actively executing, a comprehensive work plan designed to meet near- and long-term needs. Core elements of this program include:

1. Collecting data on existing broadband resources and business needs;
2. Engaging with technology and service providers to identify each organization’s plan or willingness to expand service to the Industrial Crescent and explore potential public-private partnerships;

3. Pursuing funding opportunities including federal economic development and public works grants for network design and construction; and
4. Developing a Fiber Master Plan to guide the City in planning, budgeting, and implementing a telecommunications infrastructure project.

Staff outlined this programmatic approach and presented regular activity updates at meetings of the City Economic Development Committee ([September 14, 2015](#); [February 1, 2016](#); and [October 3, 2016](#)) and the Council Technology Application Committee (October 15, 2015; [December 9, 2015](#); and [November 3, 2016](#)).

On [February 23, 2016](#), Council authorized the City Manager to negotiate and execute a professional services contract with consultant CTC Technology and Energy (CTC) to prepare a Fiber-Optic Network Master Plan. The contract was executed on April 6, 2016.

Similar to the City's General Plan, the Fiber Master Plan serves as a visioning document that sets the overarching goals and objectives for deploying a fiber-optic network in the Industrial Corridor. Specifically, the plan:

- Provides the City with information and data to set its goals and objectives to facilitate the design and deployment of a fiber optic network in Hayward;
- Presents and evaluates the current supply of broadband communications assets, products, and services in the City;
- Provides an inventory and assessment of existing City-owned assets and infrastructure required to support deployment of a fiber optic network;
- Defines and evaluates potential fiber optic network routes and requirements;
- Identifies potential impacts of a fiber optic network, including impacts on City right-of-way (ROW), City-owned conduit, streetlight poles, traffic lights, existing fiber systems, and other real property;
- Defines services and technologies to be offered on the fiber optic network;
- Presents an engineering study, network design, and deployment cost model;
- Outlines a potential phased approach to deliver the network; and
- Evaluates potential business models to build, operate, and make "last-mile" connections to a fiber optic network.

Over the past fifteen months, CTC and staff have worked closely to produce a Fiber Master Plan that thoroughly analyzes and recommends the best potential approach and business model to deploy the High-Speed Hayward system. This extensive work program incorporates the products of data collection and analysis, market research, interviews with staff, an extensive public outreach initiative targeting the business community in the Industrial Crescent and feedback from Council.

Staff completed multiple reviews of Master Plan iterations and presented the Draft Master Plan to [Council on January 24, 2017](#). Staff facilitated an additional discussion with the Council Technology Advisory Committee (CTAC) on April 3, 2017. The Draft Master Plan was revised based on Council and public comments. The Final Master Plan is attached for Council

review and adoption. Changes to the plan and consultant responses to comments are summarized in Attachment III.

Adoption of a Dark Fiber Business Model

The most significant recommendation of the Fiber Master Plan is the adoption of a business model to deploy a fiber optic network that meets the community's goals and reduces risk to the City. At both the Council Work Session (January 24, 2017) and CTAC meeting (April 3, 2017), Council expressed support for adopting a Dark Fiber business model. The Dark Fiber business model is essentially a public works model, in which fiber is considered a type of infrastructure that the City manages and maintains. This approach involves the City installing the conduit and fiber required to deploy a network and providing one or more private partners with a license or lease to use the City-owned fiber. This partner then "lights" the fiber and offers services to end users.

In the Dark Fiber business model, the City would be responsible for all construction and maintenance of the conduit and fiber, but would not incur costs of managing network electronics, customer premise equipment, marketing or customer contracts. This model assumes the private partner will make a substantial investment in network electronics and lead the marketing, advertising and support responsibilities associated with providing service to end users. This approach will leverage City assets and create the public-private partnerships called for in the Council-adopted Economic Development Strategic Plan.

ECONOMIC IMPACT

The job creation impacts attributable to this initiative cannot be estimated. However, information collected through the Economic Development Division's Business Engagement Program since September 2014, as well as the results of the business surveys and interviews conducted during the Master Plan formation process, indicates there is demand for broadband connectivity for small to medium-sized businesses within the advanced industries sector. Advanced industries, including firms in the biotechnology, construction and engineering, information and business services, and manufacturing sectors, have expressed a need for such service to help them grow and remain competitive.

The ability to add this infrastructure to Hayward's Industrial Crescent will also serve as a competitive advantage over other communities. Improved broadband connectivity in the City's industrial areas will support business attraction efforts. While the existence of fiber is only one of many site selection factors (such as lease rents, building configuration, traffic patterns, etc.), being able to market Hayward's broadband connectivity to the business community at-large not only helps satisfy a site selection criterion, it will strengthen the City's reputation as a center for innovation and growth.

FISCAL IMPACT

The formulation of the Master Plan follows the \$2.74 million grant award from the U.S. Department of Commerce - Economic Development Administration. The grant funding enables the City to install conduit and fiber optic cables in the Industrial Crescent to construct the backbone of the fiber optic network. This backbone will consist of existing infrastructure and newly constructed conduit and fiber. These grant funds served as the basis for the engineering design and were included in the cost estimate developed by the consultant and presented in the Master Plan.

Staff administering the EDA grant is developing an implementation plan that identifies project staffing resource requirements, sources for the required matching funds, and project milestones (See April 25, 2017 Council Meeting Agenda Item entitled, "Approval and Acceptance of EDA Grant 07-01-0286: High Speed Fiber Optic Network Installation project, aka High Speed Hayward"). Staff has identified some right of way properties for possible contribution towards the City's matching portion of the project; once an appraisal has been completed on the right of way properties, the information will be presented to Council for consideration as a no additional cost option to meet the required Federal grant match and reduce the impact to the General Fund. Additionally, Council approved a reallocation of \$350,000 of Economic Development funds previously authorized towards the project during the FY 2017 Mid-Year Budget process.

PUBLIC CONTACT

Development of the Fiber Master Plan included a thorough outreach effort to the City's industrial business community. This work included an online survey and telephone interviews with business representatives and organizations, property owners and other public and private stakeholders. The survey was sent by the City and by the Hayward Chamber of Commerce to over 2,600 businesses in July 2016. There were 259 respondents. Of these 259 respondents, 24 were further contacted for in-depth telephone interviews.

NEXT STEPS

Following adoption of the Master Plan, staff will initiate scoping for the timelines, specific resource requirements, and funding sources for implementing the near-term and long-term actions outlined in the final plan. Specific actions shall include:

1. Developing a Dig-Once Policy: A "Dig-Once Policy" would require any excavation plans fitting specific criteria to install municipal fiber conduit or fiber, unless the City opts out. This would allow the City to leverage public and private projects to expand the City's conduit and fiber network.
2. Conduct an Extensive Infrastructure Audit and Implement Records Management System: A thorough evaluation and compilation of all City fiber assets and their condition is key to accurate planning and management. While the Master Plan involved a major data collection effort, more detailed information and a formalized

record keeping system will be necessary as a robust fiber optic network is constructed. For example, documenting the network's fiber runs and individual strand usage is crucial to managing leases and expanding the system.

3. Engage the Private Sector through a Procurement Process: Staff is currently developing a Request for Information to signal to the private sector that the City is willing to invest in infrastructure and is seeking partners to help shape the technical design and operation of the system. San Leandro Dark Fiber, the service provider of the City of San Leandro's fiber system ("Lit San Leandro"), has been working with the City to negotiate a lease as part of the Fiber Grant. However, it may be necessary to solicit other marketplace actors to ensure the City achieves its goals and maximizes the return on investment.
4. Progress Reporting & Consultation with Council, CTAC: Staff will provide regular updates on progress on the Master Plan and EDA grant implementation to Council and CTAC. Staff administering the grant brought a discussion on the specifications of the fiber infrastructure following interviews with several ISPs to the June CTAC meeting.

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