CONNECTIVITY PLAN

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INTRODUCTION

In today's world, Internet connectivity is a basic building block towards the creation of a responsive and supportive community. San Francisco's municipal and county government relies heavily on the Internet to communicate with residents and to provide modern services.

Government's role in this space is to expand Internet connectivity to all public employees and to provide sustainable services. First and foremost, the City & County of San Francisco must create a secure and reliable communication network for first responders and emergency services. The structural capacity of the City Fiber Network can support modern communications to City departments. Modern communications includes correspondence such as video conferencing, voice calls, and processing large volumes of multimedia content simultaneously. With modern communications, City departments can more efficiently provide services to residents.

As a public entity, the City & County of San Francisco must also help residents and visitors obtain Internet access without obstacle, especially as more public services develop online portals. Through the City wireless network (#SFWiFi) and the Community Broadband Network, more visitors and residents can access the Internet free of charge. Additionally, San Francisco International Airport (SFO) offers free wireless Internet (#SFO FREE WIFI) in the airport. However, broadband in public spaces does not replace broadband to the home, and the City must evaluate its role in helping San Franciscans out of the Digital Divide as well as improving San Francisco's standing among world-class cities. This version of the Plan does not address the City's role in broadband choice for residents and businesses due to insufficient time based on the publishing deadline of February 2015.

The Connectivity Plan is the roadmap for how the City will enhance connectivity over the next five years. The Plan is primarily focused on developing a five year plan for connecting City buildings, Dig Once, and #SFWiFi.

CONNECTING CITY BUILDINGS

Background and Current State

In 2002, the Department of Emergency Management issued a bond which, among other things, funded the construction of a fiber network to connect core public safety facilities. The fiber network was originally designed to ensure that emergency communications between these sites function even in an emergency. However, because of the structural capacity of fiber-optic cables, the City invested in expanding the City Fiber Network to offer additional services, and the Department of Technology (DT) became its governing authority.

Currently, the City Fiber Network extends approximately 170 miles across San Francisco, connecting 231 City buildings. The City buildings not connected to the Fiber Network use private Internet Service Providers (ISPs) for their connectivity needs.

Goals and Objectives

Following are the goals and objectives for connecting City buildings:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Connect all eligible* City buildings to the City's Fiber Network
Improve Access and Transparency	Establish a secure, reliable, and high-performing Internet service among City buildings

*Eligible buildings must demonstrate need (ie currently paying for internet services) and meet payback requirements.

The Case for a Municipal Owned and Managed Fiber Network

Although City buildings can receive Internet access through private providers, access to the City Fiber Network fulfills several strategic goals.

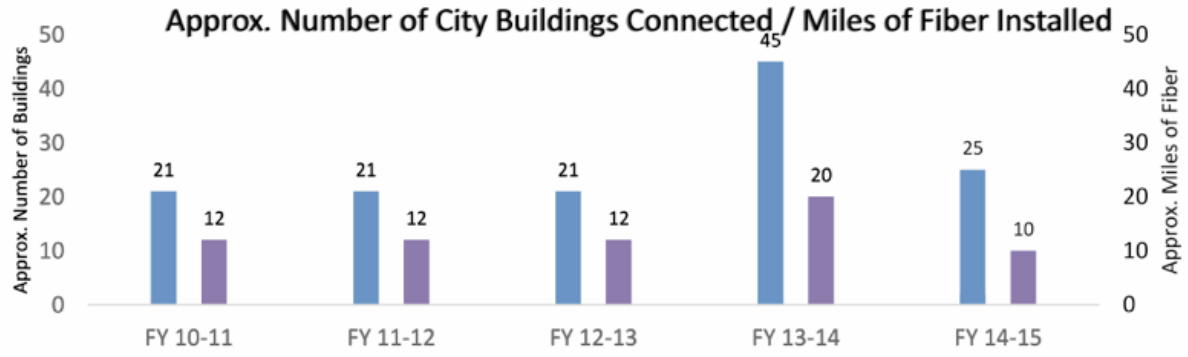
1. Improve access, collaboration and efficiency A comprehensive Fiber network will improve access to internal digital resources (Intranet, internal applications, network drives, servers), enhance collaboration through shared internal services, and increase efficiency by reducing workarounds.
2. A secure and reliable public safety network During a disaster, stable and reliable communication is critical for first responders and emergency management to respond effectively. Any communication system used by public officials must be resilient in an emergency. This also includes having sufficient redundancies in case other systems fail.
3. Strengthen Cyber-Security An internally managed network would ensure extra safeguards for secure communications. The added control of a city-owned and managed network makes it possible for DT to tailor the system to government needs, a characteristic that is not always available through private providers.
4. Scalable performance The City can provide much higher capacity through its Fiber Network than private providers. If the needs of a City agency change, there are minimal costs to increase or decrease capacity

City Fiber Network Plan

Schedule

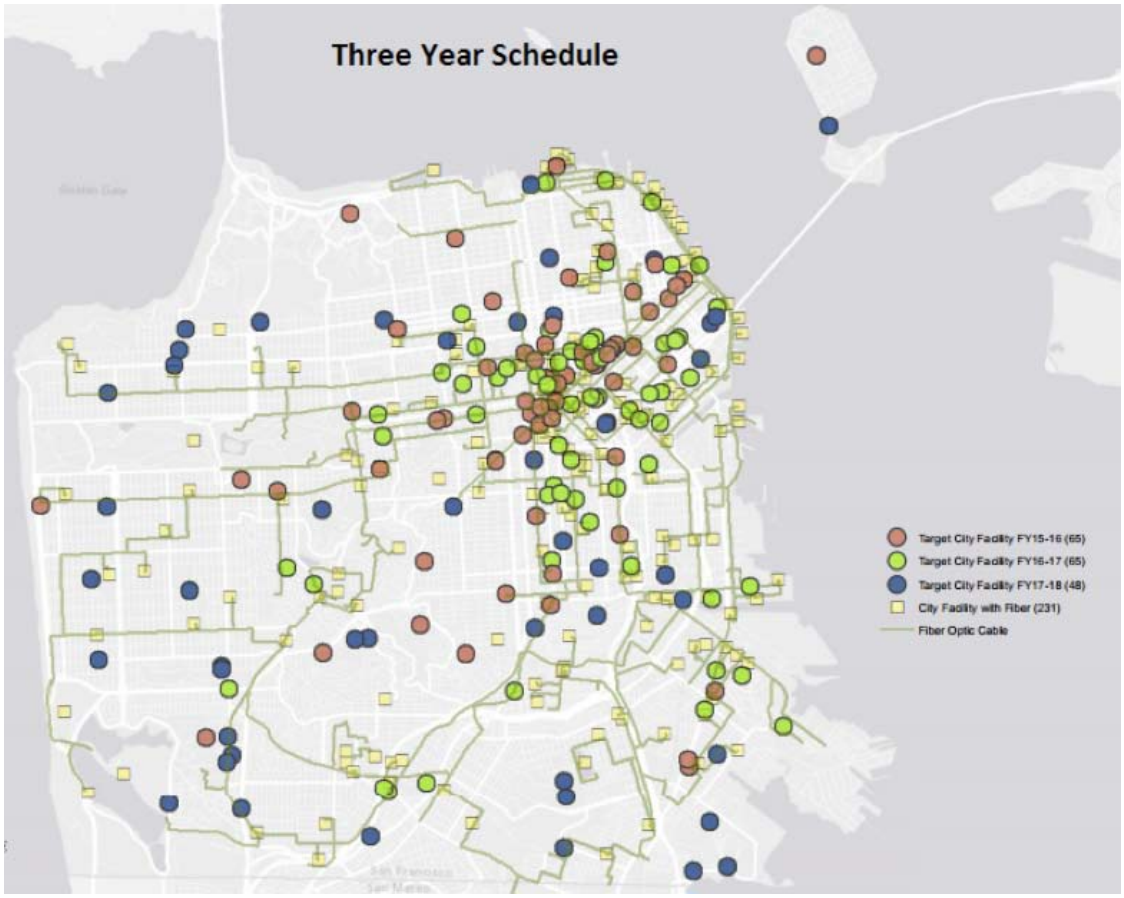
The goal of the Plan is to have every eligible City Building connected to the Fiber Network. Currently, 231 City buildings are connected to the Fiber network with approximately 178 that are left remaining. The 178 buildings were selected based on the following criteria: (1) any City facility currently not on the City Fiber Network and are (2) paying for Internet services which is tracked centrally by DT. Of the 178 buildings remaining some may not be eligible for connection to the City Fiber Network due to lack of need or lease termination in the near term.

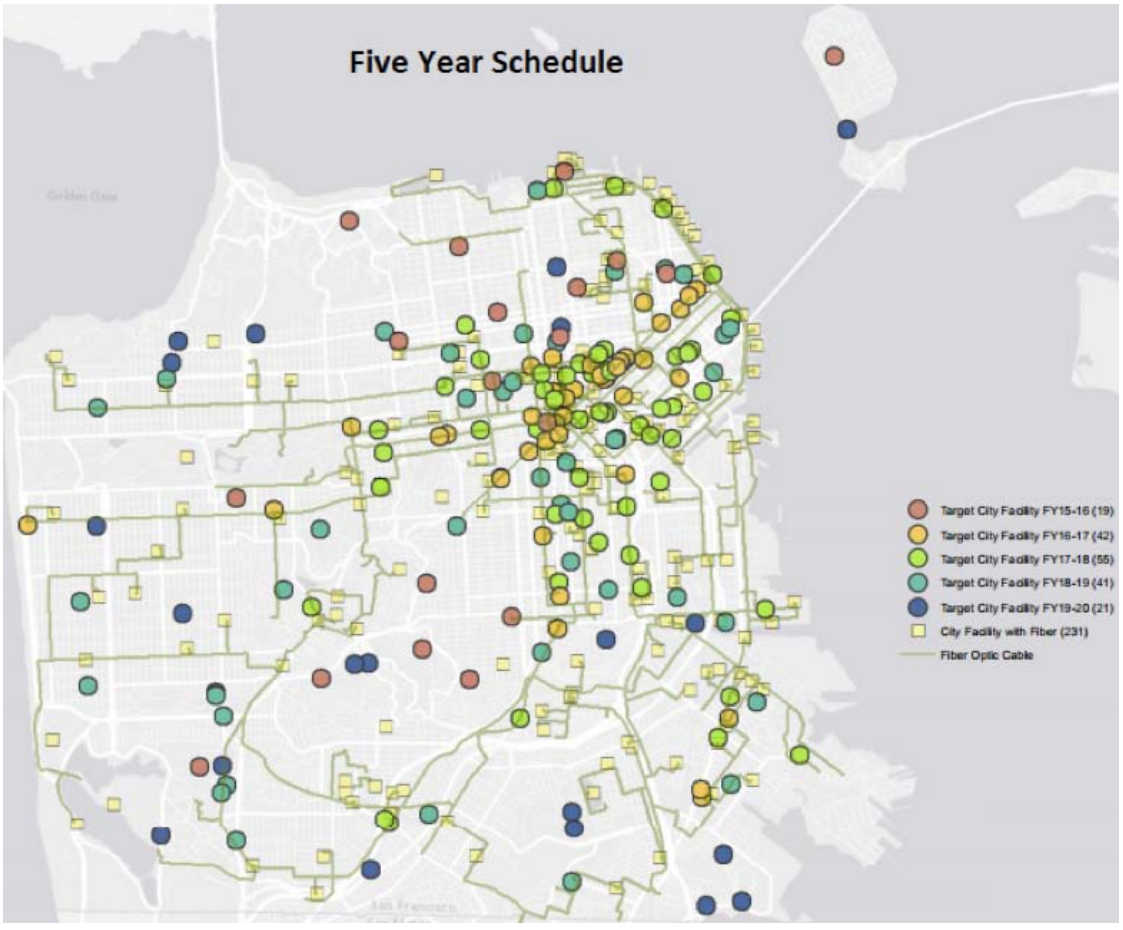
In order to connect all City buildings in five years, the City must connect on average 35 buildings annually. If the City chooses a more aggressive schedule of three years, the City must connect on average of 59 buildings annually. The City's estimated operational capacity is approximately 30 buildings connected annually. This is a more conservative estimate than what FY14 and projected FY15 data would indicate as it accounts for staffing changes that support a more responsive and sustainable delivery of services.



The Digital Steering Committee has developed a set of criteria to define eligibility and prioritize which buildings should be connected next.

1. Connectivity Need. When determining which buildings to connect, the City must consider a department's need based upon existing private Internet services. In determining the order of building connectivity, the City must prioritize public safety. Departments that also connect a large number of the general public to the Internet are a high priority.
2. Proximity to Existing Fiber Lines. A major factor in the cost of constructing new fiber lines is the distance from existing resources. The closer a building is to existing fiber lines, the lower the initial construction costs will be for the City.
3. Payback Period. Evaluating the benefits from the City Fiber Network is a critical component to evaluating City fiber extension projects. The City will analyze what a building candidate would gain from joining the network against what is presently uses, based on both performance and costs.


Three Year Schedule
Target City Facility FY15-16 (65)
Target City Facility FY16-17 (65)
Target City Facility FY17-18 (48)
City Facility with Fiber (231)
Fiber Optic Cable


Five Year Schedule
Target City Facility FY15-16 (19)
Target City Facility FY16-17 (42)
Target City Facility FY17-18 (55)
Target City Facility FY18-19 (41)
Target City Facility FY19-20 (21)
City Facility with Fiber (231)
Fiber Optic Cable

Budget

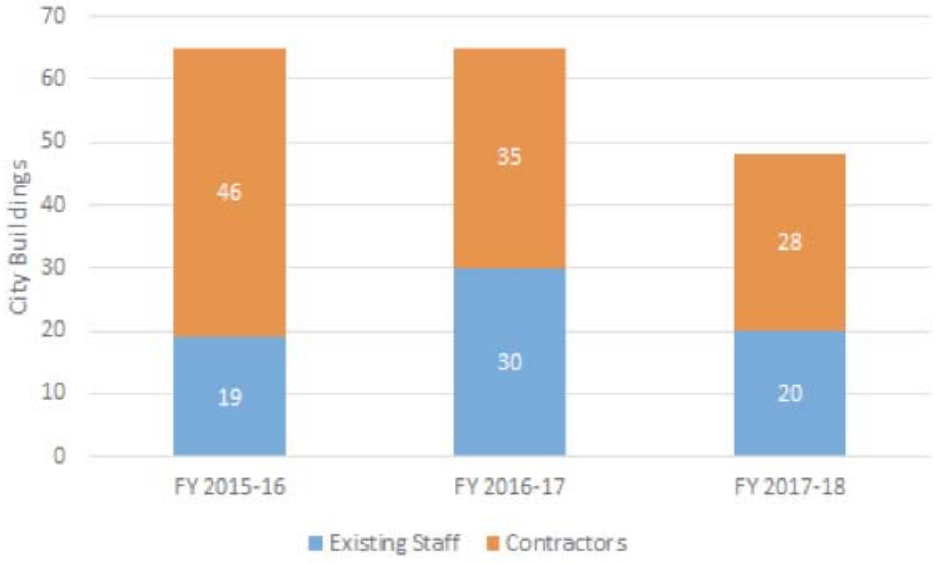
The budget estimate below is based on the assumption that DT will continue to receive the same level of annual General Fund allocation and the same level of project-based funds which have supported its estimated annual capacity of connecting 30 buildings a year. In the first year, the Steering Committee may refine these estimates to reflect more recent data and further analysis.

Based on historical costs, the estimated average construction cost per building is $40,000 including labor and materials. No costs were attributed to ongoing maintenance as this would be managed by existing staff and budget. In deriving the cost to connect a building, the Digital Steering Committee agreed that a cost estimation using a large sample of historical data was preferred over estimates derived from site surveys due to the cost and time required for the latter. A conservative reserve of 25% was added to the construction cost which reflects the lower end of infrastructure reserves varying from 25-50% of construction costs. Reserves are added to large infrastructure projects recognizing that there are unforeseen complexities and challenges such as blocked paths, lack of usable conduit, and construction projects.

Over a three-year period, the Plan estimates additional costs of $5.45M for connecting all eligible City buildings to the Fiber Network which does not reflect the City's existing operational capacity costs. FY17-18 has fewer buildings connected than previous years which reflects the fact that additional fiber deployment is required due to their increasing distance from the existing Fiber Network.

Three Year Budget

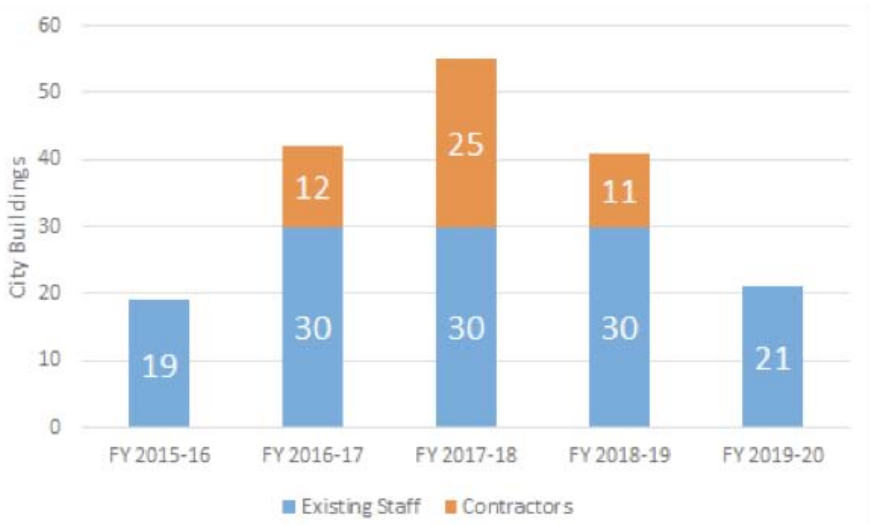
	FY 2015-16	FY 2016-17	FY 2017-18
Construction Cost (Contractors)	$1,840,000	$1,400,000	$1,120,000
25% Reserve (based on Construction Cost)	$460,000	$350,000	$280,000
Ongoing Maintenance	0	0	0
Total Cost	**$2,300,000**	**$1,750,000**	**$1,400,000**



Over a five-year period, the Plan estimates $2.4M for connecting all eligible City buildings to the Fiber Network which does not reflect the City's existing operational capacity costs. FY15-16 prioritizes 19 public safety buildings which is less than future years in terms of buildings connected. The smaller number of facilities reflects the fact that additional fiber deployment is required due to their distance from the existing Fiber Network. Also of note is FY19-20 where the number of connected buildings drops to 20. This occurs for the same reason as the drop in productivity as FY15-16.

Five-Year Budget

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Construction Cost (Contractors)	0	$480,000	$1,000,000	$440,000	0
25% Reserve (based on Construction Cost)	0	$120,000	$250,000	$110,000	0
Ongoing Maintenance	0	0	0	0	0
Total Cost	**0**	**$600,000**	**$1,250,000**	**$550,000**	**0**



Cost Savings

The Department of Technology oversees all private telecom billing (voice and data services) for every department. Based on this data, our City currently spends approximately $1.3M annually on Internet services which amounts to $3.9M in potential cumulative savings over the five year plan. These are potential cost savings, as many departments have chosen to keep two connections in support of ICT goal #1 of supporting, maintaining, and securing critical infrastructure. If the policy decision is made to keep redundant services, the estimated cost savings would be eliminated. The Steering Committee recommends a policy that departments will be required to terminate all private Internet services unless an exemption is approved by COIT.

Potential Internet Service Savings

Fiscal Year	Annual Savings	Cumulative Savings
FY 2015-16	$260,000	$260,000
FY 2016-17	$520,000	$780,000
FY 2017-18	$780,000	$1,560,000
FY 2018-19	$1,040,000	$2,600,000
FY 2019-20	$1,300,000	$3,900,000

Revenue Opportunities

Currently the City leases use of the Fiber Network to third parties generating $279,000 annually in revenue. With the continued growth of our City's Fiber Network our leasing opportunity increases as well. As it's difficult to predict market demand, the table below reflects three scenarios: no increase in revenue, 10% YoY growth in revenue, and 50% YoY growth.

A significant challenge to leasing access to our Fiber Network is the lack of records indicating conduit utilized, ownership, and conditions. Without this information, there may be legal restrictions that prevent leasing access to our Fiber Network. However, this gap in recordkeeping does not impact our City's current Fiber Network from a management and planning perspective. When planning expansion of the City's Fiber Network site surveys are conducted to assess if conduit exists, ownership, and feasibility for usage.

Fiscal Year	0% YoY	10% YoY	50% YoY
FY 2015-16	$279,000	$306,000	$418,500
FY 2016-17	$279,000	$337,000	$627,750
FY 2017-18	$279,000	$371,000	$941,625
FY 2018-19	$279,000	$408,484	$1,400,000
FY 2019-20	$279,000	$449,332	$2,100,000
Total Revenue	$1,400,000	$1,900,000	$5,500,000

Staffing Requirements

No additional staff recommended. Construction will be conducted by a mix of existing City staff and private contractors. Ongoing maintenance of the network will utilize existing staff and funding.

Recommendations

Based on the findings of the Connectivity Steering Committee, the following recommendations are proposed:

1. Establish performance standards
2. Utilize best practices for managing construction and ongoing maintenance of fiber assets
3. Ensure that any conduit used or built is tracked properly including ownership and restrictions
4. Issue policy to eliminate redundant private ISP lines unless exemption approved by COIT
5. Develop and implement leasing program

DIG ONCE

Background and Current State

The Mayor approved "Dig Once" legislation in 2014 which requires the City to install conduit during construction projects involving public right of way, when both financially feasible and consistent with the City's long-term goals[1]. Dig Once is triggered for any street or sidewalk excavations that are 900 ft or longer. This limits the scope of potential Dig Once opportunities primarily to PUC's Sewer System Improvement Program (SSIP), the Water System Improvement Program (WSIP), MTA transit and traffic projects and PG&E Gas projects.

Currently, our City is working on the rulemaking process for Dig Once and conducting a thorough engineering analysis of trenching options based on various scenarios.

Goals and Objectives

Following are the goals and objectives for connecting City buildings:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Deploy conduit for all eligible* opportunities through Dig Once
Improve Access and Transparency	• Reduce cost and time associated with expanding the City's Fiber Network • Facilitate deployment of communications infrastructure • Generate revenue by leasing conduit

*Eligible opportunities must have clear market value or be consistent with ICT goals.

The Dig Once Opportunity

With Dig Once, the City is deploying critical infrastructure that can be used in numerous ways, some of which may not have been created yet. Our City will be able to utilize this conduit to further its goal of expanding the Fiber Network. Additionally, other organizations will be able to lease our conduit to lower their costs and time to market. The primary goal of the ordinance is to "create more efficient delivery of telecommunications services for the public"[2] as well as to reduce the need for future excavation[3]. Once a road has been repaved, there is a five-year moratorium on excavating a repaved street.

1 Ordinance 220-14, Public Works Code - Instal lation of Communications Infrastructure in Excavation Projects, http://tinyurl.com/oaz2qly.
2 Ord. 220-14, Public Works Code Section 2.4.95(a).
3 Ord. 220-14, Public Works Code Section 2.4.14(a).

Five-Year Dig Once Plan

Schedule

The goal of the five-year Plan is to deploy conduit for all eligible opportunities through Dig Once. The Digital Steering Committee has developed a set of criteria to define eligible Dig Once opportunities:

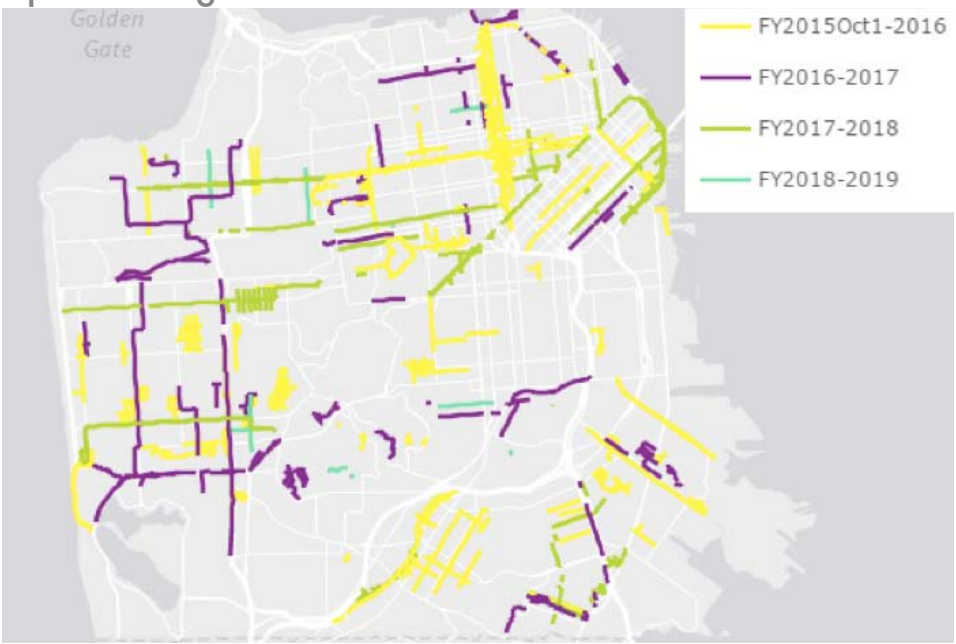
1. Supports ICT Goals. When determining which Dig Once opportunities to seek, the City must consider potential utilization for our City's Fiber Network. It will prioritize projects by taking into account existing fiber and conduit routes available to the City; the cost of constructing alternative fiber paths by attaching to utility poles or directional boring; and current and future needs of the City and public.
2. Market Demand. When determining which Dig Once opportunities to seek, the City must consider potential market demand that supports efficient delivery of telecommunications services for the public.

Below is an estimate of the miles of conduit possible based on scheduled excavations[1] and various funding scenarios. DT has hired a consultant to assist in evaluating projects according to the above criteria, as well as creating technical specifications for participating in trenches. DT expects this process to conclude by the end of April 2015.

Miles of Conduit

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total Miles
100% of Digs	56	45	41	40	40	222
75% of Digs	42	34	31	30	30	167
50% of Digs	28	23	21	20	20	111
25% of Digs	14	11	10	10	10	56

Map of all Dig Once Excavations Over the Next Five Years*



*Start date is October 2015 reflecting budget and procurement time

4 Scheduled excavation data is derived from the Department of Public Works' Acela Right of Way Management System, formerly Envista

Budget

Currently, the Plan does not have a budget estimate as we have not determined all eligible Dig Once opportunities. DT expects to have identified eligible Dig Once opportunities based on the aforementioned criteria at the end of April 2015. However, various funding scenarios are noted in the table below.

An alternative approach would be to only fund digs that will be utilized to facilitate the expansion of our City's Fiber Network (which is not entirely consistent with the goals of the legislation). This scenario was not modeled as there is no practical means of forecasting the exact placement of the Fiber Network when connecting City buildings. Expansion of the Fiber Network to additional City buildings requires site surveys based on the fact that there are many reasons why the most direct path is not feasible (unknown barriers, lack of conduit).

Five Year Budget Scenarios

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total Cost
100% of Digs	$5,322,240	$4,276,800	$3,896,640	$3,801,600	$3,801,600	$21,098,880
75% of Digs	$3,991,680	$3,207,600	$2,922,480	$2,851,200	$2,851,200	$15,824,160
50% of Digs	$2,661,120	$2,138,400	$1,948,320	$1,900,800	$1,900,800	$10,549,440
25% of Digs	$1,330,560	$1,069,200	$974,160	$950,400	$950,400	$5,274,720

The cost for one mile of conduit is approximately $95,000 ($18/ft* 5,280 ft/mile) for 2x4" conduit in a "dry" communications trench along with periodic pull boxes. This cost does not include excavations that require parallel trenches that would increase the cost. The City is in the process of a thorough engineering analysis of trenching options based on various scenarios.

Staffing Requirements

Administering the Dig Once program and managing telecommunications assets, such as conduit, innerduct, dark fiber and jointly owned utility poles will require additional staff. DT will need an additional $203,000 in FY15/16 and $270,000 in FY 16/17 and subsequent years. In addition, DT will need $30,000 in consulting help to configure conduit management software in the first year of the program.

Opportunity Costs

By pursuing alternative investments indicated above, there is an opportunity cost if the City decides to lay conduit after the excavation has occurred. The difference in cost for laying conduit per mile during an existing excavation ($95,040) is much lower than after ($554,400). The conduit costs per mile as noted in the table below were determined by the Department of Technology based on recent joint trench experience. In addition to the opportunity costs, there is a five year moratorium on future digs which may impact schedules and create other challenges.

Conduit Costs per Mile

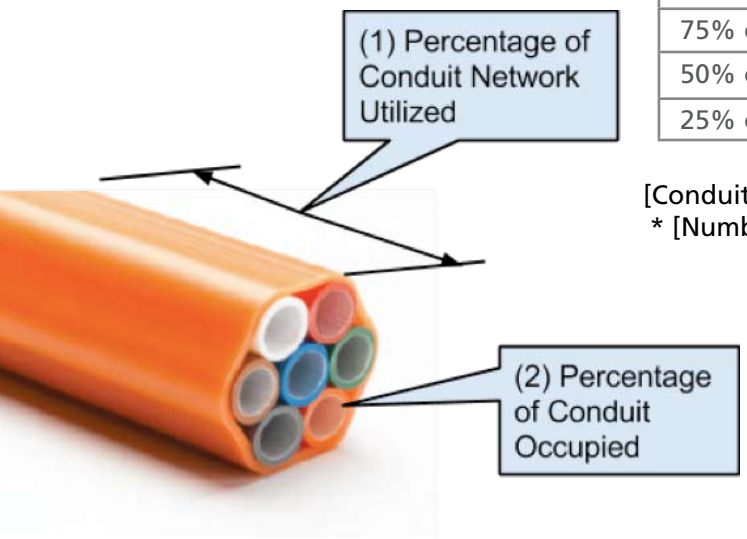
Component	Cost on Open Streets (No Trenching)	Cost including Trenching
Fiber Only	$79,200	$79,200
Conduit Only	$95,040	$554,400
Fiber + Conduit	$174,240	$633,600

The opportunity cost represents the cost to the City if it needed to re-open streets to place communications conduit.

Miles of Conduit

	Opportunity Cost/Mile	Miles without Conduit	Opportunity Cost
100% of Digs	$459,360	0	$0
75% of Digs	$459,360	56	$25,264,800
50% of Digs	$459,360	111	$50,988,960
25% of Digs	$459,360	167	$76,253,760

[Conduit cost including trenching - conduit cost no trenching] $459,360
* [Number of miles that conduit could have been installed but wasn't]



Revenue Opportunities

The annual revenue opportunity after year 5 is noted below at various leasing scenarios, assuming DT participates in all dig opportunities. Potential revenue is calculated along two dimensions: (1) percentage of conduit network leased and (2) percentage of conduit occupied.

Potential Annual Revenue

	Percentage of Conduit Utilized					
Percentage of Conduit Occupied		10%	25%	50%	75%	100%
	100%	$253,187	$632,966	$1,265,933	$1,898,899	$2,531,866
	75%	$189,890	$474,725	$949,450	$1,424,174	$1,898,899
	50%	$126,593	$316,483	$632,966	$949,450	$1,265,933
	25%	$63,297	$158,242	$316,483	$474,725	$632,966

Market rate for leasing conduit=$0.54 per foot per year for innerduct,
$1.08 per foot per year for conduit.

Recommendations

1. Establish performance standards
2. Utilize best practices for managing construction of conduit
3. Track conduit in asset management system
4. Develop and implement a performance based accounting model
5. Develop and publish conduit maps for leasing opportunities
6. Develop and implement leasing program

#SFWiFi

Goals and Objectives

Following are the goals and objectives for expanding #SFWiFi:

ICT GOAL	PLAN OBJECTIVES
Support, Maintain and Secure Critical IT Infrastructure	Provide #SFWifi to staff to help them work more efficiently and effectively
Improve Access and Transparency	• Deploy #SFWiFi in City buildings with public access • Deploy #SFWiFi in high-value public spaces within San Francisco City boundaries

Background and Current State

The City has prioritized free wireless Internet in major commercial areas and popular destinations. Major developments include:

2013

1. The City implemented free wireless Internet through #SFWiFi on three miles of Market Street.
2. Ruckus Wireless donated approximately $700,000 in networking equipment to support the expansion of #SFWiFi.

2014

1. The City received a $600,000 grant from Google, which expanded #SFWiFi to 32 public parks which were identified by Rec and Park staff and Supervisor Farrell's office.
2. SFO achieved its highest Airport Service Quality, an international airport service benchmark, rating in the WIFI category for its free wireless Internet service to passengers. High service quality ratings help SFO attract new airlines. For example, a recent new international service to Asia from SFO is estimated to have a $235 million positive economic impact to the region.

Although various departments also provide free wireless Internet service to their staff and the public under different brands, #SFWiFi is the standard name of the City's wireless service within San Francisco's City boundaries. In FY 2014-15 many of the existing wireless networks owned and maintained by City departments, like the San Francisco Public Libraries, will be transitioning from their individuals networks to use #SFWiFi.

At the Airport, the City will continue to provide #SFO FREE WIFI service. The service specifically targets the needs of air travel passengers at the Airport and contributes to supporting over $38M in yearly Airport Service Payments to the City.

The City will continue to work through various agencies to offer wireless Internet to expand coverage to more areas of San Francisco and to better capitalize on branding and services offered. DT will be working with SFO to together determine the strategy and feasibility of unifying the user experience to provide seamless connectivity between San Francisco and the Airport.

Two Year Plan to Expand #SFWifi

Schedule

The goal of the two year plan is to deploy #SFWiFi to City buildings that have been identified by our CIO in consultation with our City's leadership. The plan for #SFWiFi is limited to two years recognizing the limited data and experience our City has with this program as well as moving from a demand based model to a strategic approach in future years.

While all of the projects listed below are currently in progress or will be initiated in FY2015 they may not be completed by FY2016 due to unforeseen complexities and issues such as coverage challenges and capacity limitations. Some of the sites below encompass a wide and complex geography including buildings plus outdoor areas. Given the limited coverage of Wi-Fi Access Point (AP) of 100' to 200' radius, not only are many APs required to extend coverage ubiquitously but their placement must be determined - often through trial and error.

Once installed, APs must then be tested to ensure seamless coverage. Also, each AP must be connected to the City's Fiber Network to provide complete coverage. In some cases, it can be physically difficult to extend the Fiber Network into an area where coverage is desired. This may necessitate alternative backhaul approaches such as microwave. Additionally, ensuring that sufficient capacity exists is not trivial to achieve. Interference, legacy protocols, heterogenous equipment providers can all work against the goal of sufficient capacity.

Beyond expanding #SFWiFi to new sites, existing City wireless networks are currently undergoing a transition to be branded as #SFWiFi. In addition, public private partnerships are being pursued to adopt #SFWiFi for private wifi providers (eg small businesses, museums).

Budget

The two-year plan estimates a cost of $1.3M for initial build which includes labor and materials plus a reserve of 25%. Ongoing maintenance costs will utilize existing staff and funds. The cost estimates below were calculated based on FY13 and FY14 data using [total cost] / [total sites] to get a unit cost of $31,000 for each site which includes labor and materials. Operations and maintenance costs are currently not known as our City has not completed the anticipated useful life span of APs and other equipment. While material costs can be estimated based on anticipated lifespan, even this is difficult as the number of APs are not known in advance for a specific site. Additionally, labor costs for ongoing maintenance are difficult to estimate without any prior experience. In the first year, the Steering Committee may come back and refine these estimates which reflects the data and information available at the time of this plan.

PROJECT	ESTIMATED COST
City Hall	Corrently funded
HopeSF • Sunnydale • Potrero Hill Annex • Potrero Hill Terrace • Hunters View • Alice Griffith	$155,000
Dolores Park	Currently funded
West Sunset Park	Currently funded
1 South Van Ness	$31,000
28 Fire Stations	$868,000
TOTAL	$1,054,000
TOTAL + Reserve of 25%	$1,317,500

Staffing Requirements

No additional staff recommended. Installation will be conducted by a mix of existing City staff and private contractors. Any ongoing maintenance of #SFWiFi will utilize existing DT staff and operational budget.

Recommendations

1. Establish performance standards
2. Move from demand based model to strategic
3. Adopt industry standard usage measures
4. Utilize best practices for managing installation and maintenance
5. Track #SFWiFi assets in an asset management system
6. Standardize equipment provider to reduce management and maintenance complexity
7. Develop and implement an accounting model for initial and ongoing costs
8. Publish real-time map of #SFWiFi locations for staff and public

Public Connectivity

Background and Current State

Five years ago, San Francisco's Board of Supervisors resolved that by 2015, 90% of San Francisco households would have broadband connectivity at home (SF Board of Supervisors 2010). The City is only two percentage points shy of this goal (under the previous FCC definition of broadband), but the remainder of non-users skews toward low-income families, minorities, the unemployed, youth, the elderly, and those living with disabilities (GoConnectSF 2014). The lack of Internet access is also intergenerational; 16% of San Francisco Unified School District (SFUSD) students[1] do not have a computer with a home Internet connection.

The City's public access efforts include #SFWiFi, at commercial corridors, recreation centers, parks, public libraries, and other public areas. #SFO FREE WIFI will continue to provide service to the Airport and provide the critical link to our millions of visitors. Additionally, the City's Community Broadband Network (CBN) provides free Internet access to San Francisco Housing Authority buildings and their residents. The CBN also connects 22 different community centers, apartments, and senior centers which are part of the City's Department of Aging & Adult Services' (DAAS) digital literacy programs.

San Francisco's Public Library (SFPL) system and San Francisco Unified School District (SFUSD) are valuable access points to those without the Internet at home. In FY2013, SFPL provided residents with over 655,000 hours of public computer usage through its 1,017 connected devices, which are available for public use. SFUSD successfully piloted wifi access in two high schools and all 12 middle schools, and now plans to implement wifi in the remaining 89 SFUSD schools. Of the wired schools, SFUSD has a total of 7,191 computers for use among 52,989, or a ratio of one computer for every seven students.

However, successful broadband adoption requires more than affordability and ubiquity. In one 2009[1] study, the U.S. Department of Commerce reported that 47% of Internet non-users do not see the value in a home broadband connection. Subsequent studies by the Pew Research Center, including one in 2013[2], continue to validate lack of interest as a leading barrier.

It takes a combination of Internet access and digital literacy to achieve digital equity. In 2009, the U.S. Department of Commerce established the Broadband Technology Opportunities Program (BTOP), which distributed $4.7 billion across infrastructure, computer centers, and broadband adoption initiatives. DAAS received $7.9 million on behalf of the City to increase digital connectivity among the elderly and those living with disabilities. DAAS works with vulnerable populations that have historically low Internet adoption rates, and a successful BTOP initiative depended on demonstrating the value of the Internet. DAAS partnered with DT and 26 community-based organizations on SF Connected, a technological literacy initiative for seniors and people living with disabilities. There are computer labs in 54 sites, stocked with a total of 224 touchscreen computers and 24 laptops in six different language options. Partners also offer digital literacy classes in English, Spanish, Mandarin, Vietnamese, and Russian. SF Connected wants to demonstrate the value of Internet connectivity to seniors, so classes also couple skills with topics like family trees and genealogy software, connecting on Skype and using online maps, browsing Craigslist and YouTube, and more. SF Connected organizes events as well; in 2014, SFPL and SCAN Health Plan hosted the second annual Wii Bowling Tournament for seniors (DAAS 2014).

5 http://www.sfusd.edu/en/assets/sfusd-staff/about-SFUSD/files/2014-05-13_tech-survey-presentation.pdf

6 http://www.ntia.doc.gov/files/ntia/publications/esa_ntia_us_broadband_adoption_report_11082010_1.pdf

7 http://www.pewinternet.org/2013/09/25/whos-not-online-and-why/

Role of Government

A common barrier to connectivity is the availability of affordable broadband Internet service. At least six different Internet service providers (ISPs) currently offer plans in San Francisco. However, only two of the wired companies can offer Internet access across all of San Francisco. While local ISPs have increased consumer options, their reach is physically restricted. Currently, one ISP provider can only serve buildings built after 1995 with 10 units or more, and it cannot reach areas west of Sutro Tower. Similarly, wireless ISPs require a clear line of sight to deliver home Internet service through radios and microwaves. Point-to-point services are typical of smaller ISPs; they rely on the physical infrastructure leased from telecommunication companies like AT&T and Comcast that can afford infrastructure build-out.

While the lack of viable competition for residential service contributes to the digital divide, another factor is the cost of service. Even when consumers choose the most basic subscription packages, residential plans can be costly. The cost varies from one ISP to the next, so the availability of affordable plans are unevenly distributed across the City.

Private ISPs find it financially unfeasible to build infrastructure in places with poor financial projections or many geographic obstacles. Meanwhile, a municipal government serves all residents, and does not need to balance infrastructure cost against the number of subscriptions. There are cities that have built a fiber network to deliver faster speeds to all residents and also guide service growth in connectivity-starved areas. When looking at the role of government, there exists a spectrum, where governments play anywhere from no role to a primary role as noted in the diagram below.

In addition to infrastructure, there is a question of the role of government in improving digital literacy.

Recommendations

1. Collect neighborhood scale data as none currently exists
2. Conduct formal research and analysis of the various roles that government can play
3. Engage the public in a discussion on the role of government
4. Update report to include findings

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