



STUDY ON THE UNDERGROUNDING OF UTILITY WIRES AND EXPANSION OF FIBER NETWORK IN SAN FRANCISCO

DRAFT REPORT

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I. INTRODUCTION

The objective of this report is to analyze the 1996 Utility Undergrounding Program (1996- 2006), with a particular focus on options for the City and County of San Francisco (CCSF) to continue undergrounding utility wires and methods by which the City's fiber network can be expanded. This study provides a summary of findings on five major areas:

1. The state of undergrounding in the City
2. The 1996 Utility Undergrounding Program
3. Options for viable, equitable undergrounding.
4. Possible ways to reduce overall costs for undergrounding
5. Potential funding sources.

This report stems from the interest in reviving utility undergrounding and the expansion of the city's fiber network in San Francisco, as well as to learn from past challenges. In light of this discussion, San Francisco's Local Agency Formation Commission (LAFCo) has undertaken a Special Study of undergrounding utility wires and expansion of the city's fiber network. This study, undertaken pursuant to Government Code §56378 and LAFCo Policies on Special Studies §2.6, §2.62, §2.63, and §2.64, was conducted with the intent of providing an objective analysis of these programs, policies, and procedures - and as such relies primarily upon data provided by City and County agencies and departments, as well as other outside agencies and organizations.

To best provide information for the purpose of this study, LAFCo examined previous reports from the San Francisco Budget and Legislative Analyst's Office and the Utility Undergrounding Task Force (UUTF), in addition to documents produced by various CCSF departments and agencies around best practices of other cities - both in California and nationwide.

While throughout the report third-party insights and suggestions have been included, none should be viewed as an endorsement or rejection by LAFCo but rather staff making sure all possible suggestions are included. The "Next Steps" section is where LAFCo staff offered its opinion on where CCSF may want to take further action.



II. EXECUTIVE SUMMARY

This report captures in one place the ongoing work that has been conducted by CCSF for both the undergrounding of utility wires, and the expansion of the city’s fiber network. While the city can combine in some places the work of undergrounding both systems concurrently, both systems have divergent issues that therefore require separate review. For the undergrounding of wires, the city’s various reports have captured the main ways by which this work is funded. LAFCo staff were not able to find any new funding sources, but do have some suggestions around places where costs can be shared. However this would require CCSF to perform more in-depth analysis on what costs would look like and how those costs gets charged. As well, LAFCo staff did find a couple of areas which CCSF may wish to look at for possible small-amount funding sources. These possible monies could be used to cover costs such as street light replacement; however these reductions are not sizable relative to the project’s overall cost.

As regards the fiber network expansion, the City has recently begun a more thorough review of what exactly is involved in expanding the system. In February 2015, the report’s first part was released – with the second part slated for release in summer 2015. This report consequently addresses the work that has been performed to date in San Francisco, as well as examples of other cities’ network expansions that could serve as insightful models.

While the majority of this report reviews all previous reports done to date, in the “Next Steps” section LAFCo staff do make seven recommendations that CCSF may wish to consider so as to better understand the project’s costs and possible funding sources.



III. UNDERGROUNDING: THE CURRENT SITUATION

UTILITY WIRES

San Francisco has a total of 990 miles of utility wires, with 520 miles currently undergrounded and 470 miles remaining aboveground – of which there are 400 miles on the street side and 70 miles are rear yard.¹ From 1996 to 2006 the 1996 Utility Undergrounding Program placed 45.8 miles of utility wire underground in San Francisco. However, funding and efficiency challenges emerged that must now be addressed if the project is to be revived.

The 1996 Utility Undergrounding Program was based on an estimated cost of \$1 million per mile; yet actual costs of undergrounding averaged \$3.8 million per mile. A recent Budget and Legislative Analyst Report predicts the real costs of planning and construction by Pacific Gas and Electric (PG&E) will be between \$2.8 - \$5.9 million per mile.²

The 1996 Utility Undergrounding Program had both related and unanticipated costs, combined with insufficient program oversight and lack of a comprehensive master plan that in turn considerably slowed the pace of construction. This subsequently led San Francisco to advance \$53.7 million of its future 20A funds. In 2011, PG&E revised 20A funding formulas, which resulted in the halving of annual undergrounding allocations from approximately \$6 million to \$3.1 million.³ Should this number remains the same it, will take roughly 17 years before the city can repay this advance and resume using 20A funds for undergrounding.⁴

FIBER NETWORK

In February 2015, the Connectivity Plan was released by CCSF. This plan was assembled with the collaboration of The Committee on Information Technology (COIT) and the Department of Technology (DT). The report looks at how to better connect the City's buildings, Public Connectivity, and the use of #SFWiFi as different options to provide internet access. As well, it looks at how the CCSF can use the "Dig Once" policy to better incorporate the expansion of the city's fiber system, with the city's current fiber network at approximately 170 miles in length. While the report does provide some basic costs of expanding the network, CCSF is currently analyzing the costs of expanding the trenching of conduit through Dig Once. This analysis will also take into consideration the parallel trenching impacted by other projects already included in the same process. The report should be completed by summer of 2015.

¹ Budget and Legislative Analyst's Office. (March 2015) Utility Wire Undergrounding Costs. City and County of San Francisco. (p. 14)

² Budget and Legislative Analyst's Office. (March 2015) Utility Wire Undergrounding Costs. City and County of San Francisco. (p. 22)

³ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p.6)

⁴ Budget and Legislative Analyst's Office. (March 2015) Utility Wire Undergrounding Costs. City and County of San Francisco. (p. 15)

IV. AN OVERVIEW OF THE 1996 UTILITY UNDERGROUNDING PROGRAM

The 1996 Utility Undergrounding Program faced a number of challenges, as will future undergrounding programs. This report outlines a number of program obstacles, listed immediately below, and later will offer various funding and policy solutions to these issues - some of which are outside of CCSF direct control and will therefore require changes to be agreed upon by others.

A. PROGRAM OBSTACLES

UNCLEAR FUTURE FUNDING

Undergrounding in San Francisco faces a number of challenges, fiscal and otherwise. Thus far, the utilities undergrounding program has relied upon 20A funding. Yet as noted previously, because the \$53.7 million of 20A funding is advanced, this revenue source will not be available until roughly 17 years from the present. Alternatives - such as 20A credit swaps, expanding the use of 20B and 20C funding, and various taxes and municipal charges - should be considered if this program is to restart.

The Utility Undergrounding Task Force (UUTF) outlined a number of possible taxes and fees to address this gap, many of which will be discussed at a later point in this report. However, the use of taxes is constrained by two Propositions: Proposition 26 and Proposition 218. Proposition 26 stipulates there can be no taxes, assessments, or fees without voter approval - most of which require a two-thirds supermajority, though it does cite exceptions for what is considered a 'tax'. Proposition 218 gives specific guidelines for interpreting what is a "property related fee" and how these can be used.⁵

UNANTICIPATED COSTS

The 1996 Utility Undergrounding Program costs ballooned to nearly four times original estimates, in part due to unanticipated costs and a lack of cost transparency. Recently, CBS News San Francisco reported on a different program the city wanted to implement that required gunshot monitoring devices installed by PG&E on utility poles. City officials initially received quotes of \$1400 per device for this program, which was then revised down to just \$200 - \$400 per device. This revision came after government officials questioned the high per-

OBSTACLES



Unclear Future
Funding



Unanticipated
Costs



High Population
Density



PG&E
Contract



Undergrounding
Coordination



Right of Entry
Issues

⁵ San Francisco City Attorney. (Nov. 2010) *Impact Of Proposition 26: Initiative State Constitutional Amendment That Imposes A New Requirement For Voters to Approve Certain Local Fees And Charge*. City and County of San Francisco.



unit cost for a program that should have economies of scale.⁶ With respect to undergrounding, PG&E has not provided the City with detailed or line-item explanations for undergrounding costs.

Original cost estimates were not detailed and did not include major expenses such as connection costs - i.e. connecting private properties to the main grid, the cost of city services during construction - nor did it include the purchase of streetlight replacement during the undergrounding process. The 1996 undergrounding required 1,800 new streetlights to be put in and this replacement comprised 10 percent of the project's budget⁷, yet it was not included in the original cost estimates.

In all, the project cost more than \$173 million - substantially more than original estimates. These unforeseen costs caused the cost-per-mile to rise from \$1 million per mile to \$3.8 million, and did not include City administrative costs or expenses incurred by telecommunications and cable TV utilities.⁸ For a detailed exploration of program costs, please see the work by the Budget and Legislative Analyst's Office on comparative undergrounding expenses.

HIGH DENSITY

San Francisco's undergrounding appears to be more expensive and more time-consuming than other cities, in part due to San Francisco's relatively high urban density as well as the increased number of building connections necessary for each mile undergrounded.

San Francisco is the second-densest city in the U.S., and has more than four times the population density of San Diego (respectively 17,000 people per square mile vis-a-vis 4000).⁹ The City also generally requires infrastructure (such as utility connection hubs) to be constructed below-ground and placed near the public right-of-way (PROW) or on private property through easements, which further adds to the length and expense of projects.¹⁰

PG&E CONTRACT

Unlike other cities, the San Francisco franchise agreement with PG&E dates back to 1939, and provides for a .5% fee and no renegotiation.¹¹ Therefore, even if the city hoped to increase the fee to capture the

⁶ CBS San Francisco. (Oct. 2014) *PG&E Will Cut Installation Fees For Gunshot-Tracking Devices In San Francisco*. Accessed online.

⁷ Utility Undergrounding Task Force (UUTF). (Jan. 2007) *Utility Undergrounding Task Force Report*. City and County of San Francisco. (p.11)

⁸ Budget and Legislative Analyst's Office. . (March 2015) *Utility Wire Undergrounding Costs*. City and County of San Francisco. (p.15)

⁹ Population Density for U.S. Cities. Retrieved from Governing.com (SF: 17,179.2 / SD 4,020.4)

¹⁰ Utility Undergrounding Task Force (UUTF). (Jan. 2007) *Utility Undergrounding Task Force Report*. City and County of San Francisco. (p.15)

¹¹ Utility Undergrounding Task Force (UUTF). (Jan. 2007) *Utility Undergrounding Task Force Report*. City and County of San Francisco. (p.25)



difference between the franchise fees in effort to support the undergrounding program, they would have to obtain PG&E's approval to reopen a standing 70+ year agreement – the consequences of which could expose the company to decades of new legal, financial, and policy requirements. It is thus highly unlikely PG&E would be willing to reexamine the terms of the contract.

UNDERGROUNDING COORDINATION

Most of the 45.8-miles undergrounded were done in conjunction with existing undergrounding plans. 25 miles were undergrounded with PG&E natural gas pipeline replacements, while 3.84 miles were done in conjunction with Department of Public Works projects. The remaining 17 miles of undergrounding were done through neighborhood petitions that had more than two-thirds property-owner approval. These neighborhoods tended to be more affluent and civically-engaged, as property owners often agreed to bear some portion of the costs of undergrounding.¹²

RIGHT OF ENTRY ISSUES

The Utility Undergrounding Task Force Report found that accessing property in order to perform customer conversions could “take longer than two years, or more than half the duration of a project.” Property owners’ unresponsiveness to property access requests has the effect of delaying program schedules and the overall project duration.

B. PROGRAM FUNDING

The 1996 Utility Undergrounding Program used prior 20A allocation credits and advanced future-year allocations to reach \$115.9 million of the total \$173.2 million in actual project costs. 20A funds have to-date been advanced by \$53.7 million; thus alternative funding sources must be considered for undergrounding to continue. CPUC Tariff Rule 20 has three distinct funding mechanisms: 20A, 20B, and 20C - although to date only 20A funds have been used.

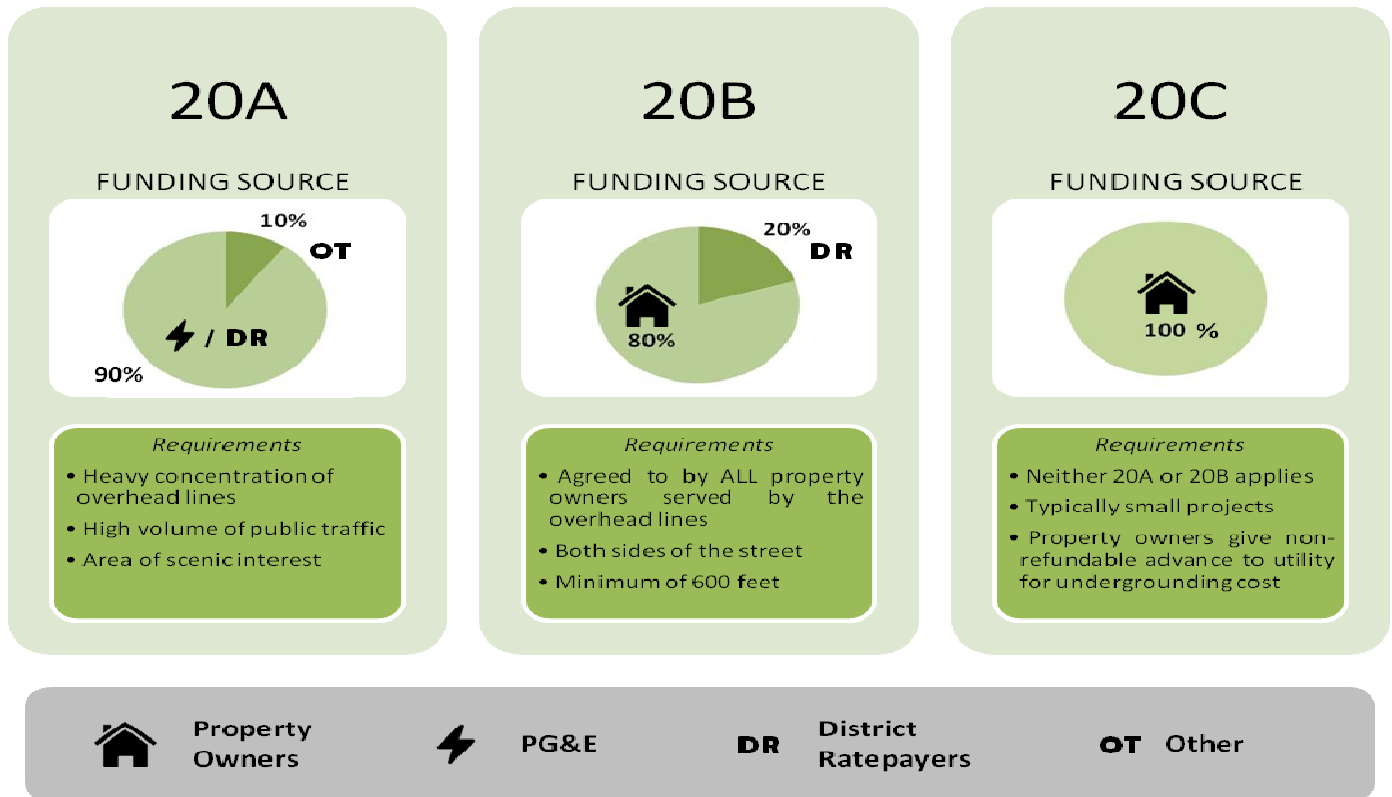
CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC) RULE 20

The California Public Utilities Commission (CPUC) Tariff Rule 20 provides three mechanisms for Electric Utility funding undergrounding projects Rule 20: A, B and C.

The CPUC approves a maximum-allowable amount to be used for undergrounding projects for the utility's entire service area on a yearly basis. This means that the quantity credited to the City can change yearly, depending on San Francisco's power usage relative to the total PG&E service area.

¹² Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p.12)

DIFFERENT CHOICES OF FUNDING UNDER RULE 20¹³



Rule 20A Funding

- 90% of costs are paid for by the utilities, and these costs are then passed on to ratepayers as capital improvements through the CPUC
- 10% of the costs (such as required new streetlights) are paid for by the City, property owners, or the utility company
- Telephone and cable 20A
- Undergrounding costs are paid by each respective utility
- 20A rule does not cover rear easement overhead wires; this must be paid by alternate sources

Rule 20B Funding

- Property owner applicants pay 80%, ratepayers pay 20%
- Requires 100% approval by property owners
- 20B undergrounding is paid usually in a special assessment Mello-Roos District
- The City may pay for the property owner share costs if funding is available from other sources, such as an undergrounding utility surcharge

Rule 20C Funding

- Property owner applicants pay 100%
- If neither Rule 20A or 20B applies, rule 20C allows property owners to pay for undergrounding electric lines and equipment
- Typically used for small projects
- Property owners must make a non-refundable advance to the utility equaling the cost undergrounding

¹³ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p.6-7) All graphic icons courtesy copyright-free vector graphic services including Pixabay, Ckiker, and Flaticon



V. FIBER NETWORK IN SAN FRANCISCO

CURRENT STATE OF THE FIBER NETWORK

Over the years, CCSF has analyzed its current fiber system in search of possibilities for expansion. Cities and counties across the country have various methods around how citizens and business attain internet connectivity - ranging from private control, to public-private partnerships, to government control. In the Connectivity Plan¹⁴, there is a chart illustrating San Francisco's close proximity to the private control end of the spectrum – with the suggestion that CCSF should move to an area between public-private partnership and government control area of the spectrum. The report gives four suggestions that require completion:

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.



WHERE A CITY STARTED SMALL AND EXAMPLED ITS SYSTEM

In Santa Clara, they started out with a small system aimed to serve 3 very large customers – with the intention of crewing it over time to increase revenue. In 2000, Santa Clara started with a 26-mile fiber loop with revenue of \$350,000. By 2012 the system had grown to 57 miles of fiber, with \$2.13 million in revenue that returned \$300,000-\$500,000 annually to Santa Clara.¹⁵ It should be noted that in Santa Clara, the system was geared to serve commercial customers primarily in the social media and web search sectors. Santa Clara does show a path of how to start with a smaller system and grow it over time.

¹⁴ City and County of San Francisco (February 2015) Connectivity Plan (p. 119)

¹⁵ Wall Street Journal. (March 14, 2012) In San Leandro, a Drive to Get Wired. Accessed online



CURRENT ISSUES WITHIN THE FIBER NETWORK

As previously mentioned, there are approximately 170 miles of fiber throughout the city. However, there are some limits to the system. One limitation is the third-party conduit used for stretches of the system, which requires for its usage limitation agreements around how the City can use these portions. A second limitation regards how the expansion of the system has occurred. There are locations where the fiber has been installed with the purpose of connecting a specific city building, with no design intent to connect any other priorities along the path. Therefore while there are 170 miles of fiber throughout the City, one might be blocks away from having an access point to the system. These two issues occurred because they allowed the City to connect the various City departments and agencies to the system for a reduced price, but didn't necessarily allow for easy access for others to the system.

VI. MOVING FORWARD - OPTIONS FOR VIABLE, EQUITABLE UNDERGROUNDING

Undergrounding can provide a number of benefits to the people of San Francisco, from more beautiful neighborhoods and city streets to more reliable energy during extreme weather. To move the program forward, it is important to understand the City's options. The past program relied almost entirely on 20A funding; however future programs will likely receive support from a variety of financial and policy solutions.

A. FINANCIAL OPTIONS

San Francisco has until now relied almost exclusively on 20A funding to underground utility wires. With 20A funding at a deficit of \$53.7 million, alternative sources must be identified if the program is to continue prior to this advance being paid in full. Below is a list of possible funding options used by other cities, or options identified by Utility Undergrounding Task Force.

GENERAL OBLIGATION BONDS

Large scale capital programs are often funded by General Obligation bonds (G.O. bonds), which require two-thirds voter approval. G.O. bonds are paid back through property taxes; these taxes fund the bond's annual debt service.¹⁶ The City has a list of projects for which it seeks funding through the use of the G.O. bond process. This project would therefore compete with other projects on the City's abovementioned list.

UTILITY USERS TAX

San Francisco currently levies a 7.5% Utility Users Tax (UUT) on monthly charges for electric, gas, and water service to commercial customers within the city.¹⁷ This means that if a utility user's total PG&E energy charges were \$100 a month, their total bill would be \$107.50, with \$7.50 being remitted to the City by the service provider. These funds are collected by the respective utility companies and on a monthly basis are remitted to the City in the General Fund. The City charges an additional 7.5% User Tax on all

Financial Options



G.O. Bonds



Utility User's Tax



Utility Connection Fee



Transfer Tax Fee



Residential User Surcharge



Transfer Tax Rate

¹⁶ City and County of San Francisco Controller's Office. (Jun. 2014) Financing Options for Undergrounding City Utility Lines.

¹⁷ City and County of San Francisco Controller's Office. (April 2005) The Utility Users Tax. (p.2)



cellular telephone bills in San Francisco for both commercial and residential users, which is also remitted to the General Fund.¹⁸

The Utility Undergrounding Task Force has noted that the Board of Supervisors could increase these fees to create additional resources for undergrounding. The table below from a City Controller report shows San Francisco's UUT of 7.5% is comparable to that of other California cities.¹⁹ Any changes to the Utility Users Tax would be considered a Special Tax and would thus require approval by two-thirds of registered voters.²⁰

| Utility Users Tax - Rate Comparisons | | | | | | |
|--|---------------|----------------------|----------------------|--------------------|----------------|-------------------|
| Non-Residential | | | | | | |
| 10 Largest California Cities | Population[1] | Electricity Tax Rate | Natural Gas Tax Rate | Telephone Tax Rate | Water Tax Rate | Cable TV Tax Rate |
| Los Angeles | 3,694,820 | 10.00% | 10.00% | 10.00% | N/A | N/A |
| San Diego | 1,223,400 | N/A | N/A | N/A | N/A | N/A |
| San Jose | 894,943 | 5.00% | 5.00% | 5.00% | 5.00% | N/A |
| San Francisco | 776,733 | 7.50% | 7.50% | 7.50% | 7.50% | N/A |
| Long Beach | 461,522 | 10.00% | 10.00% | 10.00% | 10.00% | N/A |
| Fresno | 427,652 | N/A | N/A | N/A | N/A | N/A |
| Sacramento | 407,018 | 7.50% | 7.50% | 7.50% | N/A | 7.50% |
| Oakland | 399,484 | 7.50% | 7.50% | 7.50% | N/A | 7.50% |
| Santa Ana | 337,977 | 6.00% | 6.00% | 6.00% | 6.00% | N/A |
| Anaheim | 328,014 | N/A | N/A | N/A | N/A | N/A |
| Average (Mean) of 10 Largest Cities | | 7.70% | 7.70% | 7.70% | 7.83% | 7.50% |
| Median of Largest Cities | | 7.50% | 7.50% | 7.50% | 7.50% | 7.50% |
| Source Data & Notes | | | | | | |
| [1] 2000 Census Data from CA Dept. of Finance Website (10/21/2003) | | | | | | |

City and County of San Francisco
Controller's Office

UTILITY CONNECTION FEE

San Francisco presently assesses a monthly Emergency Response Fee of \$2.75 per telephone. In the 2004-05 fiscal year, this source raised \$36.7 million. The UUTF recommended the Board of Supervisors consider raising this fee to supplement support for undergrounding projects. If this was increased to \$1 per month, nearly \$13.35 million per year would be created. Similarly, the UUTF suggested the Board of Supervisors could add a utility connection fee for electric meters.²¹

¹⁸ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p. 26)

¹⁹ City and County of San Francisco Controller's Office. (April 2005) The Utility Users Tax. (p.2)

²⁰ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p. 26)

²¹ Ibid.



RESIDENTIAL USER SURCHARGE

The city of San Diego implemented a surcharge of 3.5% on residential electric bills to bolster 20B funds. San Diego obtains approximately \$50 million per-year from the surcharge, which is then added with 20A funding. However, changing this surcharge became possible only after San Diego renegotiated contract terms with San Diego Gas and Electric in 2002. Since the 1939 agreement between PG&E and San Francisco is unlikely to be reopened and may require two-thirds voter approval to do so, this option would be very difficult to implement.²²

TRANSFER TAX RATE

San Francisco presently collects a tax on non-exempt transfers of real property located in the City. The rate for the property transfer is determined by the transfer value. For transfer values between \$100 and \$250,000 the rate is \$2.50 per \$500 of value (or an overall tax rate of approximately .5%). The transfer rate on property valued between \$250,000 and \$1 million is \$3.40 for each \$500 of value (.68%), while for transfers of \$1 million or more the rate is \$3.75 for \$500 of value (.75%).

In the 2004-05 fiscal year, San Francisco accumulated a total of \$116.71 million from all property transfers. The Utility Undergrounding Task Force noted that if the transfer tax rates were raised one-quarter of one percent for transfers of \$1 million or more, an estimated \$22.11 million in additional revenue would be raised.

B. OTHER ALTERNATIVES

In addition to new funding sources, there are also various policy and legislative options which can address the efficiency, equity, and financial challenges of undergrounding. These include developing a master plan, coordinating undergrounding with other excavation projects, public-private partnerships, community facilities districts, community benefit districts, permit fees, right-of-way regulations, and finding ways to help property owners and altering the PG&E contract.

DEVELOP CLEAR FUNDING SOURCES AND MASTER PLAN

PG&E reports that it did not have the resources or the personnel to carry out an undergrounding plan of such magnitude.

San Francisco is also the second densest city in the United States, a factor reportedly not properly considered during the creation of the original \$1 million per mile estimate.

—Utility Undergrounding Task Force 2007

²² Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p. 7)



The 1996 Utility Undergrounding Program was done without detailed cost reporting and third party oversight. The above quote highlights the stark difference between the initial cost estimate of \$1 million per mile and the actual cost – which ranged between \$3.8 to \$9.6 million per mile.

Identifying funding sources while developing a master plan would ensure undergrounding is distributed with greater geographic equity as well as with the cost savings that result from coordinating with other undergrounding organizations. A master plan could also increase the transparency of the undergrounding process, allow for greater public participation in the project, and add new auditing requirements.

COORDINATE WITH OTHER EXCAVATION PROJECTS

Numerous organizations utilize undergrounding - from utilities like PG&E to city agencies. Coordinating undergrounding therefore has the potential to create substantial cost savings. While more than half of the area involved in the 1996 Utility Undergrounding Program was coordinated with other projects, room for improvement remains.

At present, the San Francisco Public Utilities Commission (SFPUC), Department of Public Works (DPW), Municipal Transportation Agency (Muni), the Department of Technology (DT), and the Department of Parking and Traffic (DPT) use undergrounding for these respective purposes:



SFPUC is in charge of water, power, and sewers, in addition to the City's extensive network of pipes



DPW takes care of the City's infrastructure, public rights-of-way, and facilities, and would likely oversee construction management and neighborhood notifications for undergrounding programs



MUNI undergrounds distribution lines



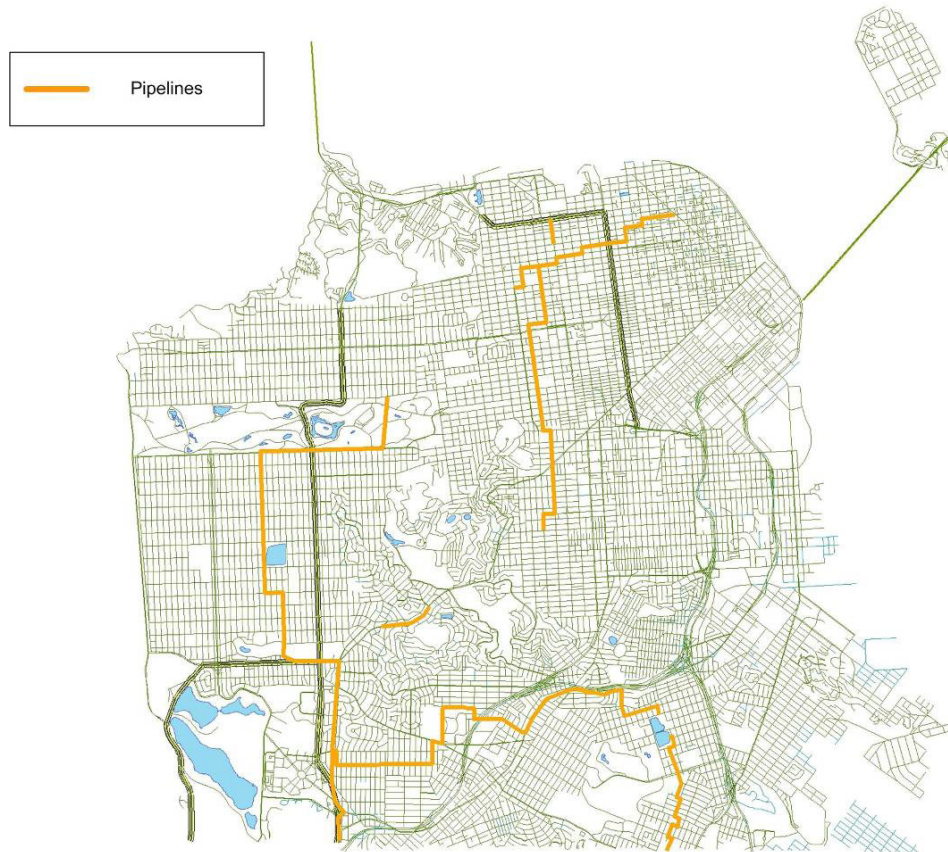
DPT is responsible for installing street signs when utility poles are taken down



DT can underground City networks, including fire alarm and police communication services, along with the City's fiber network

One analysis of the undergrounding of fiber-optic cables projected that coordination with utility projects could yield a savings of 5-15% of project cost.²³ The map in figure 1 details how undergrounding could be planned around existing undergrounding and capital improvement projects, such as the Department of Power and Water's plans to replace pipelines.

Figure 1: Planned Water System Replacement Projects,
Undergrounding could be planned for these locations



In addition in December of 2014 the Board of Supervisors passed resolution 463-14, which allows for the SFPUC to obtain contracts on some of its current utility poles for wireless communication systems. The revenue from these leases is to be used for the City's street light program. A possible use of these funds could therefore be towards street light replacement as the current utility poles are taken down and replaced with new street lights.

²³ Columbia Telecommunications Corporation. (Jan. 2007) Fiber Optics for Government and Public Broadband: A Feasibility Study. City and County of San Francisco



CREATE A PUBLIC-PRIVATE PARTNERSHIPS

Some cities, such as Washington DC and San Leandro, CA, have developed successful Public-Private Partnerships for undergrounding utility wires and fiber networks, respectively.

According to the website for Washington DC's DC PLUG initiative:

The **DC PLUG** initiative will be financed through a combination of Pepco investment (\$500 million), funding from the District through District's Department of Transportation Capital Improvement funds (\$62 million) and funds from District issued bonds (\$375 million). Costs will be recovered through two surcharges on customer bills. The Pepco investment will be recovered through the "Underground Charge, Pepco" and will initially have a rate impact of \$.18 or 0.18% per month for the typical residential customer in 2015.

A second surcharge will cover the debt service on the bonds to be issued by the District to fund its portion of the work. Low-income customers receiving the Residential Aid Discount will be exempt from the rate impact.

In the case of San Leandro, the city had access to already-existing conduit and, in working with a private investor, they were able to install an 11-mile fiber optic loop. This loop is geared toward the industrial zone on the west side of the city and is slated for business sector use, as opposed to residential.²⁴

COMMUNITY FACILITIES DISTRICTS

Community Facilities Districts (CFD), also known as Mello-Roos Districts, are non-profit corporations able to conduct undergrounding projects. These districts came about in response to the passage of Proposition 13 in 1982, which greatly limited local public agencies' ability to raise property taxes based on a property's assessed value. The Mello-Roos Community Facilities District Act allows counties, cities, and special districts to create CFD in order to fund public improvements and services, including utility or fiber undergrounding. Establishing a CFD requires the approval of at least two-thirds of the registered voters in the proposed district.

COMMUNITY BENEFIT DISTRICTS

Community Benefit Districts (CBD), also called Business Improvement Districts, are similar to CFDs, but are instead produced by city ordinance rather than state law and are thus independent non-profit bodies, rather than a statutory district that as such falls under local jurisdiction. The CBD is voluntary funding mechanism that assesses a special tax on property owners in order to fund neighborhood improvements.

²⁴ Wall Street Journal. (March 14, 2012) In San Leandro, a Drive to Get Wired. Accessed online



CHANGE THE PG&E AGREEMENT

When the City of San Diego changed their PG&E agreement, they amended the terms to include a surcharge of 3.5% on residential electric bills to accumulate 20B funds. This allowed the city to gain \$50 million annually for undergrounding. However, changing the terms of the PG&E contract would be very difficult in San Francisco as the agreement dates back to 1939, has no expiration date, and could require PG&E to comply with decades of new regulations as noted above.

CHANGE RIGHT-OF-WAY REGULATIONS

The inability to access private property slowed the undergrounding process, and it can take up as much as half the duration of a given project. However, the City has the power to change the Public Works Code and excavation regulations regarding public right-of-way; and the UUTF notes that it could consider measures which would facilitate property access, ensure proactive property owner outreach, and expedite the undergrounding process.

ALLEVIATE PROPERTY OWNER COSTS

Options should also be considered for alleviating the cost of undergrounding borne by property owners. 20A funding does not support the cost of streetlamp design or installation, nor does it support the cost of customer conversions, when a private property is connected to the rest of the undergrounded system. The Utility Undergrounding Task Force estimates the average cost for a San Francisco home with 25 feet of linear frontage to be approximately \$13,500.²⁵

Future projects must consider if and how much of the cost should be borne by property owners, and what funding could be used to fill these gaps. One option that would relieve property owners from the costs of installing streetlights is the Landscaping and Lighting Act of 1972 (LALA), of the California Streets and Highways Code Section 22500 et seq. This act gives cities the ability to set up assessment districts to finance landscaping and lighting projects.²⁶ This is accomplished through special taxes that are added to property tax bills based on property size, square, rather than value. As with Commercial Benefit Districts, LALA district requires approval by two thirds of property owners.

²⁵ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p.25)

²⁶ Utility Undergrounding Task Force (UUTF). (Jan. 2007) Utility Undergrounding Task Force Report. City and County of San Francisco. (p.30)



VII. NEXT STEPS

CCSF has conducted several reviews of the undergrounding of utility wires and the expansion of the fiber network. While no new unknown funding sources have been identified, there are nevertheless cost-savings measures available.

Some items may take considerable time, and therefore should not be relied upon for short-term planning.

Any of the suggestions below would help expedite the undergrounding process. Each suggestion may impact the undergrounding of utility wires, expansion of the fiber network, or both in some cases. After each suggestion, you will see bracketed the item(s) to which the suggestion pertains.

- The need for a 'Master Plan' for the undergrounding of utility wires is critical. All previous research has found cost-savings when work is done in coordination with other projects. LAFCo staff recommends that CCSF conduct a thorough cost-estimate on merging the undergrounding of utility wires and the expansion of the fiber network with current DPW projects. At present, DPW has a rolling five-year plan of street resurfacing. Prior to street resurfacing, the SFPUC will do an evaluation of its underground water and sewer lines. If it is determined that any of these lines are in need of repair, SFPUC will contact DPW so that the work can be administered prior to the street resurfacing. Each year, roughly 15-30 miles are completed. LAFCo staff further recommends that CCSF regard both the last five years and the next five years of work under this program in order to assess how much of it was performed on streets that had overhead wires, or could use fiber expansion to help connect nongovernmental customers to the City's fiber network. It should be noted that any additional work performed on an individual project will likely mean a longer completion time, - which in turn means either fewer miles of work will be completed per year, or more teams of workers will be needed to accomplish that work. Should CCSF conduct an analysis, this should be factored in. Further, CCSF would need to have a policy discussion to determine which project pays for the work and whether it is paid by percentage of linear foot dug per individual item within the project, whether utility wires and fiber pay the additional cost beyond that which SFPUC work has already covered, or some other formula. When speaking with the street resurfacing and SFPUC systems team, while their maps do indicate which streets have aboveground and underground wiring, they do not include the layer indicating which streets have the fiber network. This information will therefore need to be shared between departments. Another consideration for fiber expansion is that the network does not always require open trenches for its expansion, but instead has other processes for undergrounding that are otherwise not available to utility wires. Which streets require the open-trench process for fiber expansion should of course be assessed. Based on discussions with COIT and DT staff, it appears a review is currently underway. (Utility wires and fiber network)
- Currently there is no actual oversight of the cost breakdowns provided by PG&E for projects conducted under Rule 20A. Therefore, no one outside of PG&E can determine if charged costs were as cost-effective as possible, or if in fact there are alternative ways to perform the work at a lower



price point. When LAFCo staff discussed this issue with CPUC staff, from LAFCo's perspective it appeared that bills are submitted to the CPUC for remittance but no questions are asked as to whether the work is being done in the most cost-effective manner. It should be noted that this is outside of the CCSF's purview and would require either state legislation or the CPUC to change this process, unless PG&E voluntarily agreed to be more transparent around its project costs with outside agencies. (Utility wires)

- CCSF may wish to consider contacting other cities for whom PG&E is currently performing undergrounding work to gauge support for a request that CPUC and PG&E increase the amount of money in 20A funding back to either pre-2011 funding levels or higher. Based on the recent BLA report, CCSF receives more in its allocation than other jurisdictions; yet that price does not cover a mile of work in a year. If we returned to pre-2011 funding levels, we would reduce by roughly half the amount of time required to pay in full the debt from prior undergrounding, as well as enable more than one mile per year to be completed – even if no other funding or cost-reduction measures were taken. (Utility wires)
- In the BLA report, one city arranged to purchase another city's 20A credit previously held in reserve for non-20A money. If the CCSF finds other funding sources for the undergrounding of wires, it should ascertain whether other jurisdictions not currently performing 20A projects would be willing to make this same arrangement. If this is done while we are still paying the amount owed for previous project overruns, CCSF will need to finish paying that debt before new projects can be started using 20A funds. (Utility wires)
- As mentioned previously with the passage of Resolution 463-14, there is some funding made available for street light replacement from the use of SFPUC current polls for other purposes. The overall cost estimates of the undergrounding projects reveal that about 10% of the money spent is used for the replacement of the old streetlights. While funding from the use of street lights would likely not cover the full amount needed, if properly timed it could help to pay for some of the related costs of this part of the undergrounding process, and meet the goals of Resolution 463-14 as well. Further, there is some desire for the SFPUC to take ownership of the remaining PG&E street lights in the City; however a funding source has not been identified to do this. Should a funding source be identified, then LAFCo staff recommends coordination to the degree possible with any street light replacement occur as overhead wires or undergrounded. Finally, the desire to change street lights may have various reasons that do not line up with the undergrounding priority structure meaning coordination may not always be possible. (Utility wires)
- As mentioned above, CCSF has initiated discussions around what the City's fiber network should look like and the role of CCSF therein. LAFCo staff support the four suggestions of the connectivity plan: collect neighborhood-scale data, since none currently exist; conduct formal research and analysis of the various roles that government can play; engage the public in a discussion of government's appropriate role; and update the report to cover findings. Additional items to possibly regard as the review of these four areas is completed include the short-term items that it



may wish to change – i.e., the current policy of undergrounding to city buildings without having spots in-between through which nongovernmental buildings can access the network. Should any undergrounding of fiber currently be in the pipeline, the City may want to accommodate for nongovernmental buildings' use of the system; therefore it should be assessed whether it can afford more spots along pathways through which access can be achieved. As well, the CCSF should avoid any future agreements limiting use of its expanded system. (Fiber network)

- A full expansion of the underground fiber network will be a lengthy process. Therefore, as COIT and DT undertake the four questions above, LAFCo staff would recommend the consideration of methods by which to expand the customer base to areas that have yet to be connected. In the short term, this could be accomplished through use of a wireless system to connect customers unless or until the fiber network becomes available in their area. One of the priorities of the expansion would then be the identification of key high spots in need of access. Should the CCSF either become a completely government-controlled system, or enveloped in a public-private partnership, the ability to create a customer base will open a new revenue stream that will, in turn, help cover the costs of the expansion. This would require planning and review of necessary equipment costs, as well as the estimated length of time for its payment; and this equipment would eventually have to be replaced as well. This planning and review process will ensure that the equipment will be paid for, and that you have excess funds available to help pay for the eventual extension of the network at that particular location. This could be considered a modified version of the Santa Clara model - which employed current customer revenues to help expand the system. (Fiber network)



VII. LIST OF ACRONYMS

- BLA- Budget and Legislative Analyst
- CCSF - City and County of San Francisco
- CBD- Community Benefit Districts
- CFD - Community Facilities Districts
- CPUC – California Public Utilities Commission
- COIT - Committee on Information Technology
- DPT - Department of Parking and Traffic
- DPW - Department of Public Works
- DT- Department of Telecommunications
- MUNI - Municipal Transportation Agency
- PG&E - Pacific Gas and Electric
- PROW- Public Right-Of-Way
- SFPUC - San Francisco Public Utilities Commission
- LAFCo - San Francisco's Local Agency Formation Commission
- UUTF - Utility Undergrounding Task Force
- UUP - Utility Undergrounding Program
- UUT- Utility Users Tax



IX. LIST OF DOCUMENTS

All government documents can be found on the LAFCo website.

Budget and Legislative Analyst's Office. . (March 2015) Utility Wire Undergrounding Costs. City and County of San Francisco.

CBS San Francisco. (October 19, 2014) PG&E Will Cut Installation Fees For Gunshot-Tracking Devices In San Francisco.

City and County of San Francisco (February 2015) Connectivity Plan

City and County of San Francisco Controller's Office. (April 2005) The Utility Users Tax

City and County of San Francisco Controller's Office. (June 2014) Financing Options for Undergrounding City Utility Lines.

Columbia Telecommunications Corporation. (January 2007) Fiber Optics for Government and Public Broadband: A Feasibility Study. City and County of San Francisco

San Francisco Board of Supervisors Resolution 463-14 (2014)

San Francisco City Attorney. (November 2010) Impact Of Proposition 26: Initiative State Constitutional Amendment That Imposes A New Requirement For Voters to Approve Certain Local Fees And Charge. City and County of San Francisco.

Utility Undergrounding Task Force (UUTF). (January 2007) Utility Undergrounding Task Force Report. City and County of San Francisco

Wall Street Journal. (March 14, 2012) In San Leandro, a Drive to Get Wired