District 2 **District 3**

San Francisco Board of Supervisors'

Handbook

On Undergrounding Utilities

prepared by the San Francisco Coalition to Underground Utilities
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District 8

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District 7

Mission Statement

San Francisco has long recognized that unsightly wooden telephone poles, with their sagging utility wires, degrade our city. Now is the time to finish the half-completed job of utility undergrounding. We urge the Board of Supervisors to adopt and implement a viable citywide policy in line with its own Utility Undergrounding Task Force Report of 2007. A citywide program will achieve cost savings, set rational priorities and fairly allocate the costs.

District 1

Executive Summary

This Handbook is prepared for the Supervisors of the City and County of San Francisco, their staff, and all others involved in the project to underground the unsightly wooden telephone poles, with their telecommunications cables, connectors, boxes and antennas, that scar our city. This project does not include MUNI wires, which must remain as they are because of the configuration of MNUI service in the city.

The overarching goal is to develop a long-term Master Plan and a properly funded program for San Francisco to insure that all utility wires have been undergrounded within approximately fifty years. The Master Plan will create a transparent community process that involves residents in all decision-making. The resulting program should be finished within a finite and reasonable period of time in order to ensure the necessary public support for the undertaking.

To accomplish this, the City needs to seek a variety of funding sources, many of which are outlined here. A citywide undergrounding program will allow flexible use of any and all funding sources, including general obligation bonds, neighborhood districts, development fees, other project-specific sources, and an increased utility franchise fee.

The handbook is not sequential. Each section stands alone, so it is available to those involved in various departments with specific questions on subjects such as costs or sources of funds. The sections are grouped as follows:

- **Sections 1 through 4** provide background: an in-depth definition of the issue, the benefits of undergrounding, the history of undergrounding in San Francisco, and the current scope of a project to underground.
- **Section 5** covers a recent development: the proliferation of bulky and unattractive equipment to facilitate wireless communication.
- **Sections 6 and 7** estimate realistic costs of a remediation project that would be finished within a finite and reasonable period of time, and lays out funding sources that could be combined to produce the required revenue stream.
- **Section 8** explains the requirements of the next step: creation of a comprehensive and complete Master Plan, with realistic cost-per-mile estimates for all parts of the project and a realistic timetable to underground all utilities throughout the city.

A note about notes: The authors have not attempted to document precisely every statement and source. We have relied on several source documents (See Appendices) and have indicated page references where possible with the following code:

Appendix 1:	(UUTFR)	Utility Undergrounding Task Force Report, 2007
Appendix 2:	(BLA)	Budget and Legislative Analyst Policy Analysis Report, 2015
Appendix 3:	(LAFCo)	San Francisco Local Agency Formation Commission Study on the Undergrounding of Utility Wires and Expansion of Fiber Network in San Francisco, 2015
Appendix 4:	(CONT)	Controller's Office, Budget\Revenue Report, April, 2015

We will gladly provide more detailed citations when needed.

For further information - www.sfcuu.org
Please address comments to Anne Brubaker, Chair,
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District 6

Identification and Description of the Issue

Current Situation: Four hundred and seventy (470) miles of San Francisco's streets are fouled by the electrical, telephone, and cable wires strung overhead from ugly wooden poles, all in addition to the proliferating wireless transmission units.

This urban blight pervades every Supervisorial District, as the accompanying photos amply demonstrate. This mesh of wires and equipment mar the streetscapes and views ─ second story and above ─ of homes and office buildings, and pose public safety risks to the people and property.

More wires and transmission equipment are being added to the poles every day. Cable companies are increasing their installations. Cell phone transmitters and relay equipment ("Tier III Personal Wireless Facilities") are now being added in volume on the wooden poles on Russian and Telegraph Hills, increasing the clutter burdening every street in those areas. ExteNet (for Verizon) is pursuing a plan that will expand such installations city-wide into practically every district.

No residential street undergrounding has been done in almost a decade, and, in the ten years preceding that, undergrounding was done for less than ten percent (10%) of the streets not already undergrounded.

Future Plans: City government currently has no plans call for any undergrounding to remove this urban blight ─ not even a plan modeling when and how undergrounding could be done. In 2007, the Utility Undergrounding Task Force ─ established by the Board of Supervisors in 2004 by Resolution #041354 and continued in 2005 by Resolution #659-05 ─ filed its comprehensive report with the Board, including funding alternatives and recommendations for how to proceed with undergrounding. However ─ whether because sponsoring Supervisor Dufty was termed out, the 2008 recession intervened, or other reasons ─ the City failed to go on to develop any plans to complete San Francisco's utility undergrounding.

Consequences: The disparity between those sections of the City undergrounded and those not manifests an abiding inequity that needs to be righted, for this reason: For nearly the past 50 years, residential neighborhood undergrounding has largely been done by Pacific Gas & Electric Company (PG&E) under a CPUC program, Rule 20. That program allows PG&E to charge an increased rate to all San Francisco electricity rate payers to fund undergrounding, done by PG&E. But the amount PG&E charged for the undergrounding exceeded the increased rate revenue. The result was that the City was forced to stop further undergrounding and borrow forward on the increased rate revenue to pay off the debt, which is expected to take another 16 years.

So those whose streets have still not been undergrounded have ended up paying, through the increased rates on their electric bills, for those fortunate enough to live where undergrounding was done ─ largely in the more well-to-do areas of San Francisco. And unless and until something is done , they will continue to pay for more than the next 17 years, with no corresponding direct benefit to them whatsoever, and indeed, no prospect of any.

District 2

Benefits of Undergrounding

Undergrounding utilities, which will finally rid San Francisco streets of overhead wires and wooden poles marring its views and landscapes, will provide very significant safety, financial, and aesthetic benefits to the city.

Undergrounding will:

Permanently remove the urban blight hanging from our street poles: Ever-increasing overhead electricity, telephone and cable wires, and ugly cable and cell phone transmission equipment mar the streets and skies of every single District in our city. This blight persists in almost half (47%) of San Francisco, and mostly in the middle and low income neighborhoods, unnecessarily exacerbating a "have and have not" division.

Make San Francisco a full-fledged member of the world's first class cities: New York, London, Paris, Berlin, Madrid, Vienna, and many more have all done extensive undergrounding.

Visitors from other cities often comment about the anomaly of San Francisco, a famous city on a beautiful natural site, being inexplicably marred by the wires and equipment strung from and on the poles all along our streets and fouling our iconic views.

Make things fair for our citizens: Many San Francisco citizens have paid ─ and they continue to pay ─ for undergrounding done on others' streets and in other neighborhoods, without receiving any benefit whatsoever for their streets or neighborhoods.

Provide the only legal means for stopping the increasing proliferation of cell phone transmission equipment: Undergrounding will require that the equipment littering our poles and streetscapes be removed. The proliferation issue is amply manifested by the recent imposition of equipment and the approved plans to install much more equipment on poles mainly throughout the Russian Hill and Telegraph Hill areas ─ all as part of a city-wide plan. These installations ─ and approved plans still to be implemented ─ proceed completely unimpeded. Federal law prohibits local jurisdictions from interfering with the proliferation and placement of such so-called interstate communication equipment, no matter its unsightliness ─ with but one sole and exclusive exception: if the wires are to be undergrounded by municipal order, the equipment must come down or be undergrounded at the owner's expense.

Increase public safety: In the event of a disaster (fire, major storm, earthquake, terrorist attack) increased risk of power outages and the dangers of falling wires and crashing poles will be eliminated. Although the likelihood of such events is low, were just one to happen, consequences could be catastrophic. And those consequences are readily avoidable by undergrounding in advance. Indeed, recognizing the public safety benefits, the City of Berkeley has recently considered undergrounding plans based on their public safety benefits.(Berkeleyside.com/undergrounding, July 10, 2015).

Benefit tourism and its many related businesses, concurrently increase tax receipts, and increase property values: The removal of the mesh of wires scarring our streetscapes and fouling our iconic views will make visiting the city more attractive. Common sense indicates that undergrounding would be a clear benefit to the city and its property owners.

Be a legacy infrastructure project: Undergrounding would be a major physical benefit to the entire city and a lasting memorial to the initiative and commitment of sponsoring Supervisors. Supervisors have very few opportunities to create an overarching, one-time, permanent benefit for the entire city ─ that is: a benefit not requiring expenditures ad infinitum, a benefit that everyone can fully appreciate in its progress and completion, a benefit that continues to acknowledge those who made it possible.

District 4

History of Undergrounding

Currently, no undergrounding at all is being done in San Francisco and no substantive work has been done since 2008. San Francisco has a total of 990 miles of utility wires, with 520 miles currently undergrounded and 470 miles remaining aboveground. (LAFCo p.4) Tracing the history of what happened and what has impeded further progress is instructive.

From the start, undergrounding efforts in San Francisco seem to have been ad hoc, project by project. Some neighborhoods, such as the Marina and Saint Francis Wood, were developed with undergrounding in place. Other areas were undergrounded as a result of capital improvement projects, such as street widening.

The following merges and abridges the issues identified in three reports available in the Appendix:

UUTFR	Utility Undergrounding Task Force Report, 2007
BLA	Budget and Legislative Analyst: Policy Analysis Report, 2015

LAFCo San Francisco Local Agency Formation Commission Study on the Undergrounding of Utility Wires and Expansion of Fiber Network in San Francisco, 2015

Background: At the start of the most recent project in 1996, the San Francisco Board of Supervisors legislated the undergrounding of forty-two miles of overhead utility wires. (UUTFR, p.10) In 1997, an additional 3.84 miles were added on to the original 42 miles due to Department of Public Works (DPW) capital improvement projects such as Third Street, Cesar Chavez, Chinatown alleys, and Octavia Boulevard. This increased the total to 45.8 miles. (UUTFR, p.12) At the completion, estimated as 2008, San Francisco would then have undergrounded 52.5% of its overhead utility wire system, leaving 47.5% for the future. (UUTFR, p.10)

This undergrounding program, executed by Pacific Gas and Electric Company (PG&E), was largely funded by ratepayer revenue available for municipal utility wire undergrounding pursuant to Tariff Rule 20A, authorized by the California Public Utilities Commission (CPUC). (BLA, p.1)

The CPUC established Rule 20A as a funding mechanism through which PG&E uses a portion of customer-based revenue to fund the undergrounding of utility wires throughout its service territory. (LAFCo, p.5) The seventy miles of rear easement overhead wires in San Francisco cannot be covered by the Rule 20A program. (UUTFR, p.13)

PG&E used Rule 20A funds to trench 100 feet to each private property in the designated areas. Property owners paid for the remainder of the cost for service trenches. Then, the costs of converting the properties to the new system, typically about $1,500 per property, were paid by the City through a grant from the Mayor's Office of Housing. (BLA, p.4)

While PG&E undergrounded the wires approved in the program and was responsible for most of the cost, the City's DPW was responsible for issuing authorizing permits and for coordinating the work. Soon after construction began, it became clear that the actual cost of undergrounding the wires would greatly exceed the projected cost of $1.0 million per mile. (BLA, p.4)
PG&E completed the project in its entirety, as was required under a Master Settlement Agreement reached with the City. (BLA, p.4) The total amount billed by PG&E for 1996 - 2006 was actually

$173,167,804, or an average of $3.8 million per mile, significantly more than the utility's originally estimated costs.

To pay the cost increases, San Francisco borrowed against its future 20A fund allocations. (UUTFR, p.5) The total program costs have still not been fully repaid to PG&E and will require approximately $53.8 million in San Francisco's future annual Rule 20A allocations. Then, in 2011, PG&E revised 20A funding formulas, which cut the annual undergrounding allocations in half, from approximately $6 million to $3.1 million. Should this number remain the same, the city will need roughly 17 years to repay its borrowing and resume using 20A funds for undergrounding. (LAFCo, p.4)

Clearly the ballooning cost overruns were the deciding factor in abandoning future projects. But the more basic question is: what caused the cost overruns? Three studies commissioned by the Board of Supervisors have analyzed the project to answer this question. The aim of these analyses has been to determine, first, given new sources of funds, what more cost-effective strategies could be employed, and secondly what, then, would be the true cost of a new project?

Planning Deficiencies: Lessons Learned

Funding Resources: Prior to commencing the 1996 project, all utility companies prepared annual operating budgets expecting to complete an average of one or two miles of undergrounding in any given fiscal year — when the program actually called for 10 miles per year. Thus PG&E did not allocate sufficient resources to design, coordinate, and complete the project. As funds became available, and PG&E responded by hiring staff and contractors to assist with design and construction, resources became strained and prevented the project from meeting the anticipated completion date of 2008. This lack of adequate planning and resource allocation added to the delays in the program schedule.

Starting in 1996, the original projected costs ballooned to nearly four times original estimates, in part due to unanticipated costs and a lack of cost transparency. 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 — and did not include the cost of streetlight replacement during the undergrounding process.

Strategic Site Selection: In the 1996 project, blocks were often included or excluded by a petition process in arbitrary or irrational ways. Seventeen miles out of the total 45.8 miles included neighborhood petitioning as a criterion for selecting and legislating undergrounding sites. A majority of property-owner signatures for each block was required for the block to be considered. These neighborhoods tended to be more affluent and civically-engaged, as property owners often agreed to bear some portion of the costs of undergrounding. The undergrounding program staff, utility companies, and City Hall received countless letters, emails, faxes and telephone calls from disgruntled property owners who resented having been excluded from the program.

For lack of an economically efficient and equitable master plan, blocks situated between or near undergrounded districts often became stranded islands of overhead wires and poles. To exacerbate the situation, new utility riser poles, needed to feed overhead wires immediately adjacent to undergrounded areas, were added, so that owners in areas with overhead utilities saw additional poles installed along their blocks.

Street Lighting: The requirement to provide for streetlights hampered the San Francisco 20A program from its inception, because the Rule 20A program does not cover the estimated 10% of the project cost for new streetlights if the municipality owns and operates those new lights. The 1996 undergrounding required 1,800 new streetlights, which used up 10 percent of the project's budget, yet this cost was not included in the original cost estimates.

Construction Issues: More Lessons Learned

Customer Conversions:

During the 1996 – 2008 project, no plans or enforceable regulations dealt with property owners' unresponsiveness to property access requests, causing delayed program schedules and extending the overall project duration. Accessing property for customer conversions sometimes took longer than two years.

Permit Fees and Regulations: In many areas, the City requires strict adherence to construction standards often not required in other cities. San Francisco's Public Works Code regulates work in the public right of way (PROW) through permits and code compliance. The permits include fees assessed to utility companies working in the PROW. However, these code requirements can drive up costs as compared to costs in municipalities with less stringent code requirements.

Regular Independent Engineering Reviews and Reports: During previous construction, each project was conducted and completed without an overview of how the work was done. From project design to the completion of "project punch lists," no independent engineering reviews were conducted. As a result, mistakes were often repeated in future projects, with inefficiencies not noted or necessarily corrected in a comprehensive manner. (UUTFR, pp. 13 – 18; LAFCo, pp.5 – 7)

The project was stopped in 2006, when funding sources were exhausted, although much work continued until 2008. "Cutting over" issues, where utility companies convert each individual property from overhead service to the new underground service, delayed many blocks from being finished and "trailing" work continued into 2014. (UUTFR, p.15) Although PG&E wanted more money to cover these last cost overruns, the City insisted that PG&E abide by the current budget. As was mentioned previously, the parties reached an agreement out of court in which the City would not pay extra but PG&E would take the City's 20A funds. The City, without 20A funds and unable to identify any other stable funding sources, has planned no new undergrounding projects.

District 5

Scope and Sequence of the Project

Funding Resources: In future undergrounding, all utility companies and City agencies must identify adequate funding sources. An undergrounding master plan would prescribe that the City departments, contractors, and subcontractors provide the plans for and warrant the resources to complete the work in a timely manner. An aggressive program must include long-term capital planning by all parties. With respect to future undergrounding projects, PG&E had not — as of April, 2015 — provided the City with detailed or line-item explanations for undergrounding costs. (LAFCo, p.6)

Furthermore, undergrounding impacts other City agencies such as MUNI, Department of Parking & Traffic (DPT) and Department of Telecommunications and Information Services. (DTIS.) MUNI distribution lines (thought not overhead wires) and DTIS facilities may need to be undergrounded and DPT parking signs reinstalled. Proper coordination and planning for these entities and a reliable

funding source for the relocation work of these facilities need to be incorporated into the undergrounding process.

Future cost estimates by contractors should be capped, with detailed line items to provide the basis for calculating those costs.

Strategic Site Selection: Future undergrounding sites must be selected on the basis of efficiencies created through a strategic grid system, based on the (primarily electric) utility distribution system designs, and on economies of scale. Sites will always be subject to outside influences, but the majority of sites should maximize construction and system efficiencies. Efficiency should be the first priority, and all other considerations should be tiered below this.

Street Lighting: A new street light system must be installed in districts when the wooden utility poles are removed because, in most situations, the streetlights are attached to the wooden poles. Currently, San Francisco has no reliable funding mechanism for new streetlights required in districts being undergrounded. (UUTFR, p.17) When undergrounding continues and accelerates, the City must identify a dedicated funding source for street light construction, estimated to add 10 percent to total project costs. (BLA, p.6) That could be accomplished with a line item in each year's budget of a minimum amount ─ say $500,000.

In addition, the community process to select the type of streetlight for each project should be streamlined by limiting the number and type of models available. After a community vetting process, a limited palette of streetlight choices can be created based upon neighborhood definitions. The choices will then be offered to residents based upon their neighborhood for each new site. Any requests for a variance should be prohibited, or, if allowed, the additional expense should be borne by the community sponsors. San Francisco currently has no process for passing through the additional costs of special street lighting requests; such a funding mechanism should be adopted. (LAFCo, p.20)

Customer Conversions: Careful planning of the order in which streets are undergrounded could mitigate delays caused by the concentration in a given project of buildings with no outside

connection and/or requiring exterior connection points. Construction of an underground substructure takes approximately six to nine months. Once construction is completed and the cable has been placed in the new underground conduit, utility companies convert each individual property from overhead service to the new underground service in a process called "cutting-over." Poles and overhead wires cannot be removed from a district until all properties are cut over.

San Francisco's Density: As mentioned previously, San Francisco is the second densest city in the United States. With a little over forty-nine square miles and a population exceeding 800,000, the associated infrastructure and unique architecture make right-of-way construction projects more costly and slower to complete than those in other metropolitan areas.

But density also means that in a project funded significantly by a utility tax, costs are spread among many more rate payers to lower the cost per rate payer.

Another "cutting over" problem occurs because San Francisco's old and densely constructed buildings often do not provide outside connection points for each undergrounding. Providing exterior connection points on building walls simplifies the conversion process, while also reducing costs. Exterior connection points, however, created aesthetic issues since these connection points could damage the façade or the appearance of older buildings.

Perhaps "cutting over" might be dealt with at the beginning of each project so that at the end the utility companies can just "throw a switch." Also, City ordinances could require all new construction, electric remodels or major upgrade work to install cut-over work for future undergrounding.

Permit Fees and Regulations: These fees should be considered in relationship to the overall goals of the program, and the City should consider exempting undergrounding from such fees or limiting the application of some of the regulations to undergrounding.

Utility Construction Agreements: PG&E operates under a labor agreement that requires a certain percentage of infrastructure maintenance and construction be performed by its in-house labor team. The costs under an operating Memorandum of Understanding (MOU) may be considerably higher

than those in competitively-bid construction contracts submitted by private firms. On projects that have been led by either Comcast or AT&T, for example, the project costs have resulted in saving hundreds of thousands of dollars for each project. Accordingly, the City could consider outsourcing as much work as possible away from PG&E.

Unlike other cities, San Francisco has a franchise agreement with PG&E dating back to 1939 that provides for a .5% fee for service with no renegotiation. Therefore, even if the city hoped to increase the fee to capture the difference between the franchise fees in a future undergrounding program, it would have to obtain PG&E's approval to reopen the agreement. But PG&E would be highly unlikely to reexamine a 70-plus-year agreement – thereby exposing the company to decades of new legal, financial, and policy requirements – just to permit a utility rate surcharge. (LAFCo, p.6)

But the City would find no impediment to achieving the same ends by imposing a tax on utility rates and requiring PG&E to remit it to the City for undergrounding. It presently does this with the tax on electricity use by commercial users remitted to the General Fund.

Regular Independent Engineering Reviews: Going forward, engineers for the City and for the various utility companies should conduct independent engineering assessments.

District 9

Proliferation of Wireless Antennae and Equipment

Recently, various telecomm companies have been installing wireless transmitters and other devices on the telephone poles on San Francisco streets. The results are unsightly and potentially dangerous masses of equipment, sometimes extending the ugly wooden poles to even greater heights. These installlations for wireless equipment significantly increase the urban blight from the wires, cables, and equipment already hanging from and on the poles on our city streets. Preventing further proliferation is one of the most important reasons to implement a city-wide undergrounding of utility wires.

The San Francisco Planning Department created a document, "Frequently Asked Questions about Wireless Facilities on Wooden utility and Wooden Streetlight Poles," to clarify policies and procedures for wireless equipment. This document is available on line at: http://www.sf-planning.org/ftp/files/currentplanning/wireless/faq_wireless_facilities_on_poles.pdf. References to the document in this section are identified as (FAQ)

According to this document, already almost 400 installations have sprung up on our wooden poles. (FAQ) The plan is to add equipment to over 300 more of the city's steel poles in SOMA and the northeast part of the city, e.g., parts of Russian Hill and North Beach (FAQ) The number of wooden poles to be added to has not been spelled out by the Department of Public Works (DPW), but it is widely known that many permits have

been granted and installations made.

What compounds all this even further is that federal law limits such installations to being placed only on "existing" facilities, and San Francisco's Public Works Code, Article 25, passed by the Supervisors on February 23, 2015, does not allow a permit to issue for streets where "there are presently no overhead utility facilities." The federal law that provides the basis for these installations is a rider tacked on, at the insistence of the telecommunications industry, to the wholly unrelated Middle Class Tax Relief and Job Creation Act of 2012. This act bars local jurisdictions from denying the placement of transmission equipment on existing facilities. (Public Law 112-96, Section 6409(a)). Article 25 sets the conditions by which Telecom Companies may install equipment on poles. This is now being administered by the City's Department of Public Works (DPW), Planning Department, and other professionals of our city government.

Together these federal and local laws exacerbate a gross inequity. Neighborhoods which have already been undergrounded will have no new installations. Typically, these are well-to-do neighborhoods that already benefit because the residents who do not have undergrounding pay ─ and continue to pay ─ for their undergrounding. Thus, the burden ─ this time the increased clutter outside their homes ─ falls, once again, upon those living on streets which have never been undergrounded (typically in the middle and lower class neighborhoods.)

Thus, the only way the City can rid itself of this further blight is by implementing a master plan for undergrounding because, "In the event an undergrounding effort begins, the wireless carriers would be required (as a condition of their utilities permit) to remove their facilities from the wooden poles." (FAQ)

So what we have is: (1) a rapidly increasing proliferation of wireless facilities equipment on our street poles; (2) added to the blight of the cables and wires already strung from the poles; but (3) exempting those streets that have benefited from undergrounding; and (4) therefore concentrating the burden all on those streets which have never been undergrounded. The approval process for telecomm companies to place additional equipment or wires needs to be coordinated with a plan for undergrounding the rest of our city. This situation strongly recommends the prompt implementation of an undergrounding master plan to eliminate these increasingly unsightly poles once and for all.

District 9

Cost of the Project

The Current Best Estimate: Based on the cost information collected, it appears that the average, all inclusive, 2016 cost per mile to underground overhead utility wires in the rest of our city is in the range of $5 million to $6 million per mile. In this cost range, a range of options for funding will permit the undergrounding to be completed in a reasonable period of time.

While we are not professional infrastructure cost estimators, we have come to this estimate based on the careful and thorough research done ─ and cost information collected ─ in the Board of Supervisors' Budget and Legislative Analyst (BLA) Report of 2015, the San Francisco Local Agency Formation Commission (LAFCo) Report of 2015, and the City and County of San Francisco Controller's Report of 2015. These reports are available in the Appendix material of this document.

The final cost estimate will, of course, have to be determined in the drafting of the Master Plan for utility wire undergrounding, where it will be informed by the Department of Public Works, the Department of Telecommunications and Information Security, Pacific Gas & Electric, outside contractors, and professional cost estimators, all pursuant to the emerging plan for

executing that undergrounding: who is to do what work, on what streets, in what order, over what period of time, and under what cost accountability and efficiency protocols.

We summarize here the basis for the foregoing $5 to $6 million cost estimate.

The 1996-2006 Undergrounding Project: From 1996 to 2006, 45.8 miles were done at an average costs of $3.8 million a mile. (BLA, p.5) The costs included were comprehensive, except for lateral trenching of over 100 feet to an owner's property, and about $1,500 to convert the electrical intake of each property. (BLA, p.5) These costs could be paid by the owners pursuant to any future plan.

Assuming that the costs varied over that 10-year period, and taking the midpoint (2001) as the average cost year, and further assuming the average cost in 2001 was $3.8 million we then discount 15% for the cost overruns due to all the avoidable inefficiencies of the 1996-2006 undergrounding. (BLA p.5, citing, in turn, the 2007 UUTFR) Finally, we come to $3.2 million per mile. Then, taking an inflation average of 3% per year, compounded, we come to $5.36 million as the cost in 2016.

The 2010 DPW Estimate: In 2010, the estimate to underground 0.3 miles of Leland Avenue in San Francisco concluded that the all-inclusive costs (cabling, overhead wire removal, traffic signals, stop signs, fire alarm relocation, project administration, and street lights) would be $6.6 million. (BLA, p.6.) We do not include the additional $3.3 million cost of telecommunications and cable wire undergrounding referred to in the BLA report because: (a) we contemplate that, as in San Diego by ordinance, those companies will be required to pay their own costs; and (b) CPUC Tariff Rule 20 prescribes that upon undergrounding being mandated by a local jurisdiction, those companies' pole-installed wires and equipment must be removed.

Note: the $534,333 (10%) for streetlights (BLA, p.6) is for the 0.3 mile costs reported there, not for a full mile, which would be $867,667.

Again, the $6.21 million figure assumes that the work would be done under all the previously-cited inefficient circumstances as the 1996-2006 undergrounding (BLA, p.6) and that it would all

be done by PG&E. Accordingly, a 15% discount is in order, resulting in a $5.29 million figure. In addition, because this figure is based on doing a very small project (0.3 mi.), not a cost-efficient infrastructure unit (BLA, p.6) some additional discount is in order, for example, 10% to $4.7 million. Projecting to 2016 costs, assuming 3% inflation, compounded, results in a 2016 cost of **$**5.94 million. Adding some further discount for the extent to which utility wire undergrounding is integrated with the construction of San Francisco's fiber network and other undergrounding, a further saving of around 5% could be realized (LAFCO pp. 3,4,9,10,14, 15) bringing the per-mile cost estimate to approximately $5.64 million, considerably higher than other California cities, likely due to some extent to building density and topography. (BLA, p.13)

Undergrounding Costs in Other California Cities

San Diego: $3.66 million per mile**,** adjusted for inflation to 2016 and inclusive of street lights and city administrative costs. (BLA, p.8)

San Jose: $4.65 million per mile in 2016 costs, including all construction for all affected utilities, all trenching costs, and all administrative costs. This does not include building owners' approximately $1,500 hook-up costs. (BLA, p.9)

Oakland: $2.77 million per mile in 2016 costs, all inclusive. (BLA, pp.9 - 10)

Bay Area Municipality (2 Projects): PG&E declined to name the municipality or the projects and did not indicate whether the $5.9 million per mile 2014 costs included city costs or street lights, which—if not included—would likely add 10-15%: yielding $5.9-6.5 million. (BLA, p.11 – 12)

But these figures are of limited value since we do not know whether the projects were efficiently sized and coordinated; what financial accountability measures, if any, were in place; or whether the municipality pursued competitive bidding and, if so, for what portion of the work.

In sum, while certain characteristics of San Francisco tend to make undergrounding somewhat more expensive than elsewhere in California, still, a number of measures can be implemented to mitigate many of them and to eliminate significant inefficiencies in order to significantly reduce costs. (BLA p.12)

Accordingly, a realistic conclusion appears to be that undergrounding in San Francisco can be done at a per-mile cost in the range of $5 to $6 million per mile.

District 10

Funding Sources

Regardless of what source or source(s) of funding may be chosen to underground the 470 miles of overhead utility wires that remain, any plan must meet the following six requirements.

Elements Required

1. **The source(s) must produce enough money annually to fund 10 to 12 miles of undergrounding each year at the estimated $5-$6 million per mile**. It is critically important that undergrounding be finished within a finite and reasonable period of time in order to ensure the necessary public support. Galvanizing sufficient support will simply not be possible for undergrounding that is not to be completed beyond any taxpayer's adult lifetime ─ for example, for another 70 to 100 years. At 10 miles per year, undergrounding San Francisco's remaining 470 miles would be finished in just under 50 years; at 12 miles per annum, in under just under 40 years.

2. **The miles per year to be undergrounded must be realistic:** San Diego is doing between 12 and 15 miles a year. (sandiego.gov/undergrounding/overview) San Francisco's topography and building density will likely make 10 to 12 miles a year realistic. The realities of available equipment and manpower will constrain what can be done to 10 to 12 miles per year. Finally, no realistic funding plan could produce more revenue than the $50 to $72 million necessary to do ten to twelve miles per year at between $5 and $6 million per mile.

3. **The funding basis must include a source or sources that require contributions from those who enjoy the benefit of already having their street utility wires underground.** That benefit was bestowed at the expense of all taxpayers but, most relevant here, at the expense of those whose overhead wires have still not been undergrounded after all these years. Fairness is very important in galvanizing the necessary support for the financial measures needed to fund undergrounding.

4. **Funding must be keyed in significant part to requiring contributions from all utility rate payers**. Both property owners and tenants must acknowledge that "their" wires are being undergrounded. This can best be done by adding a modest surcharge on utility bills, in the neighborhood of 3.5% to 4.5%, approximating San Diego's 3.8%, to be collected by PG&E, placed in an interest-earning bank account, and used solely for undergrounding.

5. **Funding needs to be keyed to at least some inflation-sensitive sources.** As inflation increases so does the revenue from inflation-sensitive sources, thereby permitting the undergrounding to continue to completion and avoiding a slowdown, suspension, or early termination of the project.

6. **The funding must come from more than one source.** Several and possibly as many as a half-dozen sources may be used because no single source can ─ as a practical matter ─ provide the necessary funds to sustain the necessary work for 40 to 50 years.

With these principles in mind, here are a number of possible sources to fund the completion of utility wire undergrounding in San Francisco. Funding alternatives are listed below in no particular order, followed by examples of how several funding sources could be combined to produce the required revenue stream and together meet the other requirements identified above.

Funding Alternatives

CPUC Rule 20A, 20B and 20C Funding

Rule 20A: The CPUC allocates about $3 million a year in Rule 20A funds to San Francisco for undergrounding. (BLA, p.4) These funds are built into the PG&E rate structure authorized by the CPUC for PG&E. (LAFCo, p.9) But because San Francisco overspent on its 1996-2006 undergrounding, and so had to borrow forward on its allotment, no CPUC Rule 20 funds will be available for another 16.4 years. (BLA, p.15) At that time, they could be used, along with the then-permitted borrowing of as much as 5 years' future allocations. (BLA, p.1) These funds are estimated at $15 million, and can be used, for example, to offset accumulated and/or future inflationary cost increases.

Rules 20B and C: These CPUC funding mechanisms permit undergrounding at significant rate payer and property owner up-front expenditures (BLA, p.15) and require 100% participant approval. (LAFCo, p.9) Thus they are not deemed practical alternatives for a major undergrounding master plan of 470 miles.

Debt Financing

General Obligation Bonds: Here, the City floats bonds to finance project expenditures, paid back through property taxes. Two-thirds voter approval would be required under Proposition 218. (LAFCo, p.12) In contrast to other fund-raising measures such as utility bill surcharges or sales taxes that generate current revenue, General Obligation (G.O.) bonds incur significant interest charges. We are uncertain whether the City's borrowing capacity could, given other necessary expenditures, sustain the entire cost of implementing city-wide overhead utility wire undergrounding requiring $50 to $72 million a year for 40 to 45 years. Nevertheless, partial funding with G.O. bonds may be practical.

Special Assessment Districts: Under Mello-Roos, special property assessment districts, known as Community Facility Districts, can be formed for the various areas to be undergrounded and special tax bonds issued, the debt being serviced by special taxes on each of the properties in the District(s). (BLA, p.16; LAFCo, p.18) Again, approval of two-thirds of the property owners would be required. But this method of financing would place the entire financial burden on those whose streets have not been undergrounded, when they have paid ─ and continue to pay through their utility rates ─ for undergrounding that other property owners have enjoyed and continue to enjoy: the benefit of undergrounding on their streets.

Parcel Tax: A parcel tax can be placed on any real property: buildings, lots, apartments, condos, single family homes. A $125 per parcel increase would produce annual revenue of about $18 million. (CONT, sheet 2) Two-thirds public vote would be required.

Transfer Tax: San Francisco presently collects a tax on the transfer of real property in the City. The tax is a percentage of the property's value, the percentage increasing in value brackets. The rate for property from $1 million to $5 million is .75%. If the tax were raised by 1/2% on properties selling for $1 million or more, this would create an estimated additional revenue stream of at least $45 million a year which would tend to increase with inflation. (LAFCo, p.15)

Utility Users Tax: Currently, the City imposes a 7.5% tax on the accounts of the 28,055 San Francisco commercial users of electricity, gas, and water. This tax has not been raised since 1993-1994; that is, going on a quarter of a century. (BLA, p.17) If it were raised to 10% ─ the rate in Los Angeles and Long Beach (LAFCo, p.12) ─ an additional $27.8 million would be generated (BLA, p.17), which would tend to increase with inflation. Two-thirds public vote would be required by Prop. 218. For simplicity, we have not included the presumably lesser industrial, agricultural, and other minor customer accounts: total, 10,842 (BLA, p.15) because neither the BLA nor LAFCo reports indicate whether they are subject to the current 7.5% tax.

Access Line Tax: Presently, each access line is taxed $3.09, generating some $43 million per year. (CONT, sheet 2) The Controller has noted that if raised $0.25, $3.8 million additional

revenue would be generated. The UUTF recommended a raise of $1.00 to generate $15.2 million. (UUTF, p.26)

Utility Bill Surcharge: As previously noted, San Diego has, since 2002, financed its 15 mile-a-year undergrounding largely by means of a 3.88% surcharge on its public utility bills for gas and electricity. Having in mind that San Francisco's commercial users are already taxed at 7.5%, (LAFCo, p.13) and that 10% is proposed here, any additional surcharge should likely be limited to residential user accounts, which are presently untaxed.

Because San Diego's franchise agreement with its utility expired and was renegotiated, the surcharge is built into the CPUC-authorized charge rate. In San Francisco, the franchise agreement is not due to terminate. (LAFCo, p.15) Thus, the proposed surcharge would be imposed by a tax, requiring PG&E to collect and remit the proceeds.

San Francisco has some 356,240 residential customer accounts. (BLA, p.15) PG&E has not released to BLA or LAFCo its revenue from these accounts. Assuming a modest average monthly bill of $100, a 3.88% surcharge would generate $16.59 million a year, increasing with inflation.

The City Controller has estimated that 1% charge would generate $3.7 million (the basis for this estimate is not stated). (CONT, sheet 4) Accordingly 3.88% would generate $14.36 million.

General Fund Commitment: San Francisco has an annual budget of $8.96 billion. Committing just $15 million a year would appear perfectly reasonable, if necessary to supplement tax-sourced funding, because this is a major, long-term, city-wide infrastructure improvement to underground 470 miles of overhead utility wires, that have remained unattended ever since installed, and that will be left unattended forever unless a sufficiently funded commitment is finally made to underground them.

Some Effective Combinations of Funding Sources to Finance Undergrounding

(See chart attached.)

Conclusion

Clearly, available funding alternatives fully meet the necessary criteria for appropriate funding sources, and they can, in combination, provide sufficient financing to underground the overhead utility wires on all 470 miles of San Francisco's streets, and do so within a finite and reasonable period of time. It is equally clear that a decision ***not*** to undertake a master plan to finance and implement undergrounding for the rest of San Francisco will, by that inaction, consign almost half our city to forever remain blighted by a network of byzantine wires and unsightly wooden poles.

Effective Combinations of Funding Sources

Cost Per Mile	Miles Per Year	Years to Completion	Cost Per Year	1. Utils.Tax, Cmrcl.Users + 2.5%	2. Access Line Tax $1.00	3. 3.88% Residential Utility Surcharge	4. General Fund	Total Expendi-tures Per Year
$6M	12	39	$72M	$27.8M	$15.2M	$14.4M	$15M	$72.4M
$6M	10	47	$60M	"	"	"	$2.6M	$60M
$5M	12	39	$60M	"	"	"	$2.6M	$60M
$5M	10	47	$50M	"	"	"	----	$50M

Other Alternatives

Parcel Tax
($125. per parcel increase)
$18M p/a

Transfer Tax
(½% increase on > $1M properties)
$45M p/a

District 11

Next Step:

An Undergrounding Master Plan for San Francisco

SFCUU believes that San Francisco must create a comprehensive and complete master plan with a timetable to underground all utilities throughout the city. Surprisingly, the city does not have ─ and has never had ─ such a plan.

About 53% of the city's streets were undergrounded for various reasons over much of the last century. What has been done so far has been haphazard and piecemeal. The Union Square area was undergrounded early in the last century. New neighborhoods such as Diamond Heights in the 1960s and Mission Bay today are built with underground utilities, which confirms without question the preferability of undergrounding citywide. In the 1950s some streets like Guerrero were widened, requiring removal of poles and wires from narrowed sidewalks. In some more prosperous areas such as Pacific Heights and

Dolores Heights, property owners initiated and paid for part of the undergrounding. In other cases CPUC Rule 20A funds were used to underground prominent arterials as part of general beautification programs.

This haphazard approach has left ordinary residential neighborhoods across the city, particularly on the south and west sides, with most utilities aboveground. Even in areas where much work has been done, streets stranded with poles and wires are surrounded by streets that are undergrounded.

The Board of Supervisors' 2007 Underground Utilities Task Force Report specifically identifies these discrepancies and makes a point of the unfairness to some parts of the city. As poles originally intended only to carry simple electrical wires became bearers of telephone wires and now massive arrays of telecommunications cables, connectors, boxes and antennas, the blight has worsened. Small poles are replaced with bigger ones and often more of them. The effect is that the unfairness has worsened dramatically with the addition of new telecom equipment and wires. This unfairness to residents must be addressed through a master plan to underground the entire city.

The lack of proper planning increases costs. This is the primary reason why cost overruns in the last round of undergrounding required borrowing against CPUC 20A funds for at least a dozen years into the future. Previous projects also did not factor the replacement cost of streetlights and some other public infrastructure into cost estimates. Cost benefits of having a continuing program in place were also lost.

Fortunately, San Francisco does not have to start from scratch to develop a master plan. San Diego has been undergrounding utilities since 1970 and has a master plan that San Francisco can use as a model. San Diego will complete its remaining 1,000 miles within 54 years. San Francisco has no plan of any kind and at the present rate its 470 remaining miles will be completed in 600 years. While it is true that San Diego and San Francisco are very different in many ways and costs and construction challenges in San Francisco will be different, the basic issues are similar. The position of SFCUU is that a master plan for San Francisco can be developed with input from the San Diego Transportation and Stormwater Department. A high level overview of the San Diego master plan can be viewed on its website at: http://www.sandiego.gov/undergrounding/index.shtml.

Benefits of a Master Plan

- A Master Plan is the result of involvement of all community stakeholders.
- Funding sources for ***all*** undergrounding are in place before any work starts.
- The whole project is transparent from the beginning.
- A completion date for the entire project is created.
- Completion dates for all phases of construction are set.
- A comprehensive map is created to identify each project segment.
- Continuous construction reduces overall costs and saves time.
- Money is saved by coordinating undergrounding with other infrastructure projects.
- Experience gained during continuing work increases efficiency and saves money.
- All neighborhoods receive a fair share of undergrounding work as it progresses.
- Related infrastructure improvements such as streetlights are included in the plan.
- Telecoms and other pole users can plan their own projects based on the predictable lifespan of existing poles.

Principal Components of a Master Plan

- Realistic cost-per-mile estimates for all parts of the project (In San Francisco this cost will vary more per mile than in San Diego because of greater differences in density, surrounding infrastructure, and local geology.)
- Established financing sources for the entire lifespan of the project
- Detailed cost estimates for all project components
- Agreement of all stakeholders on the principal components of the project
- Accurate maps of completed and planned work for each district
- Timetable for each project segment (San Diego plans 18 to 36 months for trenching, cabling, cut-over and pole removal per segment.)
- Annual progress review

District 8

Appendix: SFCUU Commentaries

Appendix 1:	(UUTFR)	Utility Undergrounding Task Force Report, 2007
Appendix 2:	(BLA)	Budget and Legislative Analyst Policy Analysis Report, 2015
Appendix 3:	(LAFCo)	San Francisco Local Agency Formation Commission Study on the Undergrounding of Utility Wires and Expansion of Fiber Network in San Francisco, 2015
Appendix 4:	(CONT)	Controller's Office, Budget/Revenue Report, 2015

SFCUU's Commentary on the

Utility Undergrounding Task Force Report

In 2004 the Board of Supervisors (BOS) created a task force to provide a plan to finish undergrounding overhead utilities in San Francisco. The Report was submitted to the BOS in January 2007 but never acted on. Because of term-limits, no current member of the BOS was sitting at the time the Report was submitted.

Only the History and Executive Summary sections of the Report follow below. The complete report is available online. The San Francisco Coalition to Underground Utilities (SFCUU) supports all general assertions made in the Report although financing assumptions are no longer current. In particular, cost-per-mile figures for San Francisco had to be re-evaluated as previous estimates were unacceptably inaccurate. Costs for streetlights and affected Muni infrastructure must be considered in budget estimates.

The quantity of wires, connectors, transformers, antennas and other gear mounted on poles and sidewalks has increased significantly since 2007. It is the position of SFCUU that undergrounding of utilities means that underground vaults should be used wherever possible for gear now mounted on poles or sidewalks.

No mention is made in the Summary regarding Muni overhead collector wires for trolley busses and streetcars, nor of the trunk feeder lines supplying them. It is the position of SFCUU that overhead trolley wires should remain, though mounted on metal poles, exactly as is now the case in the parts of the city where undergrounding has already been completed. However, all wooden poles carrying Muni wires should be removed and trunk feeder lines should be undergrounded.

The Report does not note that commercial utility users already pay a 7.5% utility tax. 100% of this tax goes into the General Fund. It is the position of SFCUU that all or part of this utility tax be used to underground utilities.

The Report does not note that the BOS capital budget has no item for undergrounding. The 2015 capital budget had a line item for replacing the boat shed in the middle of Stow Lake but no line for undergrounding.

It is the position of SFCUU that a plan be devised in which undergrounding can be completed in no more than 40 years. The three funding scenarios described in the Executive Summary of the Task Force report have completion times of 80, 105 and 57 years. If no new funding source is found and future undergrounding depends solely on 20A funds as they become available, undergrounding will take approximately 600 years, an absurd length of time to finish a project that is already half done.

The complete Task Force Report is available online at:
http://www.sfbos.org/Modules/ShowDocument.aspx?documentid=52285

SFCUU's Commentary on the

Budget and Legislative Analyst's Policy Analysis Report

The Budget and Legislative Analyst's policy analysis report of March 2, 2015, presents the original, detailed research for all subsequent discussions. It summarizes the 1996 ─ 2006 project, emphasizing the cost overruns due to incomplete pre-planning and the diseconomies that planning created. It claims that although various circumstances cause costs for undergrounding in San Francisco to be higher than in other municipalities, many of these circumstances can be managed more cost-effectively to minimize future undergrounding project costs.

The report creates specific cost estimates based on the actual numbers from different projects and lays out possible sources of funds. It then outlines several approaches to lower and control costs:

- Establishing a city-wide undergrounding Master Plan
- Stipulating certain undergrounding costs to be paid by property owners only
- Establishing more City control over costs and regulations
- Reducing miles of streets selected for undergrounding
- Undergrounding in coordination with other City agency trenching and paving projects through a "Dig Once" policy
- Investigating possible cost differential of tunnel vs. trench and using tunnels that already exist

The SFCUU concurs with and supports ─ with certain caveats ─ the recommendations in this report.

- Establishing a Master Plan must be the first action; it is fundamental to all other because it identifies and generates further savings.

- Requiring property owners to pay some part of the costs invokes Rule 20A which allows for $1,500 per property for conversions to the underground wires for each affected property. Such steps should be taken cautiously to prevent property owners from resisting and hampering the project.

- Establishing more City control means that the City would assume more management responsibility, closely align activities with the timeline in the Master Plan, negotiate with various utility companies and other contractors to clarify responsibilities for various cost components, even suspend some city regulations. These steps would be difficult and some are more likely to success than others. The City should promote the more feasible steps reasonable compromises and move the project along.

- Reducing miles of undergrounding or at least prioritizing to maximize effectiveness might mean prioritizing telephone poles located street-side, focusing on aesthetic concerns.

- Further investigating the tunneling option seems to be a part of the Master Plan, to be settled before costs are determined.

In general, the SFCUU urges the San Francisco Supervisors to consider how to implement whatever portions of these recommendations they believe would be acceptable and would work to launch a renewed project to rid the City of the urban blight of wooden telephone poles.

The complete BLA report is available at:
http://www.sfbos.org/Modules/ShowDocument.aspx?documentid=51064

SFCUU's Commentary on the
LAFCo Study on the Undergrounding of Utility Wires
and Expansion of Fiber Network in San Francisco

In July of 2015, the Local Agency Formation Commission (LAFCo) of the City and County of San Francisco produced its final report on undergrounding our unattractive wooden telephone poles, combined with a study of the ever-expanding wireless antennae that sit atop those poles.

The San Francisco Coalition to Underground Utilities (SFCUU) strongly concurs with the major recommendation of the LAFCo report, that the project must proceed pursuant to a comprehensive Master Implementation Plan. A number of city and other agencies need to be involved in planning, because the more coordination around planning, the greater the cost efficiencies. Shared costs and cost efficiencies are of paramount importance because prior undergrounding has resulted in significant cost overruns and a number of areas have been identified for possible cost savings.

SFCUU does not believe that undergrounding should rely solely on the DPW/SFPUC "Dig Once" policy for undergrounding utility wires and fiber networking because it is not practical. The option, as presented in this report, adding undergrounding to previously planned street resurfacing, could provide some cost benefits. However, many streets involved have no remaining telephone poles, so many resurfacing projects would not increase the undergrounding total. Also, following plans set up for repaving makes undergrounding an afterthought, a scatter-shot implementation through the city rather than improving large portions of specific neighborhoods. Still, DPW/SFPUC should identify opportunities to "piggy-back" on the Dig Once policy where it would advance undergrounding and provide cost savings.

Ultimately, major emphasis should be placed on devising an "Implementation Plan" for stand-alone telephone wire undergrounding, focusing on streets where SFPUC has not yet performed any work, using all possible sources of cost efficiencies, and coordinating among agencies to insure smooth operations.

Above all, the implementation plan should reflect the highest level of analysis from the highest level of expertise, to project reasonable, reliable cost estimates, so that the subsequent project to underground these repellent and dangerous poles does not perish for inadequate funding.

The complete LAFCo report is available online on the LAFCo website:
http://www.sfbos.org/index.aspx?page=4158

SFCUU's Commentary on the

Controller's Office Report on Revenue Generators

In its 2015 Budget and Revenue Summary, the San Francisco Controller's Office presented summary and detail sheets of revenue generators.

SFCUU has relied on these figures, especially in the Funding Sources section. Further, SFCUU believes that these sources of funds ─ along with more exotic revenue sources ─ can provide sufficient financing to see the undergrounding project to completion.

The complete report is available on the Controller's Website at:

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