Evacuation Route: University/6th/Dwight (3.57 miles)						
Street	Segment			Segment Length (mi)	Utility Length (mi)	
					OH	UG
University Ave	Interstate 80 Overpass	to	6th	0.31	0.07	0.17
6th	University Ave	to	Dwight Way	0.56	0.56	-
Dwight Way	6th	to	Fernwald Rd	2.68	2.68	-
Total of each OH/UG Utilities					3.31	0.17
Percentage of each OH/UG Utilities					95%	5%
Total Utilities					3.48	

Table 5: Detailed utility status for route University/6th/Dwight

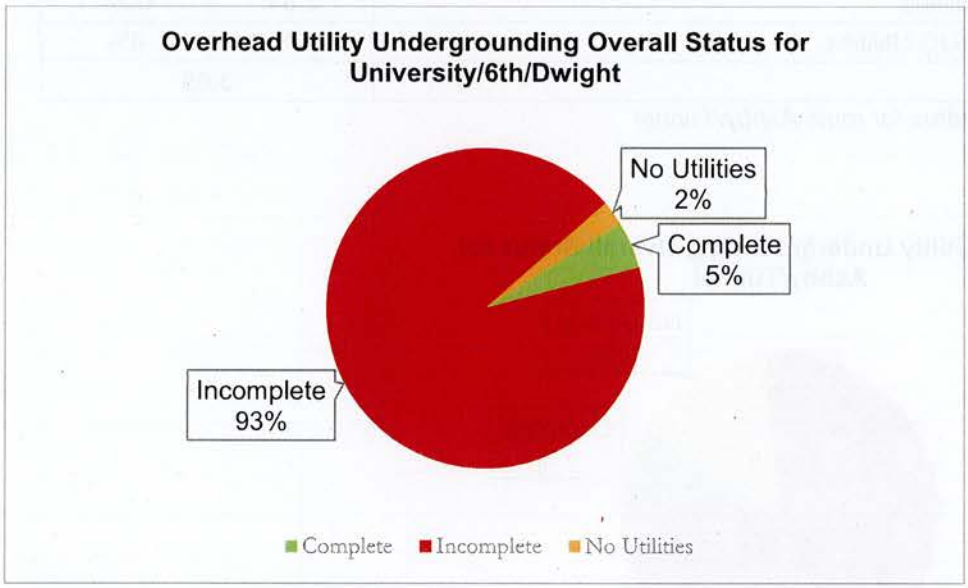


Figure 5

Ashby Avenue, Tunnel Road Route

This evacuation route is along State Highway Route 13. It is partially inside the boundary of Fire Zone 2 and connects to Interstate 80. It has a 79% incompletion rate for utility undergrounding as shown in Table 6 and Figure 6.

Ashby Avenue is an east-west principal arterial street and is also State Highway Route 13 under Caltrans jurisdiction. It is primarily residential with a few businesses, mostly between Interstate 80 and San Pablo Avenue. It provides access to the Claremont Branch Library, a hospital, a nursing home, many apartment buildings, and a couple of gas stations. The evacuation route along Ashby Avenue is 2.9 miles along. Overhead lines are present for 2.4 miles from 9th street to Martin Luther King Jr Way, Adeline Street to Benevue Avenue, Piedmont Avenue to Domingo Avenue, a section between Bay Street and 7th Street, and at the intersection with Elmwood Avenue.

Tunnel Road is an east-west principal arterial street and is also State Highway Route 13 under Caltrans jurisdiction with residential land uses along the street frontage. The evacuation route along Tunnel Road is 0.6 miles from Domingo Avenue to the City limit near Vicente Road. Overhead lines are present for the entire length.

Evacuation Route: Ashby/Tunnel (3.56 miles)						
Street	Segment			Segment Length (mi)	Utility Length (mi)	
					OH	UG
Ashby Ave	Bay St	to	Sacramento St	0.98	0.61	0.10
Ashby Ave	Sacramento	to	College Ave	1.44	1.15	0.14
Ashby/Tunnel	College Ave	to	Vicente Rd	1.14	1.05	-
Total of each OH/UG Utilities					2.81	0.24
Percentage of each OH/UG Utilities					92%	8%
Total Utilities					3.05	

Table 6: Detailed utility status for route Ashby/Tunnel

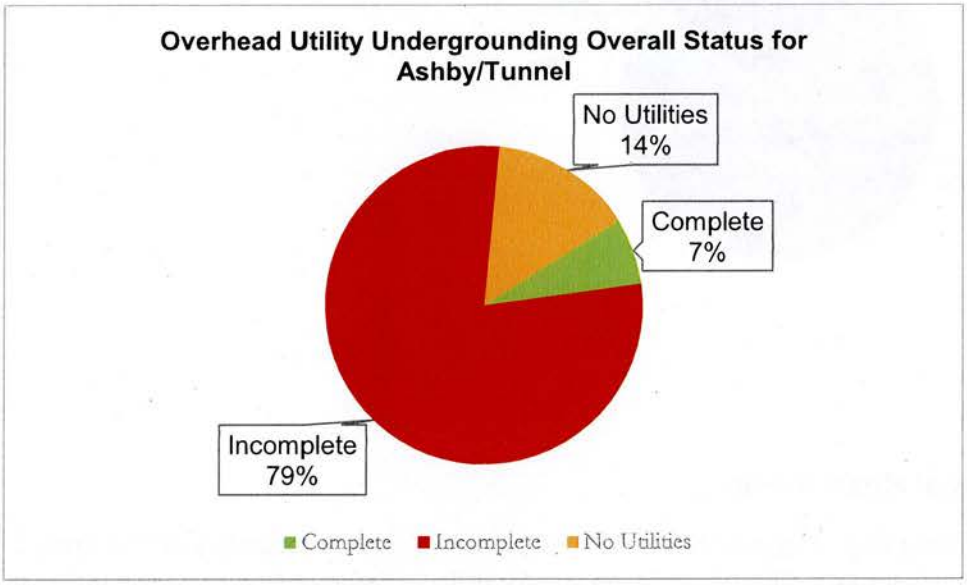


Figure 6

San Pablo Avenue, Alcatraz Avenue, Claremont Avenue Route

This evacuation route reaches the edge of Fire Zone 2 and connects to State Highway Route 13 with about one half of the route inside the City of Oakland. It has around 82% incompletions for utility undergrounding as shown in Table 7 and Figure 7.

San Pablo Avenue is a north-south principal arterial street and is designated as State Highway Route 123 under Caltrans jurisdiction with commercial land uses along the street frontage. The evacuation route along

San Pablo Avenue, connecting Ashby Avenue and Alcatraz Avenue, is 0.4 miles long. There are no overhead lines along the evacuation route except at the intersection with 65th Street.

Alcatraz Avenue is an east-west minor arterial street. It provides access to a school and a church. The evacuation route along Alcatraz Avenue is 1.9 miles long. Overhead lines are present for over 90% of the street segment.

Claremont Avenue is a north-south minor arterial street. It is primarily residential with a few businesses between Woolsey Street and Prince Street and provides access to the John Muir Elementary School near the intersection with Ashby Avenue. The evacuation route on Claremont Avenue is 0.5 miles from Alcatraz Avenue to State Highway Route 13. Overhead lines are present for the entire length.

Evacuation Route: San Pablo/Alcatraz/Claremont Ave (2.79 miles)						
Street	**Segment**			**Segment Length (mi)**	**Utility Length (mi)**	
					OH	**UG**
San Pablo	Ashby	to	Alcatraz	0.37	-	0.37
Alcatraz	San Pablo	to	Claremont	1.93	1.81	0.12
Claremont	Alcatraz	to	Ashby	0.49	0.49	-
Total of each OH/UG Utilities					2.30	0.49
Percentage of each OH/UG Utilities					82%	18%
Total of all Utilities					2.79	

Table 7: Detailed utility status for route San Pablo/Alcatraz/Claremont

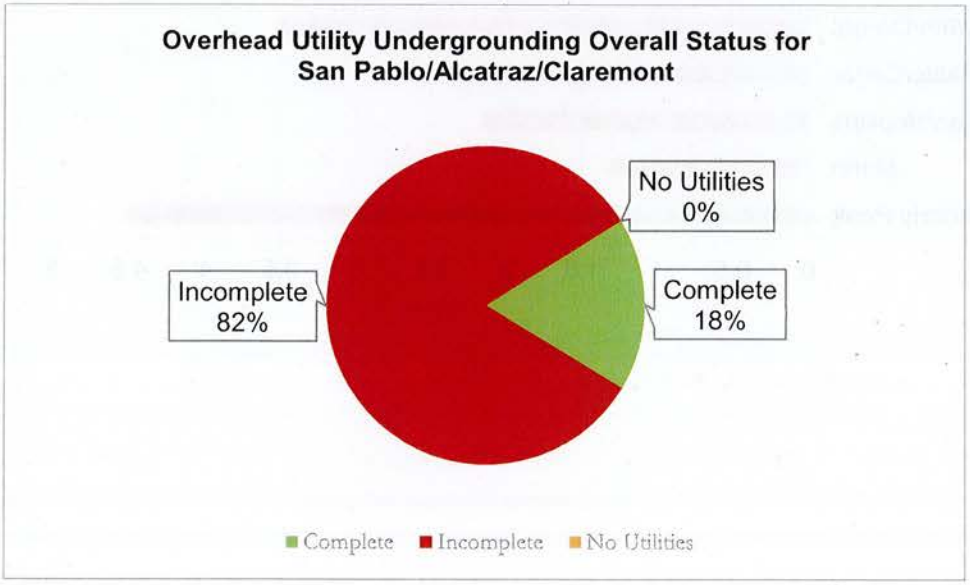


Figure 7

Summary

Currently, around 86% of the City's major evacuation routes have not yet been undergrounded. The utility maps show that along the majority of each of the City's major evacuation routes, there exists overhead utilities, underground utilities, or both, with a few minor segments that do not possess utilities. For the majority of the major evacuation routes, if utility poles and overhead wires are not observed, then it is reasonable to assume that there are underground utilities present along these segments.

Based on the compiled information, Table 8 shows the overall status of the utilities along the City's major evacuation routes. Figure 8 shows the length of each evacuation route and the length with existing overhead and underground facilities. Figure 9 shows the total utility undergrounding status for the City's major evacuation routes.

Total of OH/UG Utilities along all Evacuation Routes		
	OH	**UG**
Total of each OH/UG Utilities (mi)	16.92	2.74
Percentage of each OH/UG Utilities	86%	14%
Total Utilities (mi)	19.66	
Total Route Length (mi)	20.38	

Table 8: Overall utility status for Berkeley evacuation routes

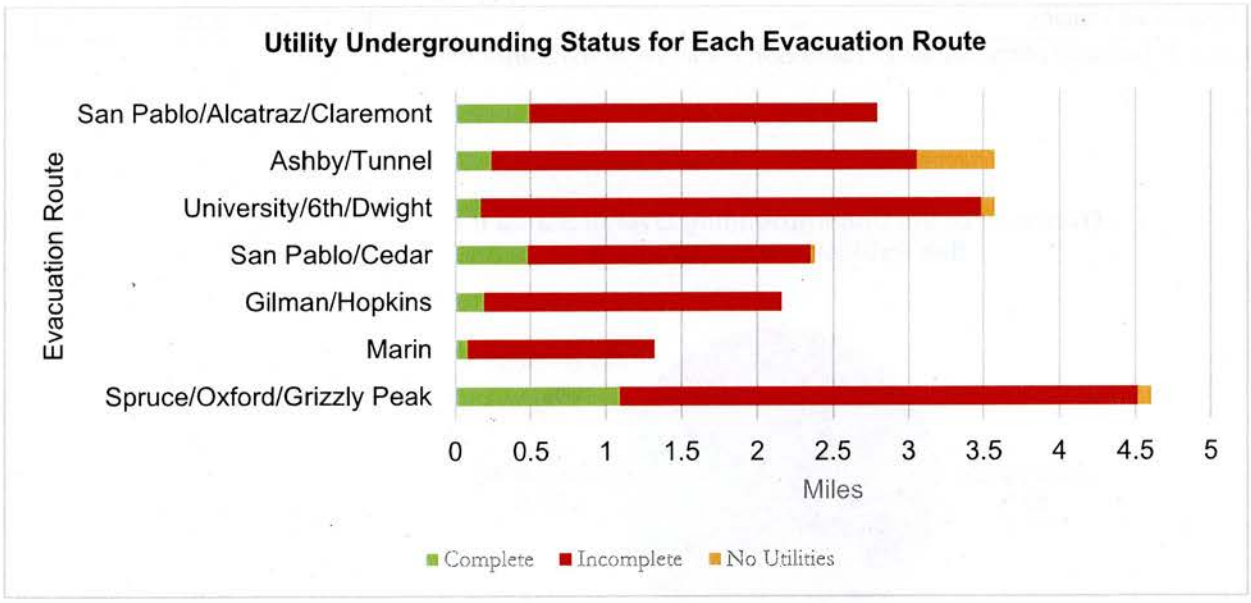


Figure 8

Section IV – Planning Level Costs

Cost Estimate Methodology

Three methods are used to determine the per mile unit cost of undergrounding: Method 1 is from a California Public Utilities Commission report regarding undergrounding program costs, Method 2 is from recent publicly bid utility undergrounding projects and Method 3 is an average of a few listed projects in a report from the City and County of San Francisco Board of Supervisors Report. Below is a description of each method.

Method 1: CPUC/Edison Electric Institute Studies on Utility Undergrounding Costs

The Policy and Planning Division of the California Public Utilities Commission (CPUC) completed a report entitled "Program Review California Overhead Conversion Program, Rule 20A for Years 2011-2015". The report references the Edison Electric Institute study titled "Out of Sight, Out of Mind" for the unit cost per mile for undergrounding utilities. The 2012 report prepared by Edison Electric Institute concluded that the cost to underground in an urban area is approximately $5,000,000 per mile. Using this unit cost combined with a construction inflation coefficient of 4%, the undergrounding unit cost for an arterial street in an urban area in 2019 is as shown below for Method 1.

Method 1 Costs for Utility Undergrounding	$6,580,000 per mile

Method 2: Utility Undergrounding Costs in the San Francisco Bay Area

Comparison of the bid unit prices from recent local agency utility undergrounding projects totaling more than $40 million in construction costs located in Redwood City, Pleasanton, Dublin, San Pablo, Half-Moon Bay, Martinez, and South San Francisco. These combined projects were evaluated to develop a general cost for utility undergrounding in the San Francisco Bay Area. The representative projects are publicly bid, incorporate the bid results of various complicated urban utility undergrounding projects, and reflect a balance of pricing from various contractors in the San Francisco Bay Area. When reviewing the bids for local utility undergrounding projects, these projects often included incidental items that will not be associated with the Berkeley evacuation route undergrounding project and therefore can be removed from the Method 2 cost. Examples of construction cost items to be removed from the Method 2 estimates are upgrades related to: storm drain systems, sidewalks and curb ramps, Caltrans and other agency requirements, wet utilities and landscape improvements. The City of Berkeley is also anticipating a programmatic approach for the evacuation route undergrounding program; it is estimated that a programmatic approach would result in a 20% reduction in overall cost due to savings in mobilization, project overhead, and materials purchases. After consideration of the added costs of streetlights, private property service conversions, and the utility company costs per mile for wiring and vaults, engineering design fees, construction management costs; the resulting unit cost is as shown below for Method 2.

Method 2 Costs for Utility Undergrounding	$7,058,000 per mile

Method 3: San Francisco Report on Utility Undergrounding Costs

City and County of San Francisco Board of Supervisors also prepared a report to review cost of undergrounding utility wires in San Francisco in March 2015. This report references several other cities that have implemented undergrounding of utility wires and included associated costs per mile. This method includes per mile cost based on some of the undergrounding projects in San Diego, San Francisco, Oakland, and San Jose with inflation costs to the Year 2019. The average of the above projects costs (excluding the highest and lowest) for Year 2019 represents the resulting unit cost for Method 3, which is shown below.

Method 3 Costs for Utility Undergrounding	$6,760,000 per mile

Utility Undergrounding Costs per Mile

The per mile unit cost for utility undergrounding for a major arterial street is calculated using the average of Method 1, Method 2 and Method 3. See below unit costs per mile with and without street lighting. These planning level cost estimates are not actual costs and may be lower or higher depending upon the project length, locations, extent of improvements, and bidding environment due to economy, when the projects are out to bid.

Avg. of Method 1, 2 & 3 Costs for Utility Undergrounding with Street Lighting FY 2019 **(BASELINE)**	$6,800,000 per mile
Avg. of Method 1, 2 & 3 Costs for Utility Undergrounding without Street Lighting FY 2019	$6,300,000 per mile
Cost for Street Lighting FY 2019	$500,000 per mile

Street lighting costs are also shown separately as per mile cost above, since the City is considering installing solar street lighting. The above baseline includes planning costs, engineering design fees, construction costs, utility wiring costs, service conversions, street lighting costs, and project management costs.

Construction Complexity Level for City of Berkeley Evacuation Routes

The Construction Complexity Level metric is broken down into five levels; Level 1 represents the least complex conditions for utility undergrounding, and Level 5 represents the most complex conditions for utility undergrounding. The Construction Complexity Level metric is dependent on four different categories:

1. Existing wire quantity and size: The utility company record maps identify the size and quantity of overhead wires for each street segment, including high voltage conductors and transformers. Wire sizes, quantities and substructures affect the cost of the underground duct banks.
2. Average Daily Traffic (ADT): ADT levels were determined from the City of Berkeley Traffic Engineering Average Total Daily Traffic Volume Map. High traffic volumes cause increased construction costs for traffic control during construction.
3. Street categorization as either residential, commercial, or mixed-use: Commercial buildings have greater utility demands and more service conversions when compared to a single family residential building.

4. Type of pavement surfacing: Streets were categorized as either asphalt or concrete streets. Concrete streets are more expensive for trenching and resurfacing.

The City's Evacuation Routes were examined for each of the four different categories and they were assigned a Construction Complexity Level. Level 5 represents the greatest cost at $6,800,000 per mile. A Level 4 street is assumed to be 10% less than the cost of a Level 5 street, a Level 3 street is assumed to be 20% less than the cost of a Level 5 street, a Level 2 street is assumed to be 30% less than the cost of a Level 5 street, and a Level 1 street is assumed to be 40% less than the cost of a Level 5 street.

A summary of these unit costs in FY 2019 for each Construction Complexity Level can be found below which includes planning costs, engineering design fees, construction costs, utility wiring costs, service conversions, street lighting costs, and project management costs.

Level 5 Construction Complexity for Utility Undergrounding	$6,800,000 per mile
Level 4 Construction Complexity for Utility Undergrounding	$6,120,000 per mile
Level 3 Construction Complexity for Utility Undergrounding	$5,440,000 per mile
Level 2 Construction Complexity for Utility Undergrounding	$4,760,000 per mile
Level 1 Construction Complexity for Utility Undergrounding	$4,080,000 per mile

For greater detail of each evacuation route undergrounding costs for FY 2019-Programmatic Approach, refer to Appendix D.

Other Construction Cost Scenarios

If the undergrounding program is implemented by ballot measure, the projects are anticipated to begin construction in 2023. See Appendix D for revised program costs to include inflation to year 2023. If the program is implemented in a traditional capital improvement program (CIP) implementation of one project at a time, the 20% savings will not be realized. Appendix D shows the program costs to year 2023 with a CIP approach.

Summary of Total Program Undergrounding Costs

The total program costs for utility undergrounding along the City of Berkeley's evacuation routes is $102.6 Million (FY 2019), $120 Million (FY 2023) with a programmatic approach and $139.5 Million (FY 2023) with a CIP approach.

Appendix A

Map of City's Major East/West Evacuation Routes


SHATTUCK AV
UNIVERSITY AV
UNIVERSITY HOUSE
MARTIN LUTHER KING JR WAY
SACRAMENTO ST
DWIGHT WAY
ASHBY AV
ALCATRAZ AV
RUSSELL ST
HASTE ST
DERBY ST
PARKER ST
BANCROFT WAY
DURANT AV
CHANNING WAY
HEARST AV
CEDAR ST
VINE ST
ROSE ST
SPRUCE ST
LAUREL ST
HILLSIDE AV
EUCLID AV
GRIZZLY PEAK BLVD
CLAREMONT AV
ASHBY AV
ALCATRAZ AV
MARKET ST
OAKLAND AV
MACARTHUR BLVD
SAN PABLO AV
TELEGRAPH AV
COLLEGE AV
DOMINGO AV
CLAREMONT BLVD
BENVENUE AV
ALLSTON WAY
FRONTAGE RD
SEAWALL DR
BREAKWATER DR
UNIVERSITY AV
SHORELINE DR
EASTSHORE HWY
I-80
OFFICE AM

Appendix B

Map of Existing Overhead and Underground Facilities

Along City's Major Evacuation Routes

CITY OF BERKELEY
EVACUATION ROUTES
UTILITY STATUS

Appendix C

Photos from Field Visits

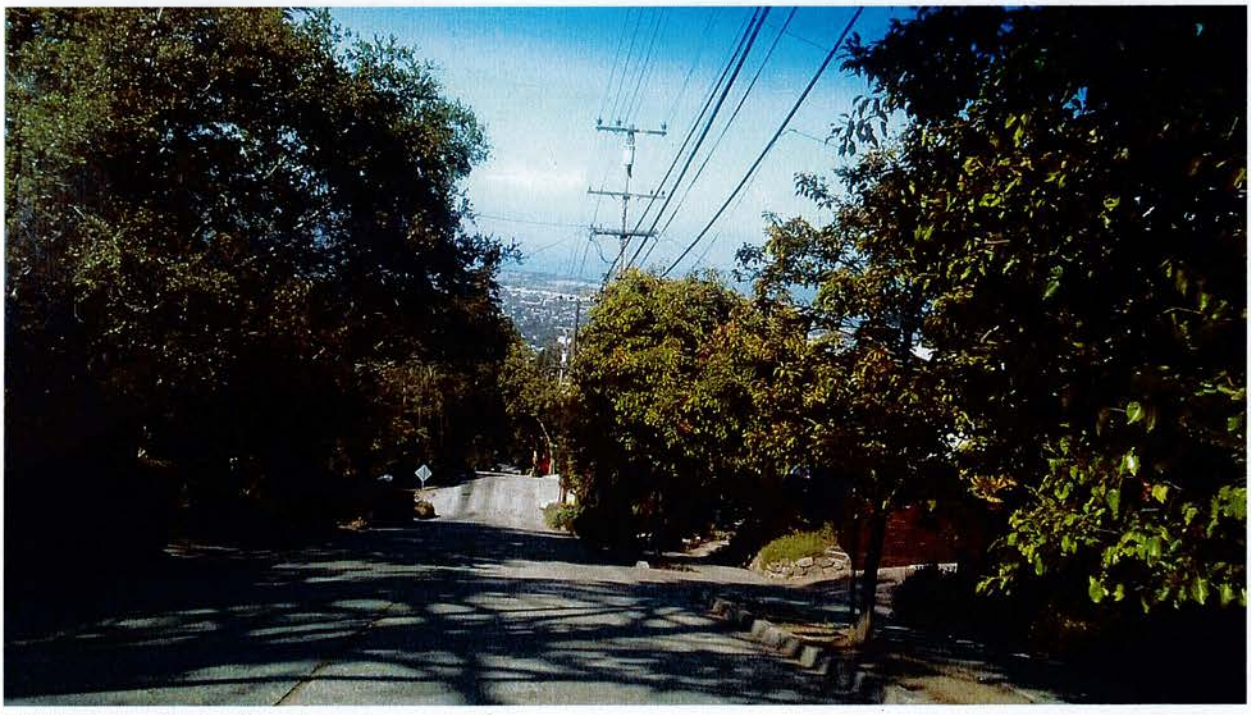
Spruce/Oxford/Grizzly Peak Route

Grizzly Peak Blvd – Facing Northwest

Spruce St – Facing South

Marin Ave Route

Marin Ave – Facing North



Marin Ave – Facing Southwest

Gilman/Hopkins Route

Gilman St – Facing West

San Pablo/Cedar Route

Cedar St – Facing West

Ashby/Tunnel Route

Ashby Ave – Facing West

Ashby Ave – Facing West

Appendix D

City of Berkeley Evacuation Route Utility Undergrounding Costs

FY 2019 Base line costs for Utility Undergrounding with Street Lighting with a Programmatic Approach is as shown below:

Street	Construction Complexity	Centerline of Street with Overhead	Unit of Measure	Unit Cost	Total Cost
San Pablo Ave	N/A	0	MILE	$ -	$ -
Cedar St	3	1.87	MILE	$ 5,440,000	$ 10,172,800
Alcatraz Ave	1	1.81	MILE	$ 4,080,000	$ 7,384,800
Claremont Ave	1	0.49	MILE	$ 4,080,000	$ 1,999,200
Grizzly Peak	2	1.35	MILE	$ 4,760,000	$ 6,426,000
Spruce St	2	1.76	MILE	$ 4,760,000	$ 8,377,600
Rose	2	0.06	MILE	$ 4,760,000	$ 285,600
Oxford St	2	0.25	MILE	$ 4,760,000	$ 1,190,000
Marin Ave	4	1.24	MILE	$ 6,120,000	$ 7,588,800
Gilman St	5	1.16	MILE	$ 6,800,000	$ 7,888,000
Hopkins	2	0.81	MILE	$ 4,760,000	$ 3,855,600
University Ave	3	0.07	MILE	$ 5,440,000	$ 380,800
Sixth St	3	0.56	MILE	$ 5,440,000	$ 3,046,400
Dwight Way	4	2.68	MILE	$ 6,120,000	$ 16,401,600
Ashby Ave	5	2.21	MILE	$ 6,800,000	$ 15,028,000
Tunnel Road	3	0.6	MILE	$ 5,440,000	$ 3,264,000
Total		**16.92**			**$ 93,289,200**
Total (including 10% contingency)					**$ 102,618,120**
Per Mile Unit Cost (including 10% contingency)					**$ 6,064,901**

FY 2023 Base line costs for Utility Undergrounding with Street Lighting with a Programmatic Approach is as shown below:

The construction costs included below use the following assumptions:

1. Construction costs with inflation of 4% per year to 2023,
2. Undergrounding projects will be implemented as a City-wide program to reduce overall cost,
3. Construction costs are scaled based on the Construction Complexity Level of the street segment, and
4. Transportation and pedestrian amenities, wet utility upgrades, and other non-undergrounding expenditures are assumed not to be included.

Street	Construction Complexity	Centerline of Street with Overhead	Unit of Measure	Unit Cost	Total Cost
San Pablo Ave	N/A	0	MILE	$ -	$ -
Cedar St	3	1.87	MILE	$ 6,364,000	$ 11,900,680
Alcatraz Ave	1	1.81	MILE	$ 4,773,000	$ 8,639,130
Claremont Ave	1	0.49	MILE	$ 4,773,000	$ 2,338,770
Grizzly Peak	2	1.35	MILE	$ 5,569,000	$ 7,518,150
Spruce St	2	1.76	MILE	$ 5,569,000	$ 9,801,440
Rose	2	0.06	MILE	$ 5,569,000	$ 334,140
Oxford St	2	0.25	MILE	$ 5,569,000	$ 1,392,250
Marin Ave	4	1.24	MILE	$ 7,160,000	$ 8,878,400
Gilman St	5	1.16	MILE	$ 7,955,000	$ 9,227,800
Hopkins	2	0.81	MILE	$ 5,569,000	$ 4,510,890
University Ave	3	0.07	MILE	$ 6,364,000	$ 445,480
Sixth St	3	0.56	MILE	$ 6,364,000	$ 3,563,840
Dwight Way	4	2.68	MILE	$ 7,160,000	$ 19,188,800
Ashby Ave	5	2.21	MILE	$ 7,955,000	$ 17,580,550
Tunnel Road	3	0.6	MILE	$ 6,364,000	$ 3,818,400
Total		**16.92**			**$ 109,138,720**
Total (including 10% contingency)					**$ 120,052,592**
Per Mile Unit Cost (including 10% contingency)					**$ 7,095,307**

Planning level cost estimate for utility undergrounding (with street lighting) along City of Berkeley evacuation routes for Year 2023 with programmatic approach.

FY 2023 Base line costs for Utility Undergrounding with Street Lighting traditional Capital Improvement Program implementation is as shown below:

Street	Construction Complexity	Centerline of Street with Overhead	Unit of Measure	Unit Cost	Total Cost
San Pablo Ave	N/A	0	MILE	$ -	$ -
Cedar St	3	1.87	MILE	$ 7,394,000	$ 13,826,780
Alcatraz Ave	1	1.81	MILE	$ 5,545,000	$ 10,036,450
Claremont Ave	1	0.49	MILE	$ 5,545,000	$ 2,717,050
Grizzly Peak	2	1.35	MILE	$ 6,469,000	$ 8,733,150
Spruce St	2	1.76	MILE	$ 6,469,000	$ 11,385,440
Rose	2	0.06	MILE	$ 6,469,000	$ 388,140
Oxford St	2	0.25	MILE	$ 6,469,000	$ 1,617,250
Marin Ave	4	1.24	MILE	$ 8,318,000	$ 10,314,320
Gilman St	5	1.16	MILE	$ 9,242,000	$ 10,720,720
Hopkins	2	0.81	MILE	$ 6,469,000	$ 5,239,890
University Ave	3	0.07	MILE	$ 7,394,000	$ 517,580
Sixth St	3	0.56	MILE	$ 7,394,000	$ 4,140,640
Dwight Way	4	2.68	MILE	$ 8,318,000	$ 22,292,240
Ashby Ave	5	2.21	MILE	$ 9,242,000	$ 20,424,820
Tunnel Road	3	0.6	MILE	$ 7,394,000	$ 4,436,400
Total		**16.92**			**$ 126,790,870**
Total (including 10% contingency)					**$ 139,469,957**
Per Mile Unit Cost (including 10% contingency)					**$ 8,242,905**

Planning level cost estimate for utility undergrounding (with street lighting) along City of Berkeley evacuation routes for Year 2023 with CIP approach

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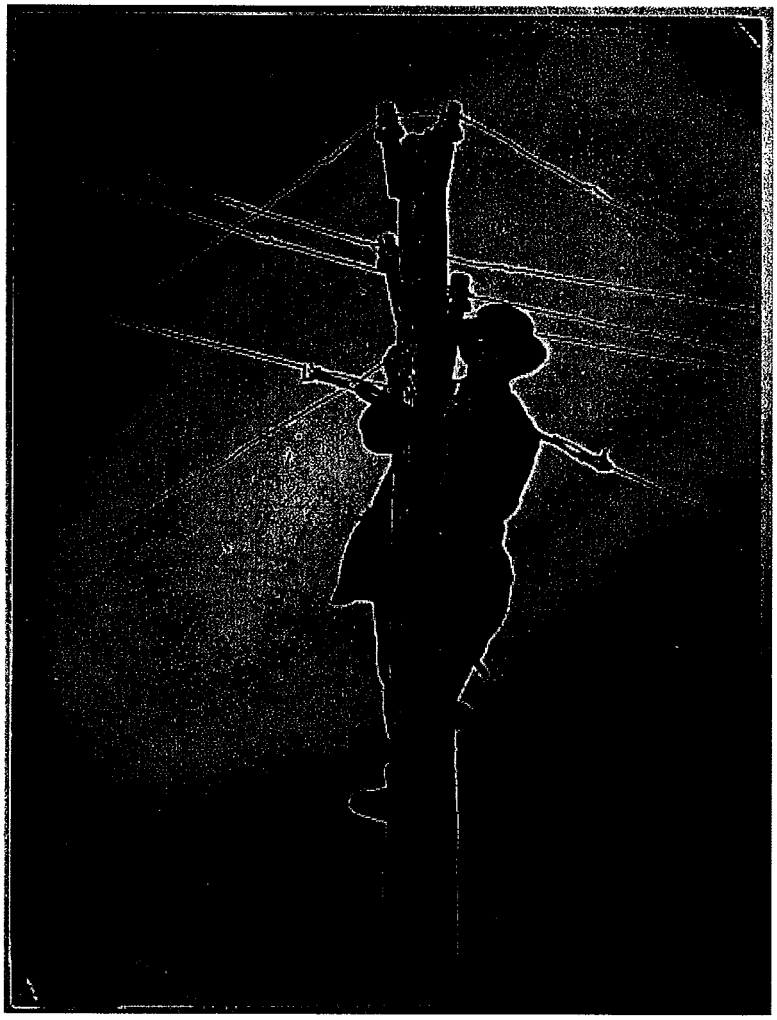
Appendix F
A Natural History of the Wooden Utility Pole

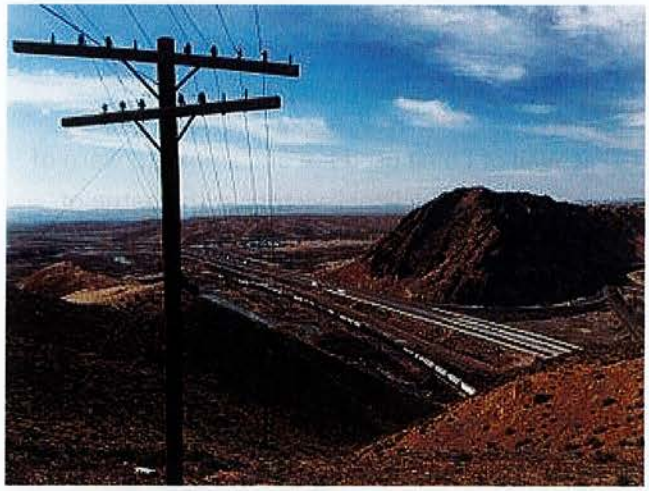
A NATURAL HISTORY OF THE WOODEN UTILITY POLE



California Public Utilities Commission

July 2017

April Mulqueen
Policy and Planning Division
California Public Utilities Commission
San Francisco



…Yet they are ours. We made them.
See here, where the cleats of linemen
Have roughened a second bark
Onto the bald trunk. And these spikes
Have been driven sideways at intervals handy for human legs.
The Nature of our construction is in every way
A better fit than the Nature it displaces
What other tree can you climb where the birds' twitter,
Unscrambled, is English? True, their thin shade is negligible,
But then again there is not that tragic autumnal
Casting-off of leaves to outface annually.
These giants are more constant than evergreens
By being never green.

---------- Excerpt from "Telephone Poles" by John Updike, 1963

1. Early Communications: Eyes, Wings, and Feet

Before the modern communications era, it was very difficult to communicate over a distance.

Clockwise from upper left: beacon towers along the Great Wall of China used fire and smoke to warn of approaching armies; Phidippides ran 26 miles to deliver the news of the Greek victory at the battle of Marathon, and died from the effort; carrier pigeons have been used to carry brief (and lightweight) messages for thousands of years; and in 1775, lanterns in a window at Boston's Old North Church signaled the direction of the British Army's march towards Lexington and Concord, Massachusetts: "one if by land, two if by sea!"

Figure 1

Figure 2

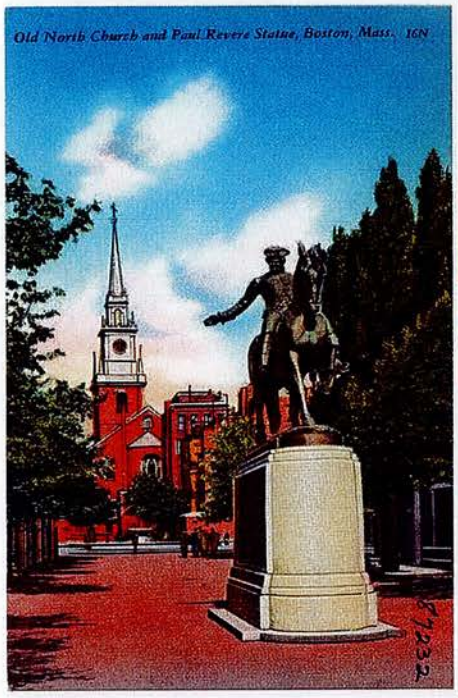


Figure 4

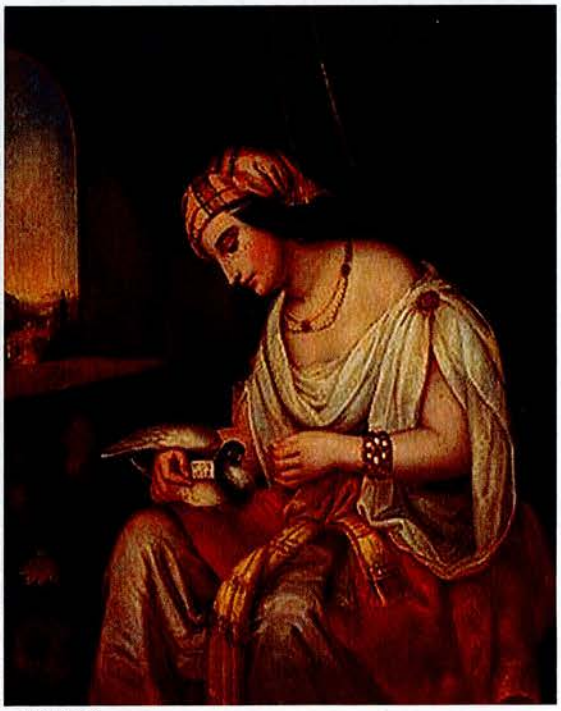


Figure 3

More complicated messages had to be written down and carried, and delivery over a distance could be quite slow. For example, in 1841, it took 110 days for news of President William Henry Harrison's death to reach Los Angeles.[1] 110 days is more than three times as long as William Henry Harrison served as President. 110 days is also the gestational period of a lion. While 110 days might be the right length of time to wait for a lion cub to be born, it is a long time to wait for important news.

Figure 5

2. The Telegraph: Forty Miles, and a Mistake

In 1843, the United States Congress gave Samuel Morse $30,000 for a demonstration project to prove he could send messages over a distance more quickly and efficiently than the means available at the time. Morse and his partners began laying underground telegraph wires between the Capitol Building in Washington, D.C., and a railroad station in Baltimore, a distance of forty miles.

Unfortunately, the wires were defective, and Morse and his partners were running out of time and money. One of Morse's partners suggested that the quickest way to complete the project would be to string telegraph wires overhead on trees and wooden poles.

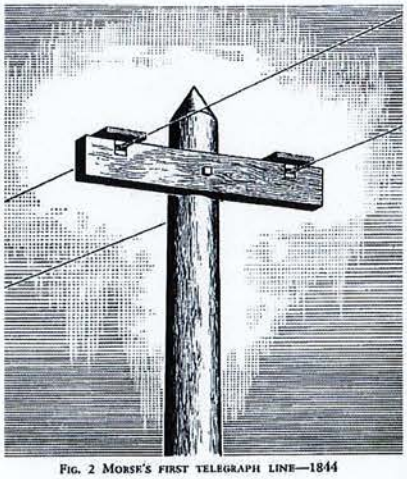


FIG. 2 MORSE'S FIRST TELEGRAPH LINE—1844

Figure 6

[1] Global Connections: Volume 2, Since 1500: Politics, Exchange, and Social Life in World History By John H. Coatsworth, Charles Tilly, Juan Cole, Louise A. Tilly, Michael P. Hanagan, and Peter C. Perdue, Cambridge University Press, March 2015, at 247.

The wooden utility pole was born, albeit as a mistake.

On May 24, 1844, thanks to telegraph wires hastily strung on hundreds of wooden utility poles, the phrase "What Hath God Wrought" was successfully telegraphed via Morse code from D.C. to Baltimore and back.

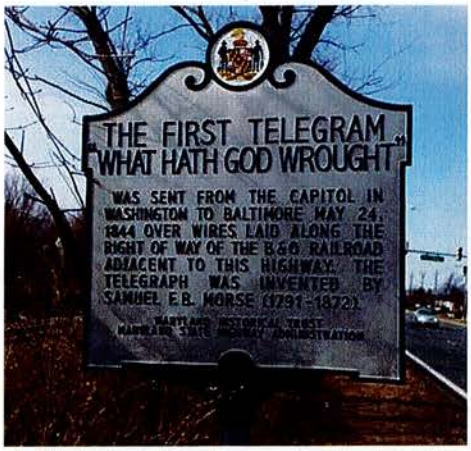


Figure 7

Although the first wooden utility poles were the result of a mistake, they caught on quickly; aside from the Plains, the United States is richly forested, and the raw material for wooden utility poles was readily available. Soon there were thousands of wooden utility poles carrying telegraph signals around the eastern and the western portions of the United States, although the eastern and western networks were not yet connected.

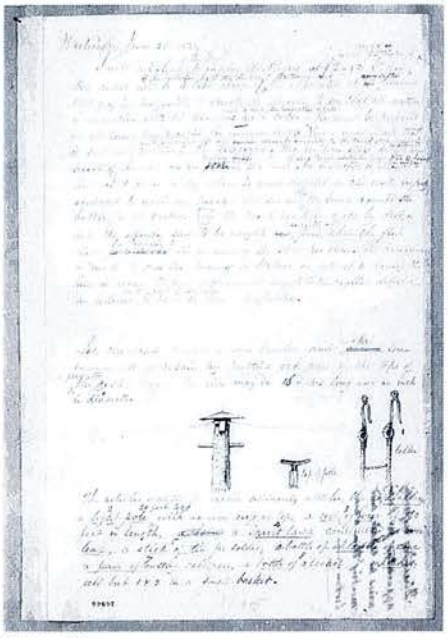
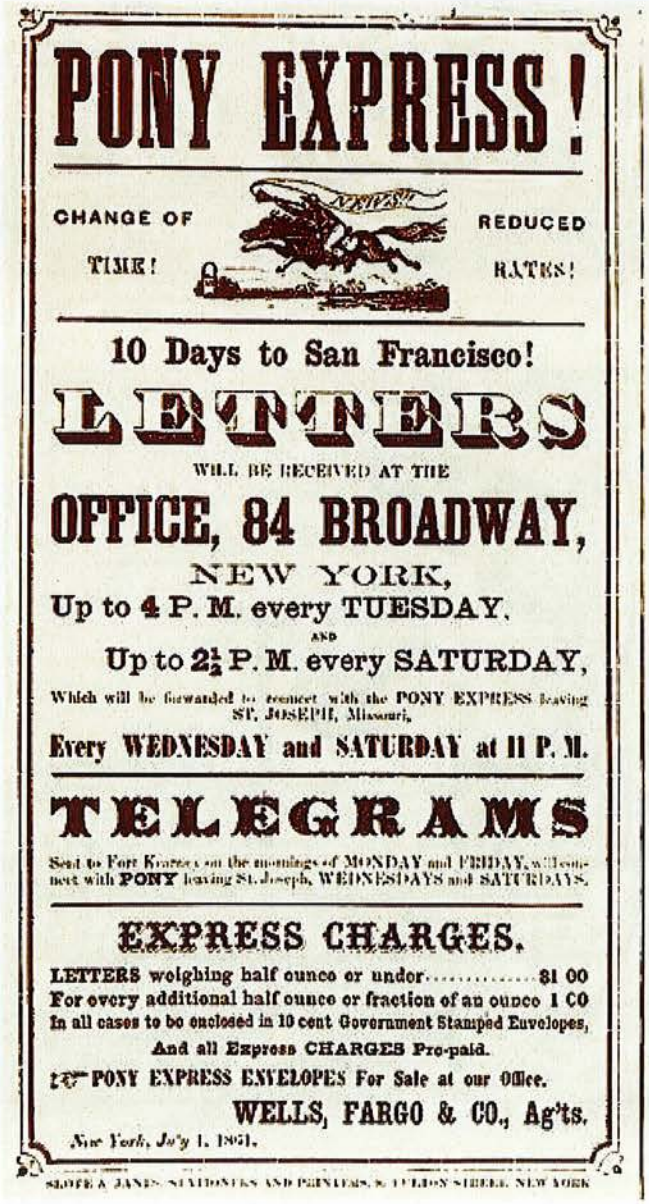


Figure 8

3. Coast to Coast: The Pony Express and the Transcontinental Telegraph

The California Gold Rush created a need for swift communications between the Atlantic and Pacific coasts. Standard overland mail took weeks or months to travel from New York to San Francisco, and the eastern and western telegraph networks were not connected. Beginning in 1860, the Pony Express used teams of riders on horseback to deliver letters from New York to San Francisco in a remarkably swift ten days. News intended for a wider audience could be carried by a combination of telegraph and Pony Express; in November 1860, the Pony Express riders bridged the gap between the eastern and western telegraph networks to bring news of Abraham Lincoln's election as President to California in eight days.



PONY EXPRESS!

CHANGE OF TIME! REDUCED RATES!

10 Days to San Francisco!

LETTERS

WILL BE RECEIVED AT THE

OFFICE, 84 BROADWAY,

NEW YORK,

Up to 4 P. M. every TUESDAY,

AND

Up to 2½ P. M. every SATURDAY,

Which will be forwarded to connect with the PONY EXPRESS leaving ST. JOSEPH, Missouri,

Every WEDNESDAY and SATURDAY at 11 P. M.

TELEGRAMS

Sent to Fort Kearney on the mornings of MONDAY and FRIDAY, will connect with PONY leaving St. Joseph, WEDNESDAYS and SATURDAYS.

EXPRESS CHARGES.

LETTERS weighing half ounce or under..... $1 00
For every additional half ounce or fraction of an ounce 1 00
In all cases to be enclosed in 10 cent Government Stamped Envelopes,
And all Express CHARGES Pre-paid.
☞ PONY EXPRESS ENVELOPES For Sale at our Office.

WELLS, FARGO & CO., Ag'ts.

New York, July 1, 1861.

SLOTE & JANES, STATIONERS AND PRINTERS, 8 FULTON STREET, NEW YORK

Figure 9

Almost as swiftly as the Pony Express carried mail to California, however, the Pony Express itself was swiftly overtaken by technology. In October 1861, thanks to tens of thousands of wooden utility poles installed across the Plains to connect telegraph networks in the eastern and western portions of the United States, the transcontinental telegraph was born. With the east and west coasts able to communicate instantaneously by telegraph, there was no more need for teams of riders on mustangs to gallop across the American Plains, and the Pony Express was disbanded.

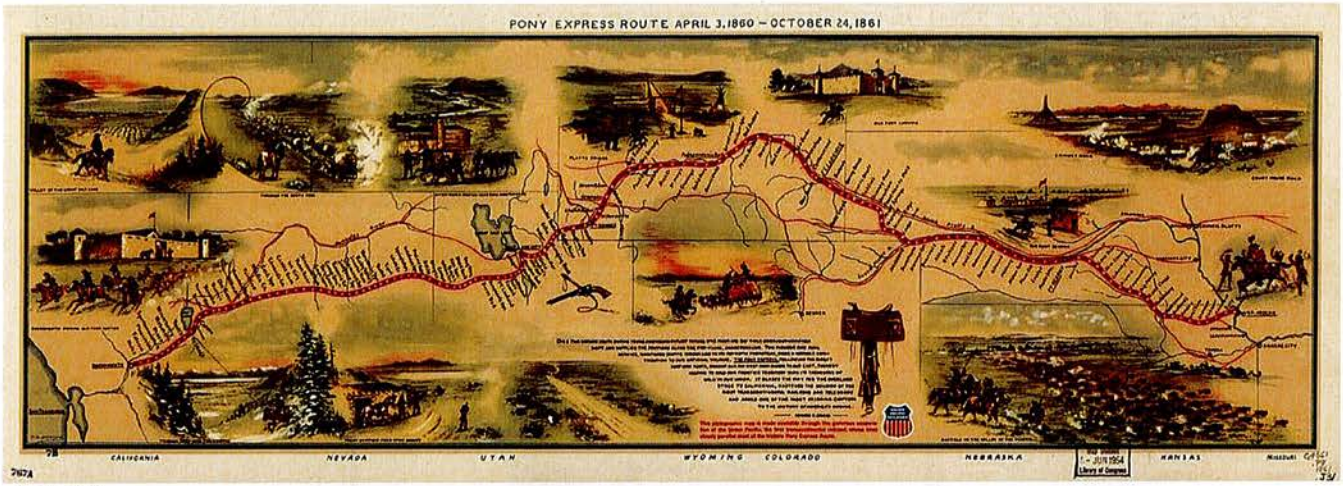


Figure 10


Figure 11

In 1860, it took eight days for news of Abraham Lincoln's election as President to reach California through a combination of telegraph and Pony Express. In 1865, thanks to tens of thousands of wooden utility poles carrying the transcontinental telegraph, the sad news of President Lincoln's assassination reached California instantly.

4. From the Telegraph to Telephones and Electric Lights

By the early 20th Century, wooden poles were carrying telephone lines and electrical lines as well as telegraph lines. Between electrification and the rapid adoption of telephony, wooden poles grew larger and more heavily burdened with utility lines to an extent that is unimaginable today.

Figure 12

Figure 13

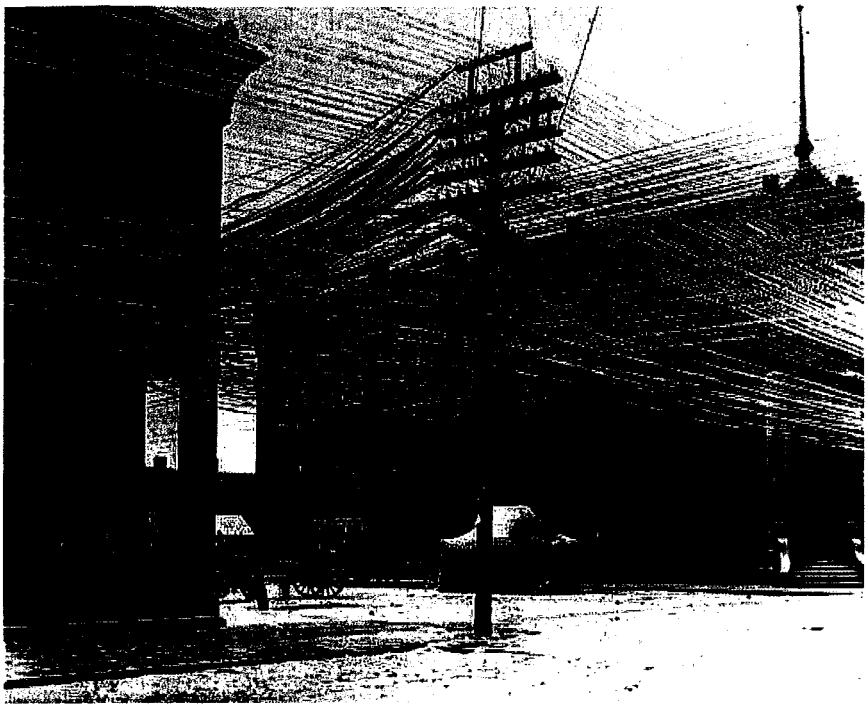


Figure 14

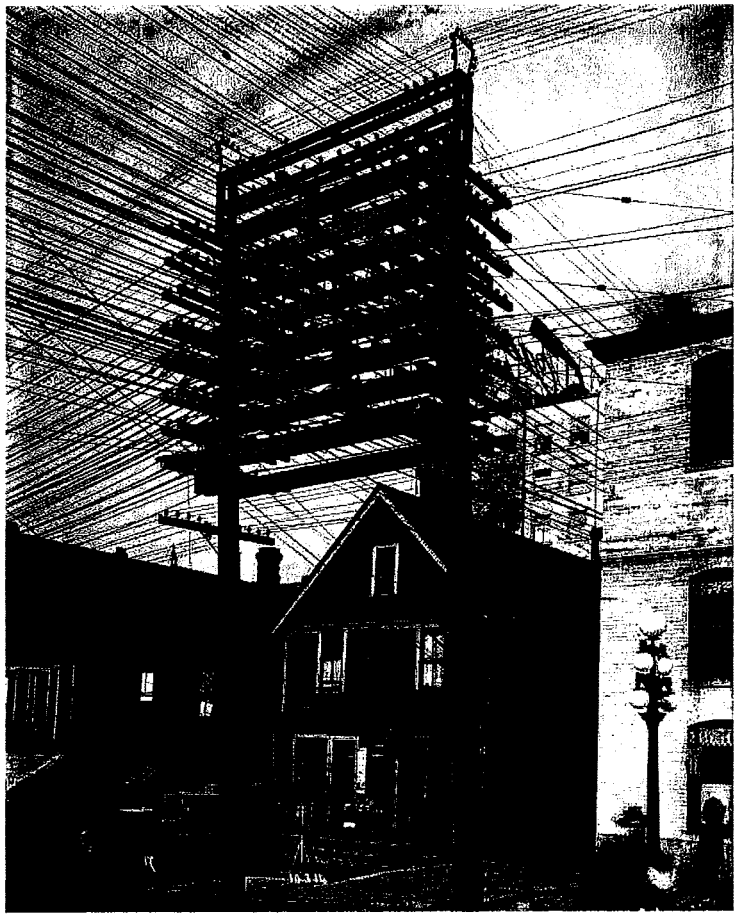


Figure 15

5. Technological Change and Competition

Although many Americans continue to use the term "telephone pole" to refer to utility poles, wooden utility poles now carry infrastructure necessary for such services as wireline and wireless voice communications, electricity, communications facilities for electric smart meter backhaul, video service, internet, communications lines for municipalities and water companies, and sometimes streetlights.

Southern California Edison provides this overview of the elements of a modern wooden utility pole carrying electric and communications lines:

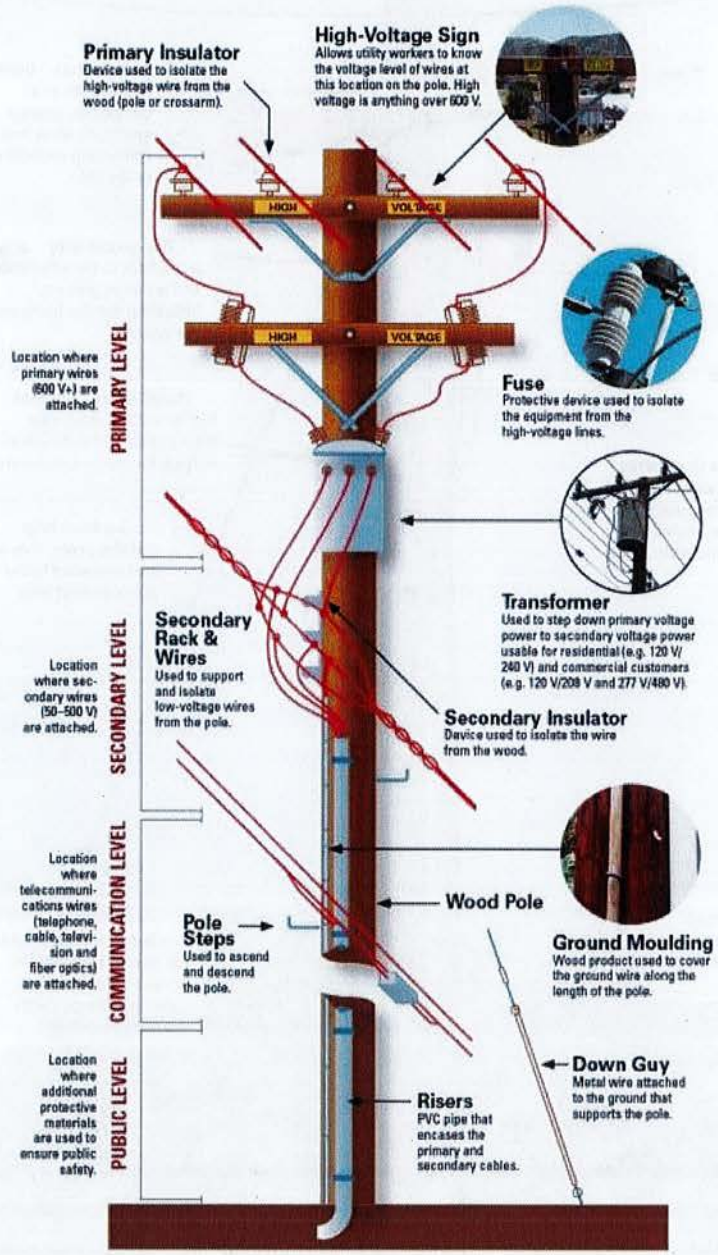


Figure 16

The following diagram, from Clay Electric Cooperative in Flora, Illinois, describes the basic electrical infrastructure on a utility pole:

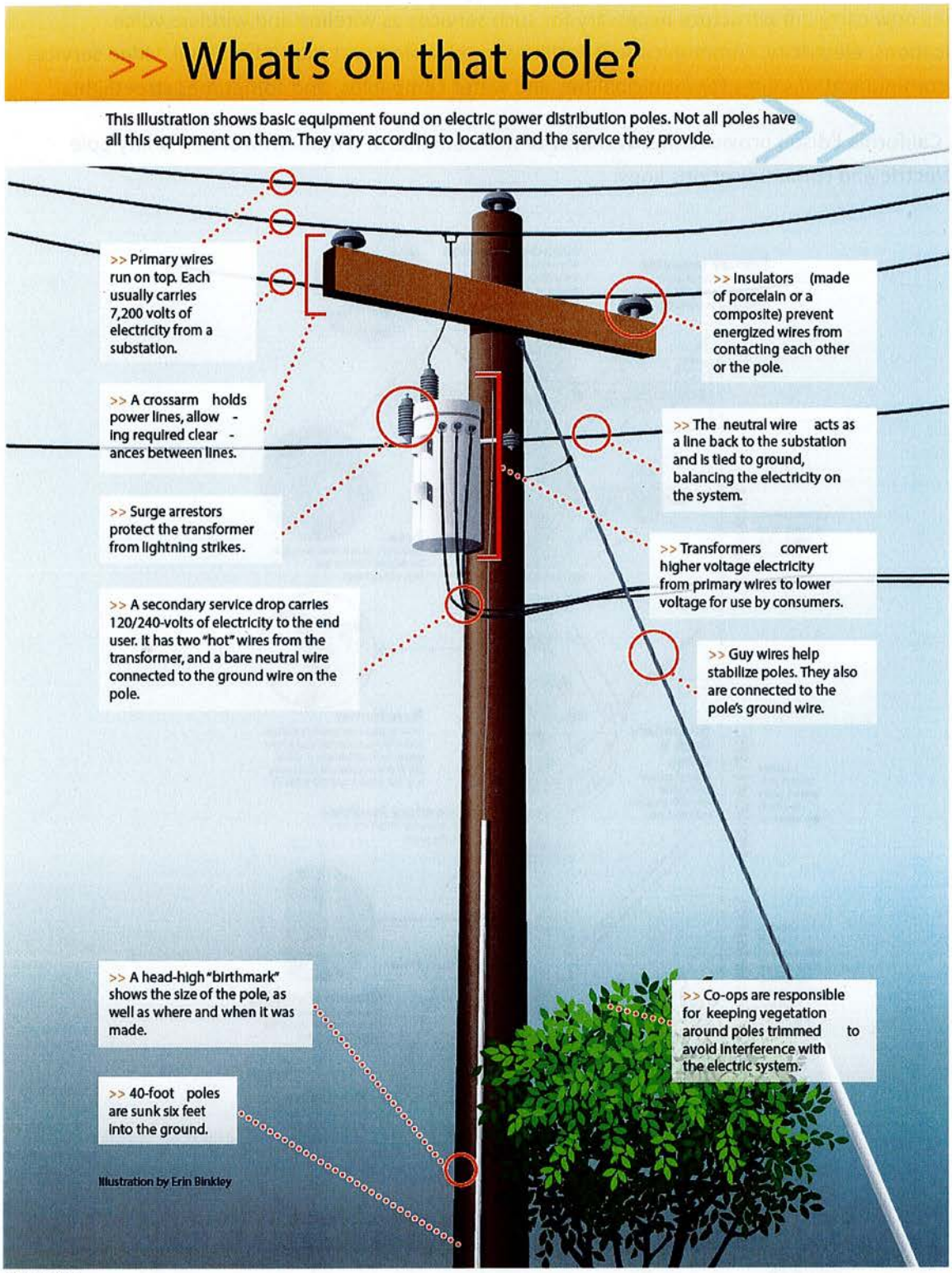


Figure 17

Of course, utility poles in the field rarely appear as neat and tidy as the utility poles in the diagrams above. The utility pole below was photographed in San Francisco in 2008:

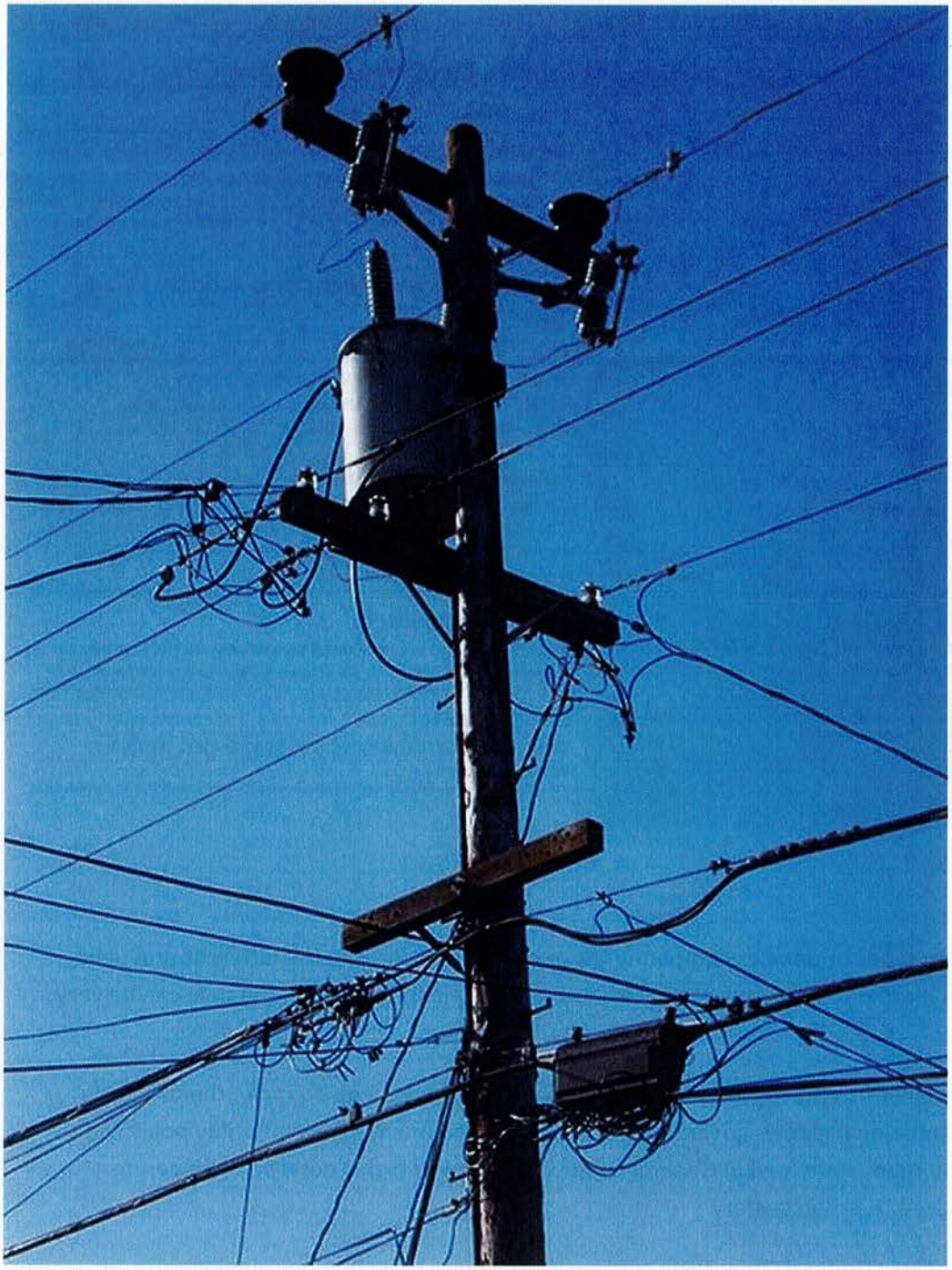


Figure 18

The image below, from the San Francisco Planning Department, shows a potential arrangement of electric lines, communications attachments, and a streetlight.

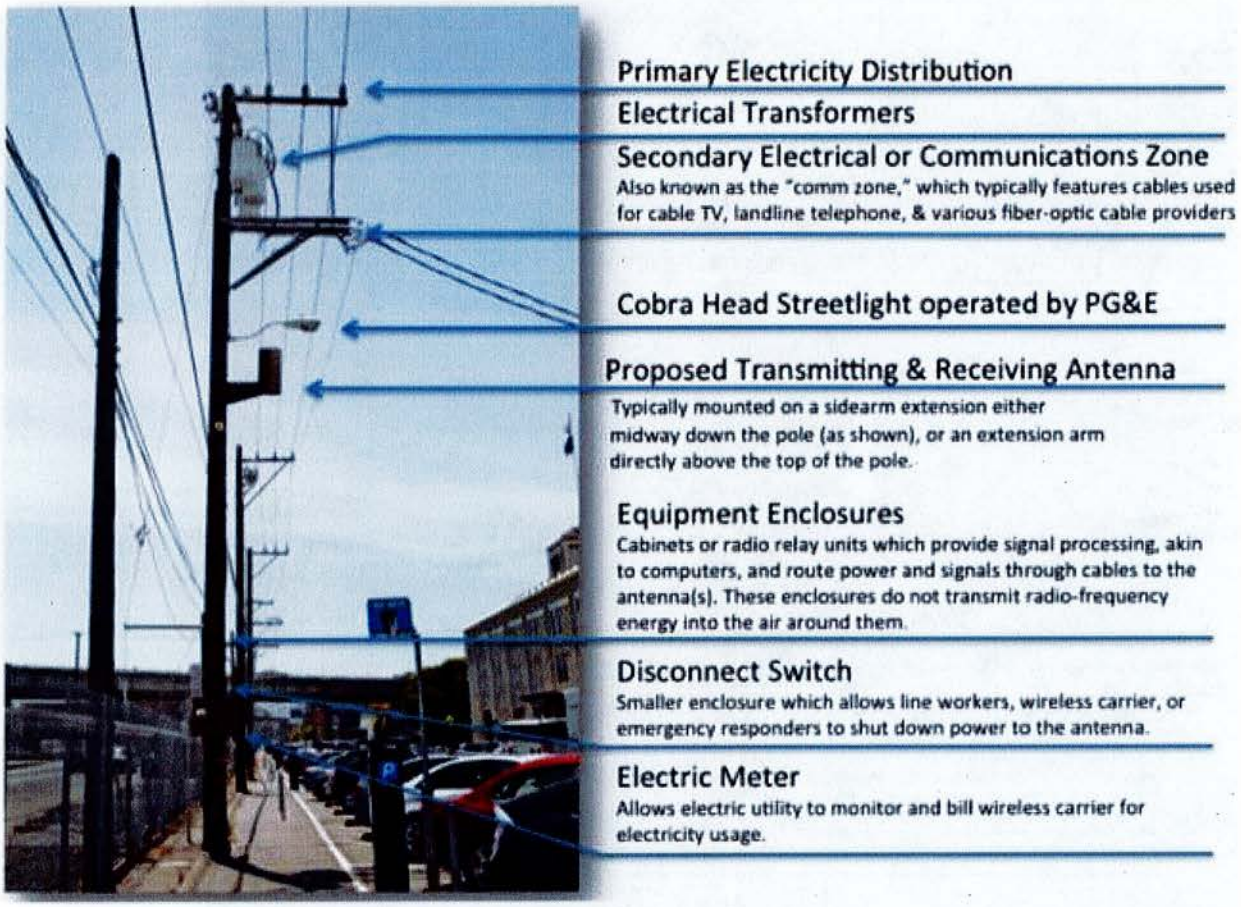


Figure 19

With all the different types of services competing for space on the pole, and the different providers competing with each other to offer those services, managing their shared use of the pole can be very complicated.

State and federal regulators enforce some rules regarding utility poles. For example, the California Public Utilities Commission has rules governing the operation and maintenance of utility poles and attachments. These rules, contained in General Order 95, consist of highly detailed engineering requirements designed to protect safety.

The Commission updates General Order 95 in response to changes in technology, engineering, or markets; for example, the Commission recently updated General Order 95 to ensure the safety of wireless attachments. The three slides below, from a 2016 Commission staff presentation, describe some of the changes:

GO 95 Safety Amendments
(page 1 of 3)

- Prohibit antenna installations that obstruct pole climbing space or interfere with fall-protection gear.

4

Figure 20

GO 95 Safety Amendments
(page 2 of 3)

- Require pole-overturning calculations for new pole-top antenna attachments.

5

Figure 21

GO 95 Safety Amendments
(page 3 of 3)

- Generally prohibit antennas on guard arms.
- Clarify requirements for signs regarding radio-frequency radiation of antennas.
- Clarify protocols for de-energizing antennas.
- Only qualified workers may work on wireless facilities installed above supply lines.

6

Figure 22

Double poles are another challenge arising from joint use. When a utility pole is replaced, all the joint users must transfer their attachments from the old pole to the new pole. Some joint users fail to transfer their attachments in a timely manner, creating unsightly double poles, such as those below, that last for months or years longer than is safe or necessary.

Figure 23

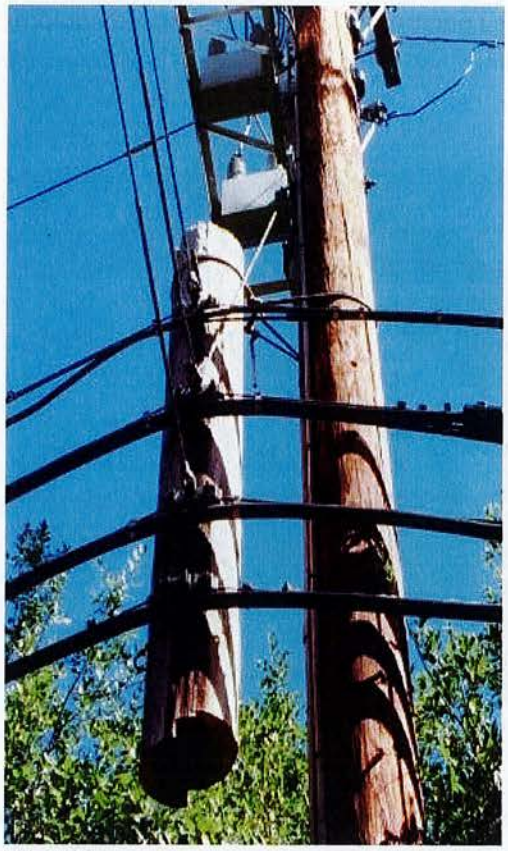


Figure 24

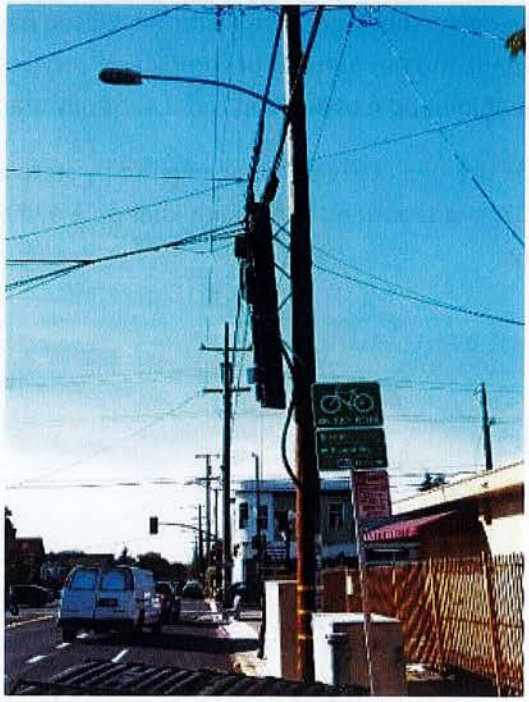


Figure 25

Another complication of joint use concerns abandoned or unused equipment on a pole. For example, loops of spare communications lines not being used to serve customers can frequently be seen attached to utility poles.

Figure 26

State and federal rules do not cover every possible question that might arise when sharing space on a utility pole. For example, if a company wants to rent space on a utility pole, or even become a joint owner of a utility pole, who do they call? What is the process?

Given the frequency of joint pole ownership (Southern California Edison has stated that 70% of the poles in its service area are jointly owned) and the number of companies, services, and technologies involved, reliability and safety could suffer if joint pole ownership is not carefully managed.

To handle aspects of their shared use of a utility pole not covered by state and federal law, some companies have formed voluntary organizations to manage joint pole ownership. In California, there are two such joint pole organizations.

The Northern California Joint Pole Association and the Southern California Joint Pole Committee handle many aspects of joint pole ownership, including: billing; joint pole planning process; pole abandonment and removal; and identifying poles and attachments for record-keeping purposes.

An example of the territory covered by the Northern California Joint Pole Association:

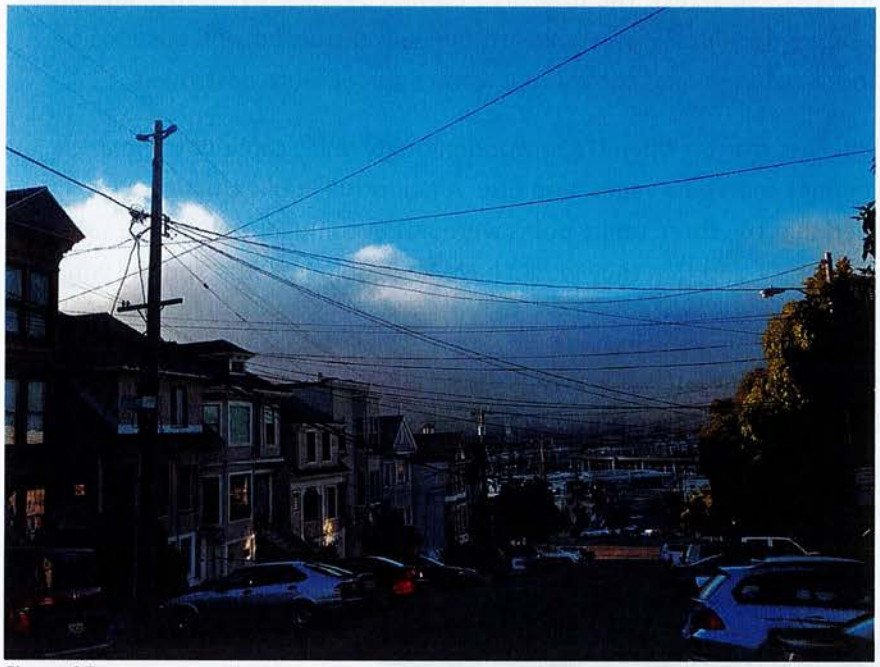


Figure 27

And an example of the territory covered by the Southern California Joint Pole Committee:

Figure 28

6. Safety

In October 2007, strong Santa Ana winds swept across Southern California and caused dozens of wildfires. Several of the worst wildfires were reportedly ignited by power lines. These included the Grass Valley Fire (1,247 acres); the Malibu Canyon Fire (4,521 acres); the Rice Fire (9,472 acres); the Sedgewick Fire (710 acres); and the Witch Fire (197,990 acres). The total area burned by these five power line fires was more than 334 square miles. During the Fire Siege, transportation was disrupted, and portions of the electric network, communications network, and community water sources were destroyed.

One of the fires, the Malibu Canyon Fire, started when three wooden utility poles came down in a windstorm and the downed power lines sparked a vegetation fire. A California Public Utilities Commission staff report determined that the three utility poles were not in compliance with the safety and engineering rules in General Order 95, and that they would have been able to withstand the wind gusts if they had been in compliance.

The California Public Utilities Commission ultimately approved settlement agreements between all the joint owners involved. Among the admissions made as part of the settlement agreement, one party admitted having placed attachments on a pole despite having been informed that the attachments would overload the pole, i.e. cause it to become too heavy, in violation of General Order 95.

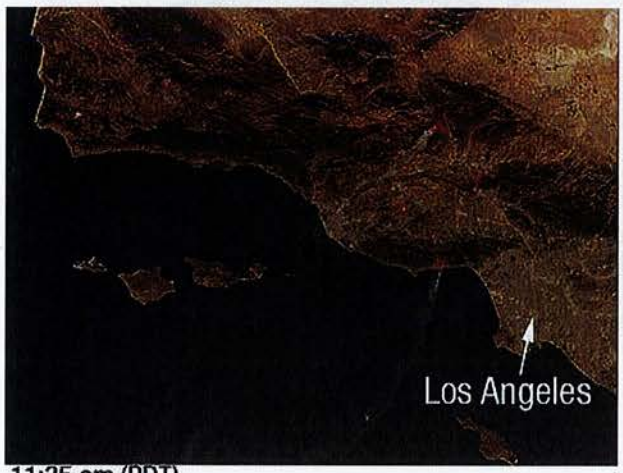
The pictures below illustrate what can happen when companies do not follow utility pole safety rules:

Figure 29

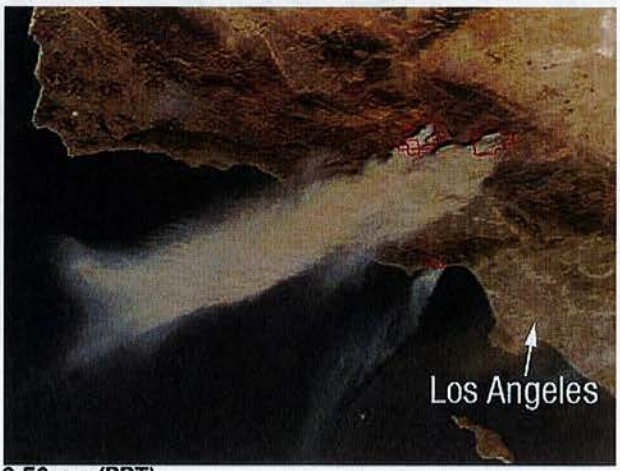
Figure 30

The pictures below were taken by NASA three hours apart on the first day of the Fire Siege. Although not every fire was caused by downed utility poles and electric lines, the pictures demonstrate how quickly fires can spread in California's dry, rugged terrain. According to NASA:

> This pair of images, depicting the area around Los Angeles on October 21, 2007, shows just how quickly the fires grew.
>
> The left image, captured by NASA's Terra satellite at 11:35 a.m. local time, shows several fires giving off small plumes of smoke. Just over 3 hours later, at 2:50 p.m. when NASA's Aqua satellite passed overhead, large amounts of smoke were pouring from blazes northwest of Los Angeles. Actively burning fires are outlined in red.



11:35 am (PDT)



2:50 pm (PDT)

Figure 31

7. Vegetation Management

Utility pole safety does not stop with engineering and maintenance of the poles and attachments and coordination between the joint owners. Vegetation management is an important component in maintaining the safety of the poles for utility employees and the general public, and for ensuring the reliability of the services carried on the poles.

The following two pictures show a utility pole in Walnut Creek, California, that is surrounded by vegetation. There is no safe climbing space for utility workers, and branches appear to be in contact with the communications lines. If the tree falls, either during a storm or because it is weakened by drought, it could conceivably take down the utility pole.

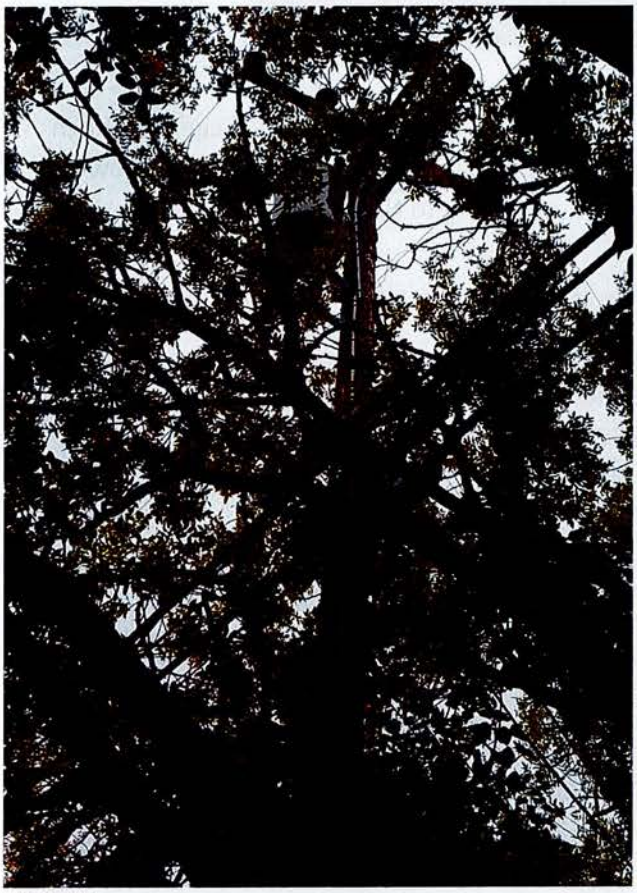


Figure 32

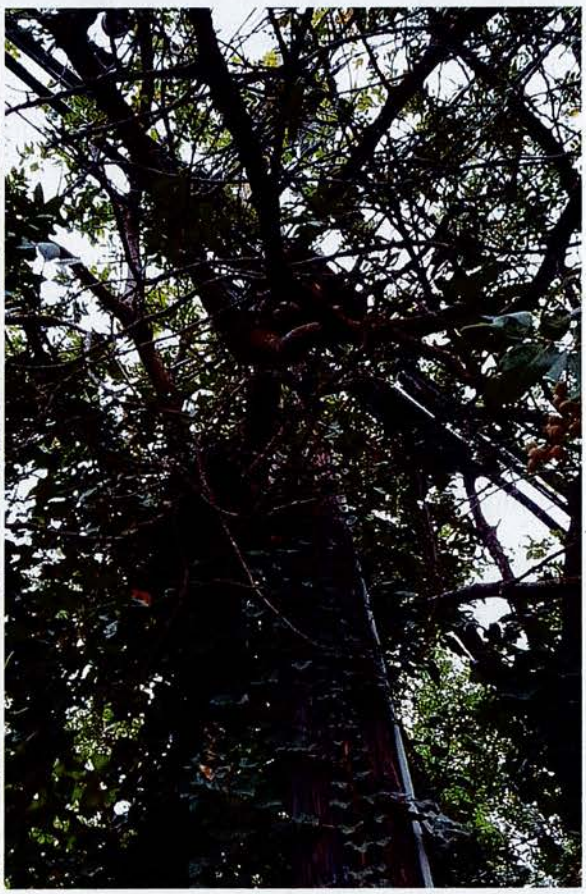


Figure 33

Fortunately, a rigorous vegetation management program at the utility company can prune back surrounding vegetation before it threatens service reliability, or the safety of utility employees or the general public.

Vegetation management at San Diego Gas & Electric...

Figure 34

...and at Pacific Gas & Electric

Figure 35

Customers have an important role to play in vegetation management. Customers may create threats to utility safety and reliability if they plant the wrong tree in the wrong place, where it can come into contact with utility lines. Fortunately, California's three large electric companies make information available to their customers concerning vegetation management and its role in safety.

San Diego Gas & Electric provides a recommended tree planting list with detailed tree characteristics, as well as a customer brochure on vegetation management, explaining why trees must be pruned in a way that prioritizes safety over aesthetics.[2]

Southern California Edison's consumer information page, "Let's Keep Trees Away From Power Lines," also provides information on what to plant, where to plant it, power line safety, and even how to use shade trees to lower energy costs.

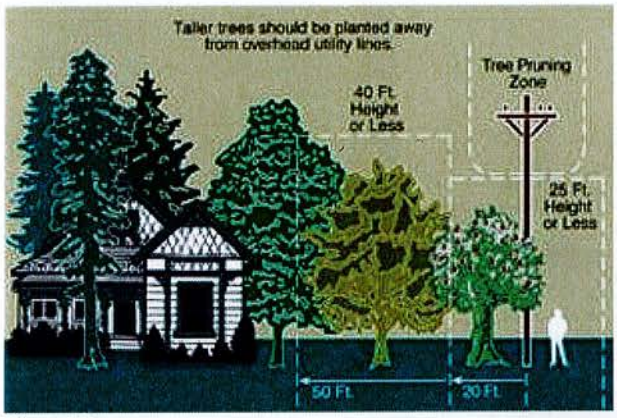


Figure 36

Pacific Gas & Electric's information on Power Lines and Trees provides links to brochures on tree planting and management, including a tree selection guide managed by California Polytechnic State University.


Figure 37

[2] https://www.sdge.com/sites/default/files/documents/594331938/Tree_Planting_List.pdf?nid=19891; https://www.sdge.com/sites/default/files/documents/808851578/pruningTrees.pdf

According to Pacific Gas & Electric, palm trees near utility poles create special challenges, because they cannot be pruned to grow away from the utility pole and any associated electric and communications lines. Pacific Gas & Electric recommends that palm trees be planted at least 50 feet away from utility poles to reduce the risk of contact from wind-blown palm fronds.

8. Animal Management

Utility poles are outside, so in addition to vegetation management, animal management is also necessary.

Bears

Bears rub, claw, and bite trees to communicate with other bears via scent, and to find food.

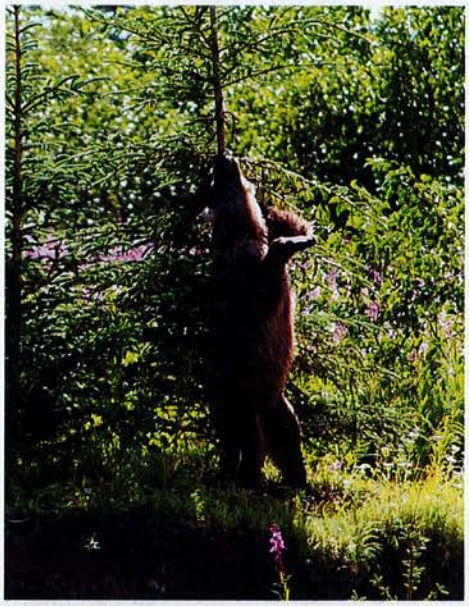


Figure 38

Figure 39

Unfortunately, bears are very bad at distinguishing living trees from utility poles. The utility poles below in West Virginia have been clawed and bitten nearly in half by bears. Appalachian Power utility workers began bear-proofing their wooden utility poles by swaddling the poles with layers of plastic pipe, which has proven be an effective deterrent. Other utilities in the area are reportedly having luck installing a new utility pole next to the damaged utility pole, finding that the bears will continue to scratch the old pole and leave the new pole undisturbed.

Figure 40

Figure 41

Some bear incursions on utility poles are more adorable than others.

A customer in West Virginia called Mon Power to report a bear cub on top of a 40 foot wooden utility pole. Two linemen were able to de-energize the utility pole and rescue the cub, with the assistance of a state game commissioner who stood lookout for the bear cub's mother.

Figure 42

Southern California Edison shared this photograph of a bear with impressive climbing skills. No word on how the bear got down. The bear was doubtless disappointed by the lack of acorns on utility poles, although information shared at the California Public Utilities Commission's Utility Pole Safety En Banc in 2016 suggests that there is an ingredient in insulation materials that bears find irresistibly tasty.

Figure 43

Woodpeckers

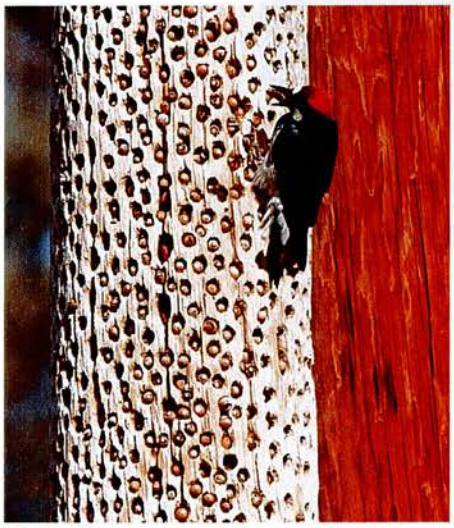


Figure 44

Woodpeckers also treat wooden utility poles like trees, and peck holes in the wooden poles to store nuts. This damage can be quite extensive, and will weaken the pole by removing wood and exposing remaining wood to water and insects. Woodpeckers are impervious to topical chemical deterrents, sounds, and fake owls, although covering the pole with wire mesh may aid in deterrence.[3]

Birds and Electrocution

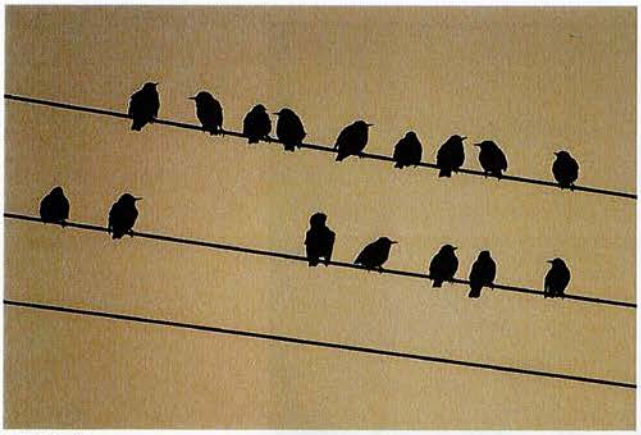


Figure 45

Have you ever looked at birds sitting on power lines and wondered why they aren't electrocuted?

It isn't because the power lines are shielded (they aren't), or because the birds are not good conductors of electricity (they are).

So why aren't the birds electrocuted?

The birds are not electrocuted because electrons are lazy. Electrical current travels along the path of least resistance; if the bird is only touching one power line, there is not a significant difference in electrical potential between the bird's feet and the power line sufficient to cause the electrons to deviate from their path, so the electrons will not leave the power line to travel through the bird's body.[4]

However, if the bird touches two power lines at the same time, especially if the power lines have different voltages, the bird will become a conductor between the different electrical potentials and the bird will be electrocuted.

Similarly, if the bird touches an electrical line and the wooden utility pole at the same time, the bird's body will provide the electrons with a path to ground through the utility pole and the bird will be electrocuted.

---

[3] Woodpeckers and Utility Pole Damage, Richard E. Harness and Dr. Eric L. Walters, 2004, IEEE http://www.ericlwalters.org/harnesswalters2004.pdf

[4] https://engineering.mit.edu/engage/ask-an-engineer/how-do-birds-sit-on-high-voltage-power-lines-without-getting-electrocuted/

The larger the bird's wingspan, the greater the risk that it will touch two energized lines at the same time, or an energized line and a grounded part of the pole, and be electrocuted. Because birds' contact with power lines endangers the integrity of the electrical line and public safety (an electrocuted bird started a 1.5 acre brushfire in Novato in 2012[5]), the Avian Power Line Action Committee[6] recommends specific clearances between energized lines to prevent electrocution, and deterrent measures to prevent birds from nesting on utility poles.

Figure 46

9. The Future

A member of the public who is handed a paper on utility poles might be forgiven if they exclaimed: "Utility poles? Who cares about utility poles? I'm walking around downtown and I don't see a single utility pole, everything is underground."

It is true that new developments in many parts of the country tend to favor (and sometimes require) that utility facilities be placed underground rather than aboveground on utility poles. The California Public Utilities Commission mandated, in General Order 128, that residential subdivisions built after 1970 locate their electrical distribution lines underground.

Despite the fact that new residential and commercial construction projects underground their utility infrastructure, California still has more than 4 million utility poles, most of which are wood. Although

[5] https://patch.com/california/sanrafael/electrocuted-bird-sparks-fire-near-skywalker-ranch
[6] http://www.aplic.org/index.php

some utilities and municipalities are replacing wood utility poles with utility poles made of concrete, metal, or fiberglass composite, all of which are bear and woodpecker resistant, the North American Wood Pole Council estimates that there are 130 million wooden utility poles across North America.[7]

Although a wooden utility pole will never be as flashy as this metal Mickey Mouse-inspired utility pole outside of Disney World, the wooden utility pole has been an important part of our communications history since 1844 and will likely be with us for years to come.

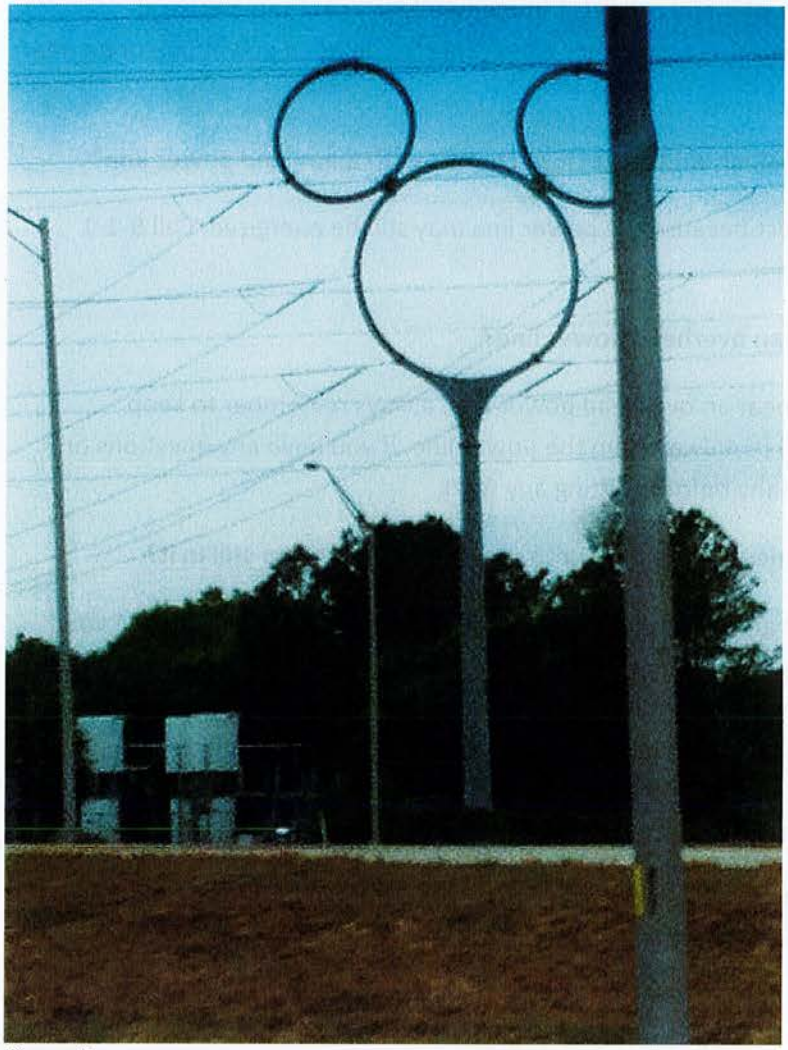


Figure 47

[7] http://woodpoles.org/WhyWoodPoles/HowPolesAreMade.aspx

10. In Case of Emergency

The California Public Utilities Commission puts safety first and offers the following tips on the importance of staying safe around overhead and underground power lines. [8]

What if I spot a downed wire?

Incidents related to accidents, severe weather, trees, etc., can cause a power line to fall to the ground. If you see a downed power wire, stay clear of it and call 9-1-1 immediately to report an electrical emergency. All lines down should be treated as dangerous. Never touch a downed power line or go near one. Always call 9-1-1 immediately.

What should I do if I see a person, animal, or object that is in contact with a downed power line?

Do not touch the person, animal, or object because the power line may still be energized. Call 9-1-1 immediately.

What if I need to do outside work near an overhead power line?

If your outside work requires you to be near an overhead power line, always remember to keep everything – and everybody – at least 10 feet away from the power line. If you have any questions or concerns, contact your local utility company before starting any work.

What if a power line falls on and/or comes into contact with my vehicle while I am still in it?

Remain calm and stay in your car, as the ground around your car may be energized. Call 9-1-1 on your cell phone or tell someone to call for you. Tell everyone to stay clear and do not touch the vehicle. If there is a fire and you have to exit your vehicle that has come in contact with a downed power line, remove loose items of clothing, keep your hands at your sides, and jump clear of the vehicle, so you are not touching the vehicle when your feet hit the ground. Keep both feet close together and shuffle away from the vehicle without picking up your feet.

A power line carries electricity, which can be dangerous and cause serious injury or even death if you come into contact with it. The California Public Utilities Commission wants you to stay informed and alert to stay safe.

11. Contact the Commission

If you ever see a downed power line, call 9-1-1 immediately. However, if you live in California, don't forget that you can also file utility pole complaints with the California Public Utilities Commission. You may file a complaint with the Commission after calling 9-1-1 to report an immediate threat, but you may

[8] The Buzz About Power Line Safety, July 2016, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/Fact_Sheets/English/PowerLineSafety.pdf

also contact the Commission about utility poles that appear unsafe or dangerous even if they do not present the immediate and obvious safety risk of a downed power line.

To file a public safety complaint with the California Public Utilities Commission:

The fastest way to file a complaint is using the online complaint form, available at https://appsssl.cpuc.ca.gov/cpucapplication/

Please be aware that the CPUC cannot help you resolve issues with:

- Publicly owned or municipal utilities, such as SMUD or the Los Angeles Department of Water and Power
- Federal, city, or county taxes and surcharges on your bills
- Long-distance telephone, cable TV, cellular phone rates, paging, or Internet rates and services

The CPUC also cannot award claims for damages, or help you determine a utility's alleged negligence or liability. If you cannot resolve this type of problem with the utility directly, you can file a claim in civil court.

If you do not want to file your complaint online, you can send us a written complaint letter. Be sure to include:

- Your name
- The name the account is billed under (if it is different than your name)
- Your mailing address
- The service address (if it is different than your mailing address)
- The name of the utility or company
- The name of the utility or company's representative you contacted (if applicable)
- A brief description of the problem (no more than two pages)
- Daytime phone number where you can be reached
- The phone number or account number of the service (if applicable)

You can mail your written complaint to:

CPUC Utilities Safety Branch
505 Van Ness Avenue
San Francisco, CA 94102-3298

If you have any questions about mobile home park safety, you can call us at 1-415-703-1126. For all other public safety complaints, you can call us at 1-800-755-1447.

References:

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Front cover: National Archives, circa 1862-1863, NWDNS-77-F-194(6)(62), available at https://catalog.archives.gov/id/519420

Back cover: Utility pole in Walnut Creek, California. Photo by April Mulqueen.

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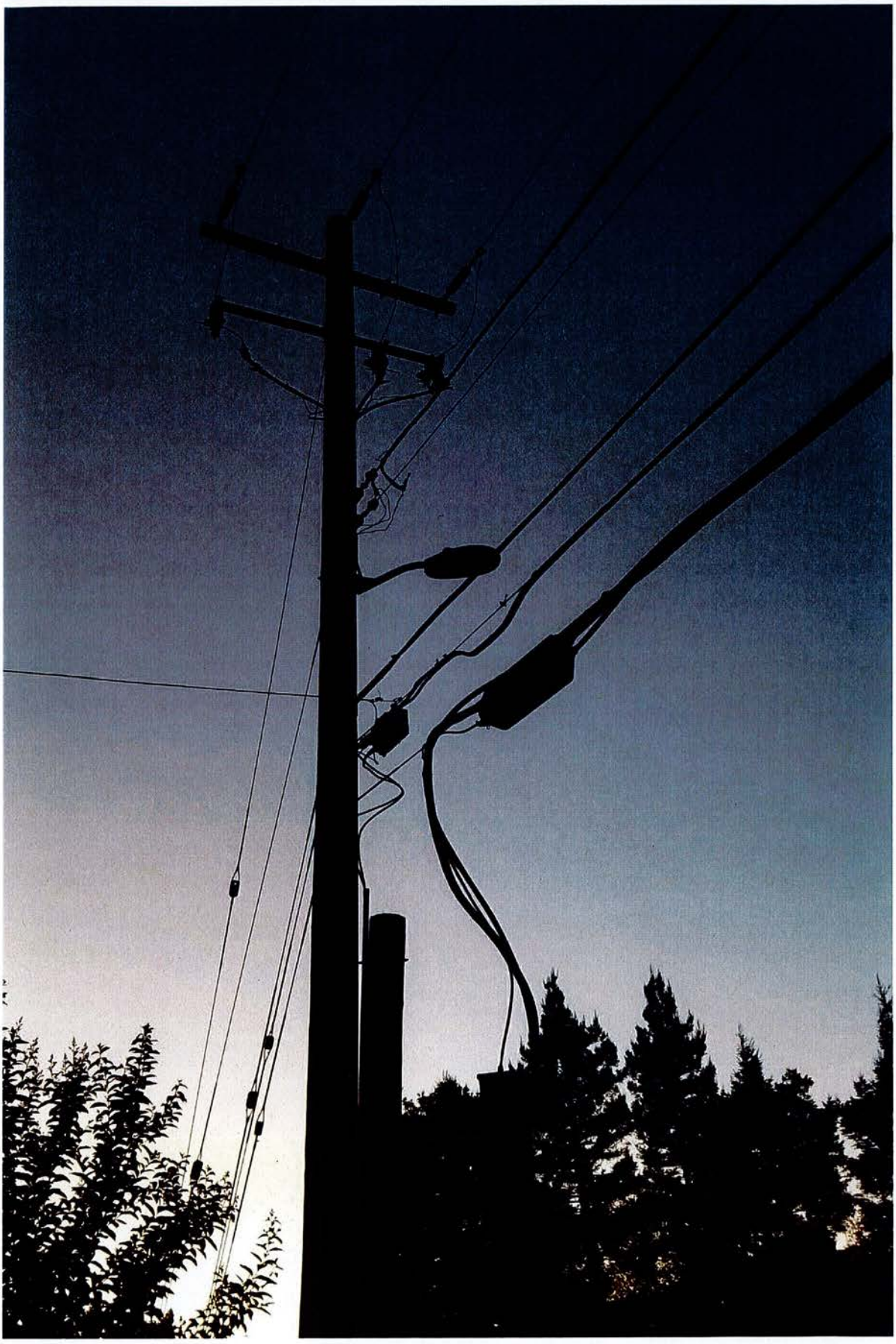

Appendix G

Staff Proposal for Rule 20 Program Reform and Enhancements

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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Revisions to Electric Rule 20 and Related Matters.	Rulemaking 17-05-010

ADMINISTRATIVE LAW JUDGE'S RULING (1) ISSUING AND ENTERING INTO THE RECORD AN ENERGY DIVISION STAFF PROPOSAL FOR IMPROVING THE ELECTRIC TARIFF RULE 20 UNDERGROUNDING PROGRAM; (2) REQUESTING COMMENTS ON THE PACIFIC GAS AND ELECTRIC COMPANY'S RULE 20A AUDIT REPORT; AND (3) SETTING A SCHEDULE FOR COMMENT

Summary

The Administrative Law Judge's (ALJ) Ruling of March 6, 2019, stated the Commission's Energy Division shall develop a staff proposal on improvements to Rule 20A, which shall be presented to the parties for comment by a subsequent ruling.

This ruling serves to issue, and to enter into the record, the attached Energy Division's *Staff Proposal for Rule 20 Program Reform and Enhancements* (*Staff Proposal*). This ruling also establishes a schedule for providing comments on the *Staff Proposal* and the October 2019 *Audit of PG&E Rule 20A Undergrounding Program* (*PG&E Audit Report*) prepared by AzP Consulting, LLC and previously made part of this record by ruling of December 20, 2019.

This proceeding will be submitted following the receipt of comments and a proposed decision will follow, unless the ALJ requires further evidence or argument.

1. Comments

The parties shall specifically identify the page and section of the *Staff Proposal* to which any comment refers. Parties shall file comments to the *Staff Proposal* on or before 30 days after the date of this ruling. Reply comments may be filed within 15 days thereafter.

The parties are also requested to provide comments on the *PG&E Audit Report*. Parties shall specifically identify the page and section of the *PG&E Audit Report* to which any comment refers and are asked to focus any comments regarding recommended program modifications on those that are applicable to all the investor-owned utilities. Parties shall file comments to the *Audit Report* on or before 40 days after the date of this ruling. Replies to comments on the *Audit Report* may be filed within 10 days thereafter

IT IS SO RULED.

Dated February 13, 2020, at San Francisco, California.

/s/ ERIC WILDGRUBE
Eric Wildgrube
Administrative Law Judge

ATTACHMENT A

CALIFORNIA PUBLIC UTILITIES COMMISSION

Energy Division's *Staff Proposal for Rule 20 Program Reform and Enhancements*

Undergrounding Proceeding (R.17-05-010) Staff Proposal for Rule 20 Program Reform and Enhancements

Jonathan Frost
Grid Planning and Reliability Section
Energy Division
California Public Utilities Commission

February 2020

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Glossary of Terms

1. **Active Communities**: Refers to communities that meet either one or more of the following criteria that was established in Resolution E-4971:
    A. Formally adopts an undergrounding district ordinance which expires at completion of work within the district boundaries; or
    B. Has started or completed construction of an undergrounding conversion project within the last 8 years; or
    C. Has received Rule 20A allocations from the utility for only 5 years or fewer due to recent incorporation.
2. **Assessment District:** A financing mechanism the California Streets and Highways Code, Division 10 and 12 which enables cities, counties to designate Districts to collect special assessments to finance the improvements constructed or funded by the District. In Rule 20B, an assessment district is formed based on a petition to the city council or county board of supervisors from 60 percent or more of the residents of the affected area.
3. **Borrow Forward:** Also known as the "five-year borrow". Refers to the process allowed under the Rule 20A Tariff in which municipalities may borrow up to five years of additional Rule 20A work credit allocations against their future allocations from the utility to help fund a project.
4. **Communities**: In the Rule 20A program, this refers to cities and unincorporated county entities that are served by the investor-owned utilities.
5. **Cultural Resources**: Tangible remains of past human activity. These may include buildings; structures; prehistoric sites; historic or prehistoric objects or collection; rock inscriptions; earthworks, or canals.
6. **Disadvantaged Communities**: These areas represent the 25% highest scoring census tracts in State of California's CalEnviroScreen 3.0 tool.
7. **Facilities**: Also referred to as "equipment". Refers to wires, conductors, antennas, guy wires, cables, and/or any other equipment used to facilitate the transmission of communications or energy.
8. **Five Year Borrow**: See "borrow forward."

9. **General Conditions Agreement**: (Or General Terms and Conditions) A document that is utilized by the electric utilities and the municipalities that clarifies the specific responsibilities for both the communities and the utilities in the preparation for and construction of a Rule 20A undergrounding project. It is referred to as the General Conditions Agreement, Sample Form 79-1127 by PG&E; General Conditions policy by SCE; and the General Conditions Form 106-35140F by SDG&E.
10. **High Fire Threat District**: Refers to the high fire threat areas in the CPUC's Fire-Threat Map which was adopted by the Commission in Decision (D.) 17-12-024. The map consists of three fire-threat areas (Zone 1; Tier 2 and Tier 3) that have increasing levels of risk of wildfires associated with overhead utility power lines or overhead utility power-line facilities that also support communication facilities.
11. **Inactive Communities**: Refers to communities that fail to meet any of the criteria described in the definition of Active Communities described above.
12. **Joint Trench Participants:** Refers to all the electric, telecommunication, and local government entities that are involved with a given undergrounding project.
13. **Non-Ratepayer Costs:** Refers to project costs that are not covered by Rule 20A. These include street lighting, repaving, sidewalk repair, undergrounding communication facilities, removal or replacement of other signage, environmental assessment, hazardous material removal, , discovery of archeological materials, permit fees and community administrative costs.
14. **Overhead Infrastructure**: Also referred to as above ground infrastructure. Refers to the conductors (wires), insulators, transformers, switches, reclosers, and other related equipment that span wooden or metal poles.
15. **Overhead Meter**: Refers to a meter at a home or business that is served by an overhead service drop.
16. **SDG&E Fire Threat Zone:** These are areas with extreme and very high fire threat risk within San Diego Gas & Electric's service territory that were identified in the Commission in Decision (D.) 09-08-029 and are currently the only areas where Rule 20D is applicable.
17. **Subsurface Equipment**: Refers to equipment that is installed in an underground vault, such as an underground transformer.

18. **Underground Meter**: Refers to a meter at a home or business that is served by an underground service line.
19. **Underground Utility District:** Also referred to as an underground or undergrounding district, or UUD. An area in the City within which poles, overhead wires, and associated overhead structures are to be converted underground. Underground utility districts are legislated by communities' city councils or by county board of supervisors.
20. **Viewshed:** The natural environment that is visible from one or more viewing points.
21. **Work Credit Trading**: Refers to any form of work credit exchange in which two or more cities or counties buy, sell, loan, trade, or donate Rule 20A work credits. The utilities sometimes refer to this as work credit transfers.

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1. Executive Summary

This Staff Proposal presents recommendations for improving the Electric Tariff Rule 20 applicant-driven undergrounding program and for resolving significant issues in the existing program which includes the Rule 20 A, B, C and D programs. While much of the focus and attention of the public has been on Rule 20A, this Staff Proposal looks holistically at the Rule 20 undergrounding program as a whole and proposes changes across all four of the component programs. This Staff Proposal does not propose changes to undergrounding requirements along State Scenic Highways in Public Utilities Code (PUC) § 320, or for distribution line or service line extensions under Electric Tariff Rules 15 and 16 respectively. Nothing in this Staff Proposal inhibits utility-led undergrounding efforts for technical or safety reasons nor any local government-driven undergrounding separate from Rule 20.

The program reforms presented in this document are intended to make the program objectives relevant to current undergrounding goals held by various stakeholders by including a focus on safety, reliability, equity, and the alignment of cost allocation with cost-causation. The proposed reforms will allow communities to use their limited funds towards undergrounding the areas that pose the greatest safety threats and/or subject to chronic outages. These reforms seek to reduce the barriers to entry for program participation for communities that have had limited opportunities or resources to initiate undergrounding projects in the past. Additionally, the reforms are intended to lessen the burden on the general ratepayer and incentivize local communities to apply more of their own funding towards undergrounding. Furthermore, this proposal offers a plan to enhance program operation and efficiency and maintain regulatory efficiency of the program.

The California Public Utilities Commission ("CPUC") Energy Division Staff ("Staff") developed this proposal in response to the March 6, 2019 Administrative Law Judge's (ALJ) the Guidance Ruling Outlining Additional Activities ("Guidance Ruling"). Staff based its recommendations on Staff's evaluation of the comments that parties submitted on January 11, 2019 in response to the November 9, 2018 Scoping Memo and Ruling. Staff also relied on the ideas that parties shared during the April 2019 workshop that was focused on near-term improvements to the Rule 20 undergrounding program. Staff is also informed by our many years overseeing the program, our own analysis and data gained through our data requests, as well as CPUC studies on the program including a recent audit of PG&E's Rule 20A program.

Throughout this document, Staff provides information on the history of the Rule 20 Program, program rules, data related to recent experience in the program, issues with the program, and various options for mitigating these issues.

Undergrounding Proceeding (R.17-05-010) Staff Proposal

A summary of Staff's primary recommendations are as follows:

- **Refine and Expand the Rule 20 Public Interest Criteria:**
  This will consist of refinements to the existing criteria for Rule 20A and the addition of new criteria based on safety and reliability concerns, such as if the street serves as an egress, ingress, or is designated as an evacuation route, and if the overhead facilities cross through Tier 2 or Tier 3 areas of the State's High Fire Threat District (HFTD). These criteria would be applicable towards a Rule 20A sunset phase and a modified Rule 20B program should either come into fruition. (Section 4.1, pg.24-26)
- **Modify Rule 20B to Incorporate Tiered Ratepayer Contributions Commensurate with Public Benefits**
  The CPUC should utilize a three-tiered Rule 20B program with higher portions of ratepayer contribution commensurate with greater public benefits and public policy objectives. The three tiers are:
  - Tier 1 – 20% Ratepayer contribution – Meets existing Rule 20B criteria.
  - Tier 2 – 30 % Ratepayer contribution – Meets Tier 1 criteria **and** one or more of the expanded public interest criteria of this staff proposal, including wildfire safety mitigation.
  - Tier 3 – 50% Ratepayer contribution – Meets Tier 2 criteria **and** one or more equity criteria.

  (Section 4.2, pg.31)

- **Sunset the Rule 20A and 20D Programs as Currently Designed:**
  The existing allocation-based Rule 20A and Rule 20D programs should be sunsetted over a 10-year period and either be replaced with the modified Rule 20 B program, other new programs or be terminated. (Section 4.3, pg. 37-38)
- **Incentivize Municipal Utility Surcharge Undergrounding Programs:**
  The CPUC encourages governmental bodies to pursue self-taxation programs in collaboration with their local utilities and Staff proposes for the utilities to provide municipalities matching funds of up to $5 million per year per participating community. An example of such a program is the City of San Diego's utility surcharge program (see page 10) which has accelerated undergrounding in San Diego. The CPUC does not oversee this type of program but can authorize the utility to collect the franchise fee through rates that goes directly to funding the undergrounding. (Section 4.2, pg. 33)
- **Eliminate Work Credit Trading with Limited Exceptions:**
  The CPUC should prohibit the trading of work credits and review all utility requests to apply additional Rule 20A work credits to a project that has insufficient funds. The limited exceptions are to allow intra-county non-monetary transfers from a county government to cities and towns within the county and to allow credit pooling amongst

two or more adjoining municipalities for a project with community benefit. (Section 4.4, pg. 41)

- **Modify the Rule 20A Annual Completion and Allocation Reports:**
  The utilities should provide more details to the CPUC, communities and the public regarding the projects that are underway, cost breakdowns for projects, project cost trends, performance metrics, and modify the summary statistics. Additionally, the utilities' allocation reports should include how the utilities derive the allocations from the general rate case and the allocation formula in the Rule 20A Tariff. (Section 5, pg. 47-49)
- **Adopt an Updated Rule 20 Guidebook:**
  The utilities should meet and confer with the League of California Cities, the California State Association of Counties, AT&T and the CPUC Staff to draft an updated version of the Rule 20 Guidebook that would be subject to CPUC review prior to its formal adoption and circulation among the cities and counties. (Section 5, pg. 4950)
- **Improve Communications with the Communities and Publish Relevant Rule 20 Program Information, Documents and Reports Online**
  New utility program communication strategies should include annual meetings with interested cities and counties to discuss their ten-year plans for undergrounding. The utilities should coordinate more closely with the communities and the broader public to enhance transparency and allow them public to have a greater voice in the planning process for projects. Staff also recommends publishing the relevant Rule 20A program information and reports online on dedicated utility and CPUC undergrounding webpages to enhance the public's access to information about the Rule 20 program. (Section 5, pg. 50)
- **Implement Incentives to Reduce Project Completion Timelines and Costs:**
  These new incentives would include requiring the communities to serve as the default project lead, establishing threshold timeframes for project milestones, and delineating all Task and Cost Responsibilities in updated guidance documents. (Section 6, pg. 56-58)

2. Background

2.1 Rule 20 Program Structure

The investor-owned utilities (IOUs) regulated by the CPUC have broad responsibilities to manage the electric utility distribution infrastructure. As part of their responsibilities, the IOUs build and maintain distribution facilities that service customers. Since the late 1960s, most new distribution facilities have been designed and installed underground. For communities developed prior to the late 1960s, most distribution infrastructure is overhead. Undergrounding is typically more expensive than overhead lines to build and maintain, so most existing overhead systems in California remain above ground.

Nevertheless, there are several ways that these historic overhead systems are converted to underground. Utility distribution planners may decide to convert an overhead system to underground, a process referred to as "undergrounding," for safety, cost, reliability or maintenance reasons. To support non-utility driven overhead conversion, the CPUC adopted and oversees an Overhead Conversion Program known as Electric Tariff Rule 20. The program allows cities and unincorporated counties (collectively communities), and private applicants (such as residents and businesses) to identify areas for undergrounding. Depending on the project characteristics and eligibility under pre-established criteria, the utility may fund some, all, or none of the costs of an overhead conversion.

The Rule 20 undergrounding program directs the conversion of overhead electrical facilities to below ground for municipal or other applicant-identified projects. This program is focused primarily on aesthetic enhancement by removing overhead electric wires from an area's viewshed. The Electric Rule 20 Tariff governs the undergrounding program which is divided into four subprograms – Rule 20A through Rule 20D – which provide diminishing levels of ratepayer contribution to projects.

Rule 20A projects are fully ratepayer-funded but must meet strict criteria to in order to demonstrate that they will be in the public interest (see Section 3.1 for more details on the criteria). The utilities annually allocate funds in the form of Rule 20A work credits (or "work credits") to communities which they may accumulate indefinitely. According to Rule 20A Section 2, 50 percent of the allocation is based on the ratio of overhead meters in a community relative to the total utility overhead meters. The other 50 percent is based on the ratio of total meters (both overhead and underground-served meters) relative to the utility total system meters.

In addition to the annual allocations, the utilities also allow the communities to borrow forward the equivalent of an additional five years of allocations in order to more efficiently fund their projects. Once a community has accumulated and/or borrowed enough work credits, identified a project that is in the public interest, and passed a municipal resolution forming an

undergrounding district, the community can then initiate the project with the utility. The Community must retire a sufficient quantity of work credits to cover the cost of the project.

Projects that do not meet the Rule 20A public interest criteria and are at a minimum of 600 feet may be completed as Rule 20B projects. Apart from the 600 feet minimum length, there are no other required criteria for 20B projects. For example, a 20B project could be carried out for wildfire safety reasons. The undergrounding is paid for by the applicant – typically a group of residents, commercial entities, or government entities – and funded in part by a ratepayer credit in the range of 20 to 40 percent. The credit is equal to the estimated cost of a new equivalent overhead system and the removal of the existing overhead system. Applicants may use Rule 20A work credits to "seed" their Rule 20B projects by initially covering the engineering and design costs and reimburse the utility later provided that the project goes forward.

In the case of projects that are unable to meet either the Rule 20A or 20B criteria, they may be completed under the Rule 20C program. In Rule 20C projects, the applicant – often an individual property owner – pays for the full cost of undergrounding, less the cost of the estimated salvage value and depreciation of the removed electrical facilities.

Rule 20D is currently only in SDG&E's service territory and it applies specifically to undergrounding in SDG&E's high fire threat areas where undergrounding is deemed by SDG&E to be a preferred method for wildfire mitigation in a given area. Rule 20D is structured similarly to the Rule 20A program and is similarly-community-driven. SDG&E annually allocates work credits to eligible communities and that they may borrow forward five years to obtain additional funds. Unlike Rule 20A, Rule 20D only allows communities to utilize work credits towards the conversion of primary distribution to underground. The program does not pay for undergrounding secondary lines or services, or for panel conversions for residences or businesses. Rule 20D has been in existence since 2014 and SDG&E has not started or completed a single project to date through this program.

Related to the Rule 20 program, the telecommunications entities such as AT&T have a Tariff Rule 32 that closely resembles the Rule 20 Tariff. Rule 32 is specific to the undergrounding of telecommunications facilities and it is virtually identical in structure as Rule 20. For instance, Rule 32 has the same public interest criteria in its Section A as are in Rule 20A.

The City of San Diego also has an undergrounding program in partnership with SDG&E that is not under CPUC oversight and is not subsidized by the general ratepayer. In December 2002, CPUC Resolution E-3788 authorized SDG&E to collect a 3.53% franchise fee surcharge within the City of San Diego for undergrounding work separate from Rule 20. By using this surcharge program to augment the Rule 20 program, the City of San Diego has managed to convert 429 miles of overhead electrical facilities to underground and 1,238 miles of overhead remain.[1] The

[1] Based on a July 17, 2019 email to Jonathan Frost from James Nabong, the City of San Diego's Assistant Deputy Director for the Transportation and Storm Water Department.

City of San Diego currently targets 15 miles of undergrounding per year through the surcharge program and seeks to underground all overhead facilities within its city limits.

2.2 Rule 20 Program History and Context: Undergrounding for Aesthetic Enhancement

The Rule 20 undergrounding program was initiated in 1967 by the CPUC in Decision D.73078 with the intent of enhancing the appearance of areas that had been "victimized by man's handiwork" by the development of overhead electric infrastructure.[2] The Rule 20 program established a structured means of facilitating municipal-driven underground conversion projects in a consistent manner throughout the State with the costs covered by utility ratepayers. The program was developed around the same time as the State's requirements to construct underground distribution lines and service line extension to new residential and commercial developments, as well as near State scenic highways took effect.[3] Since the late 1960s, the Rule 20 undergrounding program has remained focused primarily on aesthetic enhancement and has seen limited changes to aspects of the program such as the Rule 20A work credit allocations ("work credits" or "allocations") are determined, the public interest criteria for project eligibility, and the municipalities' ability to borrow forward future work credit allocations.

Over the past 52 years, it is estimated that over 2,500 miles of overhead utility lines have been converted in California under the Rule 20A program.[4] In recent years, the utilities have collectively completed on average 50 projects per year, equal to approximately 20-25 miles in length under Rule 20A at an average cost ranging from $1.85 million to $6.1 million per mile.[5] The Rule 20B and 20C programs together see a total of 15 to 20 miles per year of lines converted to underground.[6]

Relative to the approximately 147,000 miles of overhead distribution infrastructure in California – enough wires to wrap around Earth six times – this is a modest rate of undergrounding. In fact, it would take nearly 3,300 years to underground the entire state at this rate. Figure 1 provides further context with a breakdown of the overhead and underground infrastructure for each of the utilities.

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[2] Note that the Rule 20 program was initiated by the CPUC and is not grounded in statute.
[3] See Electric Tariff Rule 15 & Tariff Rule 16, and Public Utilities Code Section 320 for more information.
[4] Kurtovich, Martin, "Program Review – California Overhead Conversion Program, Rule 20A for Years 2011-2015 the Billion Dollar Risk!" California Public Utilities Commission, January 2017.
[5] This is based on the data provided by the utilities to Staff as part of their R.17-05-010 data request responses for the years 2005-2017.
[6] Data from Staff June 2019 data request.

Figure 1. Overhead and Underground Line Miles by Transmission and Distribution

Overhead vs. Underground Miles – CPUC Regulated Utilities						
	Transmission (in miles)			Distribution (in miles)		
	Overhead	Underground	Total	Overhead	Underground	Total
PG&E	18,000	180	18,180	81,000	18,000	99,000
	99%	1%		82%	18%	
SCE	13,259	270	13,529	52,731	39,607	92,338
	98%	2%		57%	43%	
SDG&E	1,840	166	2,006	9,049	14,719	23,768
	92%	8%		38%	62%	
PacifiCorp	729	0	729	2,340	633	2,973
	100%	0%		79%	21%	
Liberty	99	<1	99	1405	538	1,942
	100%	0%		72%	28%	
Bear Valley	88	3	91	482	87	569
	97%	3%		85%	15%	
Total	34,015	619	34,634	147,007	73,583	220,590
	98%	2%		67%	33%	

(CPUC Data as of Dec. 2018)

2.3 "Winners and Losers" Under the Current Rule 20A Program Structure

Under the current Rule 20A program, the communities that benefitted the most are the largest cities and counties by population. These communities have received the highest levels of allocations and have seen the highest levels of expenditures over recent years. This is in part because the Rule 20A Tariff awards work credits to communities based on the number of meters that the IOUs serve relative to the total number of meters in their systems. The largest cities and counties have the highest proportion of meters and consequently receive the bulk of the work credit allocations. The larger communities likely are better able to dedicate greater internal staff and outside consulting services to help them plan for Rule 20A projects. Figure 2 below shows the top 10 communities in terms of expenditures in nominal dollars from 2005 to 2018. For

more perspective, the utilities prepared maps in advance of the April 22-23, 2019 CPUC Rule 20 Workshop that provides a geospatial representation of the communities that have seen the highest level of benefits and those which have not. The maps suggest that the economic core coastal areas in California such as the San Francisco Bay Area and San Diego see the highest levels of undergrounding through the Rule 20A program. They also seem to indicate that rural areas may only see limited to no benefits from the program. See Appendix A for the utility maps.

As a caveat, it is worth noting that the maps are only reflective of undergrounding expenditure under Rule 20A. For instance, they do not reflect the benefits that communities have seen with new underground distribution and service line extensions in newer neighborhoods and commercial areas per Electric Tariff Rules 15 and 16.

Figure 2. Cities and Counties with the Highest Levels of Rule 20A Nominal Expenditures (2005-2018)

	Community	Total Work Credit Expenditures (2005-2018)
1	City and County of San Francisco	$174,194,533
2	City of San Diego	$123,959,969
3	Unincorporated Los Angeles County	$80,199,098
4	Unincorporated San Diego County	$66,219,539
5	City of Long Beach	$66,113,635
6	City of Oakland	$59,290,182
7	City of San Jose	$54,445,341
8	Unincorporated San Bernardino County	$38,824,162
9	City of Fresno	$ 34,846,837
10	City of Chula Vista	$30,601,828

(CPUC Data as of April 2019)

While the communities shown above have completed projects worth hundreds of millions of dollars funded by general ratepayers' contributions, there are 82 communities across the State which have not completed a single project since 2005. Ratepayers in these communities have contributed to the cost of undergrounding projects outside of their communities without seeing any projects initiated or completed in their own communities. See Figure 3 below for the list of these communities.

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Figure 3. Communities that Did Not Complete Any Rule 20A Projects 2005-Present

Utility	Total Rule 20A Expenditures 1967-2018 (Million USD)	Total No. of Communities Served	Percent of Communities Which Have Not Completed Projects 2005-Present	Communities which have not completed projects 2005 – Present
PG&E	$1,500	266	11%	(30 Total) Unincorporated Alpine County, Atherton, Biggs, Blue Lake, Brisbane, Buellton, Calistoga, Cloverdale, Corcoran, Dos Palos, Foster City, Ione, Lakeport, Lassen County, Livingston, Maricopa, Marysville, Mendota, Menlo Park, Monte Sereno, Oakley, Plymouth, Point Arena, Roseville, Unincorporated Sacramento County, Unincorporated San Benito County, San Bruno, San Joaquin, San Juan Bautista, Saratoga
SCE	$1,200	208	12%	(24 Total) Aliso Viejo, Anaheim, Banning, Calabasas, Colton, Eastvale, Glendale, Goleta, Grand Terrace, Jurupa Valley, Laguna Hills, Laguna Niguel, Laguna Woods, City of Los Angeles, Menifee, Pasadena, Rancho Santa Margarita, City of Riverside, Unincorporated Imperial County, Unincorporated Madera County, Unincorporated San Diego County, Unincorporated Tuolumne County, Wildomar, Yucca Valley
SDG&E	$735.3	27	11%	(3 Total) Dana Point, Laguna Beach, Mission Viejo
Liberty	$20.10	10	80%	(8 Total) Alpine County, Mono County, Nevada County, Plumas County, El Dorado County, Portola, Loyalton, Sierra County
PacifiCorp	$4.20	16	94%	(14 Total) Alturas, Modoc County, Crescent City, Del Norte County, Shasta County, Dorris, Dunsmuir, Etna, Fort Jones, Montague, Mt. Shasta, Tulelake, Yreka, Siskiyou County
Bear Valley	$0	2	100%	(2 Total) Big Bear Lake, Unincorporated San Bernardino County
Total	**$3,460**	**529**	**16%**	**82 Total**

3. Rule 20 Program Goals, Challenges and Guiding Principles

3.1 Current Program Goals

The current Rule 20 program is focused on promoting the construction of city- and county-sited undergrounding projects that enhance the appearance of public areas such as major corridors, parks and natural areas. Broad participation in the program is encouraged by proportionately allocating work credits based on the number of meters in a community regardless of its location and if it is urban, suburban and rural. The program is also structured to assist communities that may not have enough work credits to initiate a project by allowing them to borrow work credits up to five-years ahead. The program also incentivizes businesses, homeowners, and governmental entities with a modest contribution to construct projects through its Rule 20B and Rule 20C sub-programs that may not necessarily benefit the general public.

The program is not currently focused on safety (i.e. wildfire or traffic safety) or reliability and does not prioritize projects based on these concerns, though these are benefits commonly associated with undergrounding in general. While the Rule 20 program is not oriented towards safety enhancement, the utilities engage in strategic undergrounding under limited circumstances for safety enhancement or for technical reasons. For instance, the utilities developed Wildfire Mitigation Plans (WMPs) in compliance with SB 901 to detail their plans for increasing system awareness and fire hardening their grids in high fire risk areas, known as the HFTD. In PG&E's 2019 WMP for example, PG&E proposed fire hardening 7,100 circuit miles of their system in the HFTD by "upgrading or replacing transformers to operate with more fire-resistant fluids, installing more resilient poles to increase pole strength and fire resistance, and in rare cases, undergrounding."[7]

The program does not offer any additional funding or assistance to communities who are smaller or disadvantaged. Furthermore, the program is not intended to underground all the overhead electric facilities in the State as that would be cost prohibitive.

3.2 Challenges to the Existing Program

Over the past several years, the CPUC's Rule 20 program has been fraught with issues related to the allocation of work credits and the buildup of unused Rule 20A work credits across the State. As of March 2019, there is a balance of $489.3 million in equivalent unused and un-committed work credits among the communities served by all the utilities.[8] Additionally, 57 communities

[7] PG&E 2019 Wildfire Mitigation Plan, p.13-14.

[8] The total unused, uncommitted Rule 20A work credits by utility are as follows:

- PG&E – $254 Million

have borrowed beyond the 5 year forward limit placing them in "work credit debt" and some have work debt that exceeds 50 years in equivalent annual allocations. See Table 3 on page 49 for more details. Through an unsanctioned secondary work credit marketplace, some communities sell, trade, or donate their unused work credits to other communities that need them to complete a project. While there is a provision in the Rule 20A Tariff for reallocating unused work credits from inactive communities to those in need of additional credits, it has seen limited use and appears to be an unworkable solution to work credit shortfalls.

Numerous municipalities have expressed that the current Rule 20A is not meeting their needs as the program is too narrowly focused on aesthetic enhancement. Instead, these municipalities are eager to leverage the program to enhance wildfire mitigation and meet other community safety and reliability objectives. Additionally, some municipalities report that the electric utilities and telecommunications companies are challenging to work with due to a misalignment of incentives for timely and cost-efficient project completion and due to disagreements over cost responsibility. Consequently, there have been several instances where project costs have vastly exceeded design cost estimates and project timelines have been drawn out seven years or longer. Complicating the matter is that the utilities are incentivized to hold back on completing projects, to ensure that they do not overspend relative to their approved GRC budgeted amounts. Furthermore, by delaying project completion, the cost of the projects and in turn the cost of the capital of the underground facilities increases which allows the utilities to put higher amounts into ratebase than they would otherwise be able to.

Another issue with the program in recent years is the significant increase in project costs. Data from the R.17-05-010 discovery and the PG&E Rule 20A Audit (discussed in more detail below) demonstrate that the project costs in real terms have increased by approximately 33 percent and 44 percent for PG&E and SCE respectively. On the other hand, SDG&E's costs appear to have declined modestly by less than six percent. See Figure 4 below.

- SCE – $207.6 Million
- SDG&E – ($79.1Million); the $489.3 million total excludes SDG&E's over-commitment of $79.1 million
- Liberty – $18.9 Million
- PacifiCorp – $8.8 Million
- Bear Valley – $0

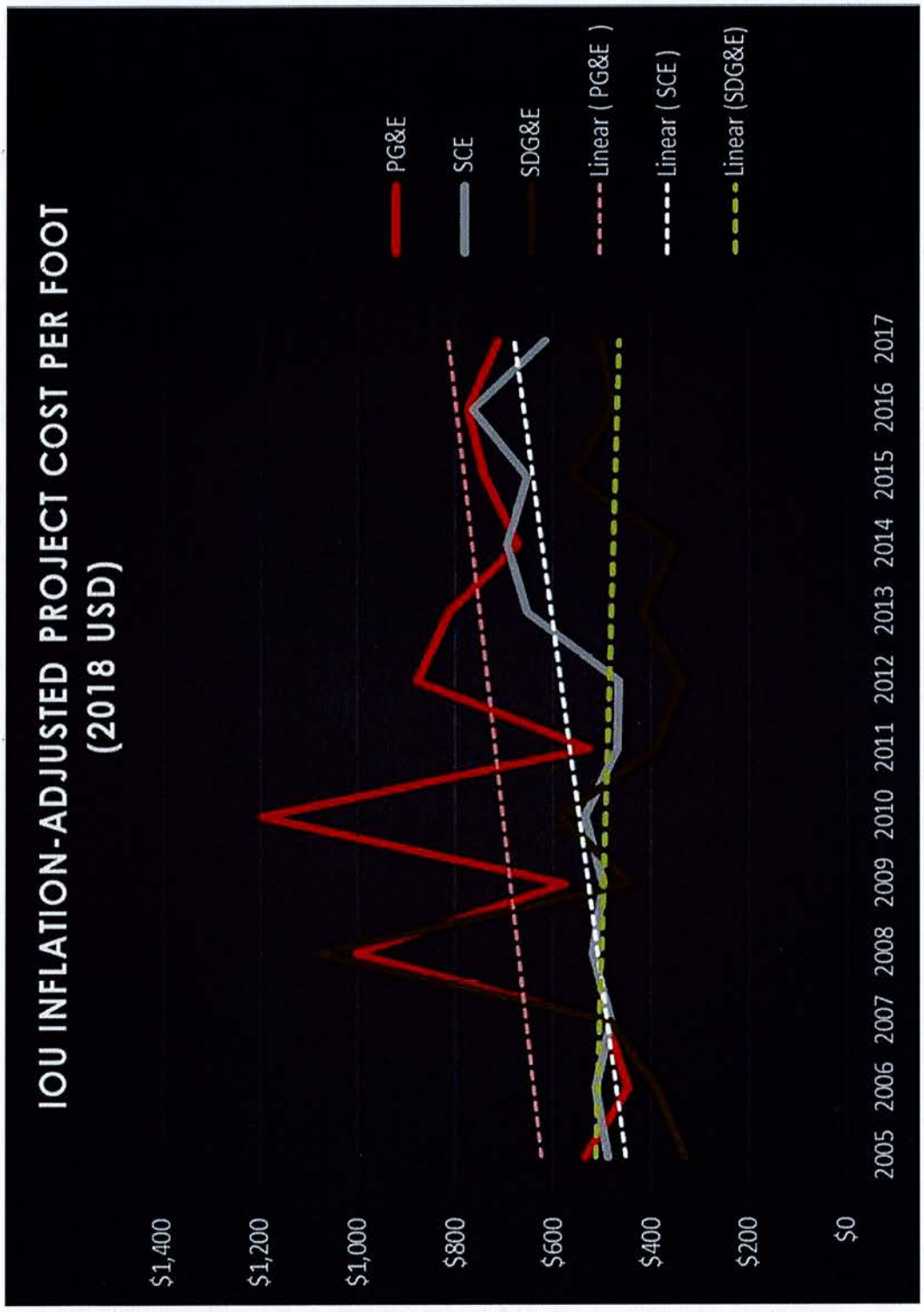

Figure 4. Inflation-Adjusted Cost per Foot for all IOUs 2005-2017 (in 2018 USD)

(CPUC Data as of April 2019)

Issues Uncovered in the PG&E Rule 20A Audit

The Rule 20A Program Audit, conducted by AzP Consulting in compliance with D.18-03-022 of the PG&E 2017 Test Year GRC Application (A.)15-09-001, uncovered several issues with PG&E's administration of the Rule 20A program.[9,10] Between, 2007 and 2016, the Audit found that PG&E consistently underspent their annual Rule 20A GRC budgets for every year over the 10-year period. Of the $555,776,000 that PG&E collected in rates for Rule 20A cumulatively over this period, PG&E spent $123 million, or 22 percent, on programs other than Rule 20A. As a consequence of reprioritizing funds away from Rule 20A, several of PG&E's Rule 20A projects experienced project delays and project cost increases leading to great frustration by the affected communities. AzP Consulting's assessment of program metrics shows PG&E's assertion that measures such as creating Rule 20A government liaison positions and revising the Rule 20 Program Guidebook and Rule 20A General Conditions Agreement have increased the ability of PG&E to carry out Rule 20A projects is inconsistent with the data on PG&E's actual program performance. Furthermore, PG&E's internal controls were found to be insufficient and unable to facilitate the proper functioning and management of PG&E's Rule 20A program. The CPUC is still considering further actions to rectify these issues with PG&E's Rule 20A program.

The Audit also found that relative to recognized nation-wide industry costs reported in the Edison Electric Institute's (EEI) 2012 study on undergrounding, PG&E's costs per converted mile were higher than the "maximum" conversion cost for two out of the three population densities – rural (50 or fewer customers per square mile) and suburban (51 to 149 customers per square mile). EEI's suburban undergrounding costs range from $329,280 to $2,541,000 while PG&E's average cost was reported to be $4,790,559. Similarly, EEI's rural undergrounding costs ranged from $166,005 to $2,058,000 while PG&E's average cost was $2,540,321. Additionally, PG&E reported to the auditors that it did not perform any benchmarking studies from 2007 to present and did not provide any explanation as to why its costs were higher than nation-wide average undergrounding costs.[11]

While the D.18-03-022 audit was specific to PG&E's Rule 20A program, the Audit Report recommendations may be applicable to other utilities and offer them a means of enhancing their Rule 20A programs. AzP Consulting's findings and recommendations were considered in the formation of Staff's recommendation for this proposal detailed in the subsequent sections.

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[9] For the full text for D.18-03-022, please visit: http://docs.cpuc.ca.gov/DecisionsSearchForm.aspx.

[10] Please see the following link to the PG&E Rule 20A Audit final report: https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442462983.

[11] While the audit was unable to provide an explanation for PG&E's relatively high conversion costs, cities such as the Town of Tiburon have reported that costs have increased in recent years due in part to constraints in the construction market. In a 2018 Tiburon Staff Report on a recently cancelled Rule 20A project, Tiburon Staff cited reconstruction efforts for the Oroville Dam, the Napa and Sonoma county rebuild post 2017 wildfires, increased spending by Caltrans, and labor shortages as drivers behind construction constraints and cost drivers. For more information, see: https://townoftiburon.granicus.com/MetaViewer.php?view_id=5&clip_id=197&meta_id=9477.

3.3 Proposed Guiding Principles

Staff recommends the following guiding principles to guide the program reform of Rule 20:

1) **Program objectives should be defined and made relevant to current undergrounding goals held by various stakeholders including safety and reliability.**
These new objectives can include a focus on safety, reliability, equity and the alignment of cost allocation with cost causation. Undergrounding safety objectives will be focused on providing communities with the ability to use their limited funds to underground areas that pose the greatest risk for wildfires or impeding emergency evacuations. Similarly, the proposed reliability goals will allow communities to underground circuits that are subject to chronic weather-related outages. The equity objectives will be focused on providing ample undergrounding opportunities for large and small communities alike and the need to target communities which have historically not benefitted from the program.

2) **Program reform should be informed by the governmental entities which have benefitted from undergrounding and those which have not.**
As is described in Section 2.3 above, the primary beneficiaries of the Rule 20 program are the economic core cities in coastal California. However, it is not simply the largest cities that have seen the most benefits from the CPUC's various undergrounding programs, but also the outlying suburbs of the economic core which were built out with underground utilities since the 1970s.[12] All of these newer communities have seen significant benefits from underground utilities that have been subsidized in part by older communities which are served by overhead facilities.

3) **Maintain regulatory efficiency of the program.**
The utilities should remain responsible for day-to-day administration. Staff intends to keep its oversight role over the program and mediate issues when necessary. Staff does not support taking on additional program administration responsibilities unless it is warranted.

4) **Minimize general ratepayer impacts.**
Undergrounding for aesthetic purposes in localized areas benefits few ratepayers at the expense of the many. While society at large may benefit from the reduction of overhead facilities in scenic viewsheds, it is not a sustainable or equitable proposition to continue placing the burden on ratepayers at large. Undergrounding of overhead infrastructure can

[12] Electric Tariff Rules 15 and 16 have required that all new distribution line extensions and service extensions in both residential and commercial areas be constructed underground since the 1970s. These Tariff requirements are separate from the CPUC Rule 20 program.

be conducted when desired by local communities, but costs should be primarily borne by those who will benefit directly from the projects.

5) **Recognize and encourage projects that can leverage local funds.**
Staff is promoting program reforms that will incentivize projects funded by local communities such through Rule 20B or 20C, and through municipal surcharge-based programs such as the City of San Diego's undergrounding surcharge program. The CPUC does not oversee this type of program but can authorize the utility to collect the franchise fee through rates that goes directly to funding the undergrounding. (See Section 2.1, pg. 10-11 and Section 4.2, pg. 36 for more details)

6) **Improve program operation and efficiency.**
Staff seeks to resolve common issues in the program that prevent timely and cost-efficient undergrounding. Furthermore, Staff intends to uncomplicate the design of the program and remove program barriers to entry.

4. Modifications to Rule 20 Tariff

This Section, in addition to Section 5 and 6, begins with background information on specific program issues related to recent experience with the Rule 20 program, and various options for resolving these problems. Many of the options presented are not mutually exclusive and those recommended by Staff are indicated as such in parenthesis.

4.1 Rule 20 Project Eligibility Criteria

Background

The Rule 20A project eligibility criteria were initially developed in 1967 in D.73078 and were focused specifically on aesthetics and traffic considerations.[13] Since 1967, the criteria have seen subsequent refinements and any new proposed Rule 20A project must be at a minimum of 600 feet or one block (whichever is less) and meet one or more of the five criteria listed below:[14]

1) Such undergrounding will avoid or eliminate an unusually heavy concentration of overhead electric facilities;

[13] See D.73078 for more information.

[14] The criteria for Rule 20A projects are listed below. Note that the third criteria is only featured in SDG&E's Rule 20A tariff. While not a public interest criteria per se, PG&E's Rule 20A Tariff requires in 1.A.c. that the governing body has: "Acknowledged that wheelchair access is in the public interest and will be considered as a basis for defining the boundaries of projects that otherwise qualify for Rule 20A under the existing criteria set forth in Section A(1)(a) above."

2) The street or road or right-of-way is extensively used by the general public and carries a heavy volume of pedestrian or vehicular traffic;
3) Wheelchair access is limited or impeded (SDG&E only);
4) The street or road or right-of-way adjoins or passes through a civic area or public recreation area or an area of unusual scenic interest to the general public; or
5) The street or road or right-of-way is considered an arterial street or major collector as defined in the Governor's Office of Planning and Research General Plan Guidelines.

Several communities in recent years have argued that the criteria for Rule 20A is too restrictive and that they are interested in undergrounding for safety and reliability reasons. In the wake of the destructive wildfires that occurred across the state in 2017 and 2018, some communities have expressed interest in leveraging Rule 20A funds to underground overhead lines in high fire threat areas for wildfire risk mitigation and ingress and egress routes in communities to prevent poles and live wires from blocking evacuation routes. There is also an expressed interest among some communities to reduce vehicle-pole collisions in certain areas.

Another issue is that the existing criteria is not standard among all the utilities (as SDG&E is the only utility that lists impeded wheelchair access) and the first two criteria are not very specific with regards to an "unusually heavy concentration of overhead electric facilities" or a "heavy volume of pedestrian or vehicular traffic." There is a fair bit of confusion and dispute with these criteria, though the utilities have authority to interpret the criteria and determine if a proposed project meets any of them or not. For example, with the "heavy volume of pedestrian or vehicular traffic," PG&E has in practice interpreted this to mean that such streets carry through traffic as opposed to only serving local traffic and checks to see if the streets meet the major collector/arterial criterion as part of their evaluation. In the event that a community consults with the utility and disagree with its evaluation of the criteria for a given area, the community would have little recourse but to file a complaint with the CPUC.

Options

Note: Options B-F are not mutually exclusive.

A. Status Quo – Maintain Current Rule 20 Public Interest Criteria

Under the status quo scenario, the project eligibility criteria remain the same. The downside of status quo is the evolving public interest would not be fully met under criteria focused almost entirely on aesthetic enhancement.

B. Safety and Reliability as additional criteria (Staff Recommendation)

Undergrounding can be an effective means of enhancing safety and reliability of the distribution system and under this proposal there are several additions to the Rule 20A eligibility criteria to encourage projects that meet these ends.

We recommend including wildfire mitigation as one additional safety criteria because of strong interest from stakeholders. Each community can leverage a limited pool of ratepayer funds for undergrounding projects. If a community wants to prioritize their limited Rule 20 funds on undergrounding to address wildfire safety, staff believes that this option should be added to the public interest criteria. See the proposed criteria below:

6) The existing above ground infrastructure is within a Tier 2 or Tier 3 area of the State's High Fire-Threat District as defined by the CPUC and the California Department Forestry and Fire Protection;

We caution the parties to have realistic expectations. Given that it will take over 3,000 years to covert the nearly 147,000 miles of overhead distribution lines to undergrounding and the high cost of conversion, this program change would have limited impact on wildfire safety. Additionally, the ALJ Guidance Ruling noted that there are several open wildfire-related dockets that may have a much greater impact on wildfire mitigation than the Rule 20A program. Staff agrees and finds that transforming Rule 20A into a wildfire mitigation program may not be the most cost-effective means of addressing wildfire risk. The utilities reported to Staff that undergrounding costs between $2.6 million and $6.1 million per mile which is far more expensive than other fire hardening measures such as replacing wooden poles with steel poles and installing covered conductors which the utilities report as costing $480,000 per mile.[15]

In addition, projects that either underground overhead infrastructure along county-designated evacuation routes and/or major ingress and egress roads can reduce the risk of escape routes being blocked by fallen poles and live wires during natural disasters. To that end, the following proposed criterion states:

7) The street or road or right-of-way serves as an egress, ingress, or is designated an evacuation route by local or state government entities.

Another safety-related issue along roadways that could be addressed in revised Rule 20A criteria is that above ground infrastructure may reduce road users' visibility and increase the

[15] Steel poles and covered conductors have been identified as a preferred method for fire hardening in the State's High Fire Threat District. According to SCE in its Grid Safety and Resiliency Program (GSRP) filing (A.18-09-002) the incremental cost of upgrading wooden poles to fire resistant steel composite poles is $52,000 per mile and installing covered conductors is $428,000 per mile. For more information, see pages 54-54 of SCE's GSRP testimony: https://www.edison.com/content/dam/eix/documents/investors/wildfires-document-library/201809-gsrp-filing.pdf.

risk of accidents in areas such as in intersections. To minimize this risk, the proposed criterion states:

> 8) The above ground infrastructure dangerously limits visibility for motorists, pedestrians, bicyclists, and/or other road users, particularly in intersections;

Additionally, the above ground infrastructure may be at high risk for vehicle damage, such as vehicle-pole collision, due to the placement of the poles along the road and the area's weather. The proposed criterion eight would allow for the conversion of such overhead equipment to qualify under Rule 20A:

> 9) The existing above ground infrastructure is along a road or right-of way that has a history of vehicle-pole collisions;

Similar to Section 4.3.B, these proposed new criteria would be applicable to Rule 20A if it is either continued or sunsetted, and to a modified Rule 20B program.

C. Refine and standardize existing Rule 20 public interest criteria (Staff Recommendation)

The CPUC would refine the existing public interest criteria used to determine project eligibility in the Rule 20A Tariff to include objective requirements, add clarity, and allow more projects to qualify that are in the public interest without changing the focus away from aesthetic and traffic concerns. These enhanced criteria would be applicable to Rule 20A if it is either continued or sunsetted, and to a modified Rule 20B program. See the proposed changes below in redline.

> 1) Such undergrounding will avoid or eliminate an unusually heavy concentration of overhead electric facilities. This is defined as poles that serve circuits in addition to a single primary and secondary circuit;

This change would allow communities to utilize Rule 20A to underground not only poles that are unsightly due to too many electric wires, but also poles that may be unsafe due to pole overloading. The last sentence adds an objective description as to what an unusually heavy concentration of overhead electric facilities would be.

> 2) The street or road or right-of-way serves as a major thoroughfare for ~~is extensively used by~~ the general public and carries a heavy volume of pedestrian, bicycle, rail, vehicular, or other traffic. Heavy traffic volume means a minimum of 5,000 average trips per day among all personal and public transportation forms collectively;

This removes "extensively used" which is vague and replaces it with a major thoroughfare. Bicycle and micro-mobility traffic are also included. Heavy traffic volume is clarified based on the State of California's General Plan Guidelines minimum traffic volume for collectors.[16]

3) Wheelchair access is limited or impeded by existing above ground electric and/or telecommunications infrastructure including pad mounted facilities on sidewalks or in other areas in the pedestrian right-of-way that is otherwise not compliant with the Americans with Disabilities Act;

This adds clarity as to how wheelchair access is impeded and allows for any above ground infrastructure on sidewalks or other areas in the pedestrian right-of-way, such as plazas, that do not comply with the Americans with Disabilities Act to be undergrounded via Rule 20A.

4) The street or road or right-of-way adjoins or passes through a civic area or public recreation area or an area of significant ~~unusual~~ scenic, cultural and/or historic interest to the general public; or

This allows other areas of importance to the public to be eligible under Rule 20A in addition to scenic areas.

5) The street or road or right-of-way is considered an arterial street or major collector as defined by the California Department of Transportation's California Road System functional classification system.~~in the Governor's Office of Planning and Research General Plan Guidelines~~.

This change conforms the definitions of arterial and major collector to the definitions used by the California Department of Transportation and the rest of the State of California.

D. Include benefit-to-cost metrics as additional criteria (Staff Recommendation)

Under the current criteria, there is no consideration of costs or using benefit-to-cost analysis as a criterion under the Rule 20A program. By creating a new criterion which states that projects which meet a benefit-to-cost ratio of one or greater would qualify under Rule 20A, the program could encourage projects that would yield quantifiable positive net benefits for the ratepayers and the general public. Possible benefit streams could include safety, reliability, efficiency/economies of scale from combining undergrounding with other planned civil construction projects and/or constructing large-scale undergrounding projects, and replacement of aging overhead infrastructure. Alternatively, there could be a minimum benefit-to-cost threshold that would need to be met by any prospective project to qualify under Rule 20A to ensure that they are a prudent investment of ratepayer funds. The challenges with benefit-to-cost criteria are that there are limited third-party benefit-cost

[16] 2003 General Plan Guidelines, page 256-257. For the full text of the State's 2003 General Plan Guidelines, see: http://opr.ca.gov/docs/General_Plan_Guidelines_2003.pdf.

studies that exist to draw from at this time for underground conversion, so the utilities would have to play a considerable role in determining the costs and benefits for the time being. Additional studies may be needed first by the utilities and/or third parties before the CPUC may be able to adopt benefit-to-cost metrics as additional criteria for the Rule 20A program.

E. Minimum Project Distance, Service Laterals, Panel Conversions – Rule 20A Section 3 (Staff Recommendation)

In Rule 20A Section 3, the utilities specify their requirements for the minimum project distance is the lesser of 600 feet or one block. Staff proposes to increase the minimum distance to the lesser of half a mile or five blocks to minimize ratepayer liability created by short, relatively expensive projects. Projects less than five blocks may be constructed as a Rule 20B project, if eligible, or as a Rule 20C project. Rural communities would be exempt from this minimum.

In terms of service laterals, the Tariff limits the length for installing underground service laterals at "no more than 100 feet" in Rule 20A Section three. However, some customers may require longer service laterals as the service lines may be routed through an alley, or because a 100-foot service lateral is otherwise infeasible. Staff recommends making 100 feet as an average for service laterals, rather than a maximum, so the utilities do not need to seek out a deviation from Rule 20A in order to underground a service line that exceeds 100 feet.

In Section three of the Rule 20A Tariff, the utilities currently limit the conversion of electric service panels to accept underground service at $1,500 per service entrance, excluding permit fees. It is unclear how the $1,500 figure was arrived at or if it is still a relevant figure today. Thus, Staff recommends changing the language of the fourth paragraph of Rule 20A Section three to:

> The conversion of electric service panels to accept underground service. ~~, up to $1,500 per service entrance, excluding permit fees.~~

F. Project Viability and Actionability (Staff Recommendation)

A final criterion to add to the prospective new list would be for the community to sufficiently demonstrate that the project is sufficiently funded and can be completed within seven years. To meet this criteria, the community would need to demonstrate that it could absorb at least a 100% increase in price, which is not an reasonable expectation for Class 5 project cost estimate during the project initiation or planning phase in accordance with the Association of the Advancement of Cost Engineering's (AACE) estimation guidelines, with additional work credits or pre-arranged community funds.[17] Furthermore, the prospective

[17] Estimates at the planning phase of a project are based on less detailed information and assumed precision than estimates during the construction phase of a project For more information about the AACE's cost estimation guidelines, please visit the AAC website: https://web.aacei.org/.

joint trench participants (i.e. city, telecommunications companies, electric utility) for the project would draft a binding charter for the project in which they would agree to complete the project in seven years or less and plan to execute it following the formation of the undergrounding district. This new criterion could act as a safeguard against projects dragging on for years or being prematurely cancelled due to a lack of adequate preparation or funding.

Questions for Parties:

4.1.i. If the CPUC ultimately decides to sunset the Rule 20A program, should any of the modified criteria be adopted for the sunset period?

4.1.ii. Is half a mile or 5 blocks a reasonable minimum distance for Rule 20A projects?

4.1.iii. How can the "unusually heavy concentration of overhead electric facilities" and "heavy volume of pedestrian or vehicular traffic" criteria be more objectively and concretely defined?

4.1.iv. How will the telecommunications companies modify their Rule 32 programs to align with any changes that may occur to the Rule 20 program as a result of this proceeding?

4.1.v. Are there other safety and reliability criteria that can be considered aside from those listed above in section D?

4.2 Rule 20A Work Credit Allocation Methodology

Background

Under the current allocation methodology, each IOU has a limit to the number of allocations that is set in their general rate cases for the Rule 20A program. The utilities allocate the Rule 20A work credits proportionately based on the number of meters (representing customer accounts) to all of their cities and counties within their service territories.[18] All the utilities, except for PG&E, provide a baseline allocation based on the 1990 allocation amount to each of the communities and utilize an allocation formula to determine the additional amount of work credits to allocate.[19] The allocation formula bases 50 percent of the allocations on the proportion of a municipality's total overhead meters to the total system overhead meters that the utility serves. The other 50 percent is based on the total meters (both overhead and underground-served meters) in a municipality to the total utility system meters.

[18] In 2019, the total allocations were $102 million in total for 2019 for all the utilities. The breakdown of 2019 allocation amounts are as follows: Liberty Utilities – $1.43 Million, PacifiCorp – $520,000, Bear Valley – $0, PG&E – $41.3 Million, SCE – $30.1 Million, and SDG&E – $28.7 Million.

[19] PG&E does not use a 1990 baseline; it simply uses the weighted allocation formula based on overhead and total meters. See PG&E's Rule 20 Tariff for more information.

This allocation structure has proven to be problematic in recent years as many communities receive too few work credits to undertake a project. There are many small communities that are put at a disadvantage by this methodology as they receive annual allocations that are less than $250,000 – the minimum allocation amount needed to save enough work credits over a five year period to complete a project of five city blocks (about 3000 feet) in length.[20] Under the current allocation methodology, many of these communities face a significant financial barrier to entry and are fortunate to have completed any projects over the past 50 years. Smaller communities with insufficient allocations may save up work credits for decades but see the value of their saved allocations diminish in value due to inflation and rising project costs.

Further complicating matters is the fact that the current work credit allocation rules do not distinguish between communities that have an expressed interest in undergrounding, disadvantaged communities, or urban, rural and suburban communities. Many communities which either have most if not all of their system underground, or have not developed a five or ten year plan, or have not formed an undergrounding district, or otherwise have not expressed any interest in participating in Rule 20A still receive work credits each year under the current program structure. Partly as a result, there are $489.3 million in unused and uncommitted work credits that are held by numerous communities across the state.

Another issue with the current allocation methodology is that it apportions work credits no differently to wealthy active communities as it does to disadvantaged communities which have completed few or no underground conversions through Rule 20A. The Rule 20A maps that the utilities developed in response to the R.17-05-010 show that the bulk of undergrounding investments in the state have occurred in the state's affluent and economic core areas, such as the San Francisco Bay Area and San Diego.

In recent years, the CPUC has become more focused on promoting environmental and social justice and has committed to advance equity in CPUC programs and policies. However, the Rule 20A program current allocation structure predates environmental and social justice objectives and, in some cases, underserves disadvantaged communities. The level of allocations can be insufficient for some disadvantaged communities, and allocations do not cover municipal administrative costs, which may represent a significant financial burden on disadvantaged communities and a barrier to entry for this program. However,

Finally, the current methodology is structured such that communities that are simply larger and have more meters are awarded more work credits. This process fails to consider factors such as the community's level of interest in the program, the level of potential aesthetic impacts, or urban density. Some communities may receive large allocations but do not

[20] This assumes a median project cost of $825 per foot and that the community will utilize its five-year borrow. According to the data the utilities provided in response to the Staff data request for R.17-05-010, the cost per foot for Rule 20A projects ranges from $500-$1,150.

prioritize aesthetic utility undergrounding in their neighborhoods for whatever reason. While the program is designed to enhance aesthetics there is no prioritization of allocations to areas where the highest societal aesthetic benefits can be made, such as near scenic coastlines, state parks or historical landmarks. Similarly, this allocation structure ignores urban density, which experts have associated with greater benefits relative to costs for undergrounding than in less dense areas due to greater economies of scale and due to existing and extensive underground rights-of-way.[21,22]

Options

Note: Options B-G are not mutually exclusive.

A. Status quo Rule 20A Program

With the status quo option, the allocation methodology would remain unchanged and assumes that the CPUC does nothing to address work credit reallocation or trading and keeps the borrowing limit at five years. Should the CPUC choose this path, none of the equity issues would be resolved for the small and disadvantaged communities. Furthermore, many communities would still have to rely on the informal, unregulated work credit trading market, reallocation and the five year borrow in order to make up for insufficient allocation levels.

B. Eliminate Rule 20A, require cities and counties to leverage Rule 20B and 20C as written

In this scenario, the CPUC eliminates the Rule 20A program which leaves the cities and counties with Rule 20B and 20C programs to construct undergrounding projects in their respective jurisdictions. Under Rule 20B, a city or county can construct an undergrounding project that otherwise would not meet any of the Rule 20A criteria and receive a 20 to 40 percent ratepayer contribution provided that the project would include both sides of the street for a minimum of one block or 600 feet. In Rule 20C, there is no minimum length requirement and like Rule 20B, there is no public interest that the community's project would need to meet.

There are several benefits to this proposal. The equity issues around the buying, selling, and reallocating work credits would no longer be present if 20A is eliminated. The Communities would continue to benefit from a 20-40 percent ratepayer contribution from the utility for projects and can choose projects without the constraint of the Rule 20A project eligibility

[21] Larsen, Peter H., "Severe Weather, Power Outages, and A Decision To Improve Electric Utility Reliability," PhD dissertation, Stanford University, 2016, p.114.

[22] To put this in perspective, a community such as Maywood in unincorporated Los Angeles County with a population density of 23,216 per square mile would not receive a higher weighting with its Rule 20A allocation than Long Beach which has less than half of Maywood's population density at 9,191 people per square mile. Only the aggregate number of meters are considered in the allocation formula.

criteria. There would not be any dispute as to whether projects would qualify or not under the five Rule 20A criteria. Finally, the allocation of undergrounding costs in the Rule 20 program would better match cost causation as the communities would have to pay for the bulk of their projects rather than the ratepayers who may not live in the community.

However, there are several drawbacks of this option. For instance, the 20-40 percent ratepayer contribution might not be insufficient to reduce barriers to entry to the Rule 20 program for smaller and disadvantaged communities. The CPUC may want to consider increasing the ratepayer contribution to 50 percent for smaller and disadvantaged communities or institute a matching fund scheme to enable these communities to obtain enough funding to construct projects through the Rule 20B program. Cities and counties would likely not be in favor of eliminating 20A without providing a comparable substitute. Furthermore, with the elimination of the public interest criteria, there would be no guarantee that undergrounding would occur in areas of interest to the general public or in disadvantaged communities.

C. Modify Rule 20B to Incorporate Tiered Ratepayer Contributions and Sunset the Rule 20A Allocation-Based Program (Staff Recommendation)

Another option for moving away from the allocation-based Rule 20A program would be for the CPUC to end Rule 20A and replace it with an enhanced Rule 20B program which would provide higher levels of ratepayer contributions to applicants on a tiered basis. The modified Rule 20B program would have three ratepayer contribution tiers for applicants based on public interest criteria and policy objectives:

Tier 1 – Ratepayer Contribution = 20%

Minimum distance of one block or 600 feet on both sides of the street, whichever the lesser. Tier 1 is roughly equivalent to the current 20B program.

Tier 2 – Ratepayer Contribution = 30%

Tier 1 **and** meets one or more of the revised Rule 20A public interest criteria proposed in the staff proposal including aesthetics, safety, and fire threat mitigation.

Tier 3 – Ratepayer Contribution = 50%

Tier 2 **and** meets one or more of the following equity criteria:

- Lies within or is adjacent to a disadvantaged community census tract the time of creating the undergrounding district;
- Community has not completed a Rule 20 project in 10 or more years[23];

[23] If a community is in work credit debt in excess of 5 years, then it cannot meet this criterion.

Replacing the Rule 20A program with a tiered Rule 20B program could potentially resolve many of the equity issues and administrative challenges that have plagued the program:

- Applicants will be responsible for most of the costs of undergrounding which better reflects cost causation principles;
- Projects would be less of a burden on the general ratepayer than in the case of Rule 20A;
- Communities will be encouraged to form utility surcharge programs to accelerate local undergrounding;
- The playing field would be more even as communities would no longer be reliant on unequal levels of work credit allocations;
- Projects that address one or more of the expanded public interest criteria will receive a modestly higher level of ratepayer contribution;
- The program would be simplified through the elimination of the work credits, and program flaws related to the allocations, borrowing, trading, etc.;
- Expanded public interest criteria enable many different community interests to be served by undergrounding; and
- Disadvantaged and underserved communities will have a greater opportunity to complete projects using the higher tier of ratepayer contribution.

Transition Sunset of the Rule 20A Program

To move towards the new 20B style program requires an orderly transition and sunset of the existing Rule 20A program. The 10-year transition can follow these steps:

Year 1 – As of January 1st of year 1, there will be no issuance of work credit allocations and work credit trading shall be prohibited. One exception is counties may distribute their county-level work credits to municipalities within the county provided there is no exchange of money or things of value. Communities may continue to redeem their existing work credits for Rule 20A projects throughout the 10-year transition. They may also continue to use their Rule 20A credits to "seed" the pre-project engineering and design costs of Rule 20B projects per current rules.

Year 10 – At the end of the transition period any remaining Rule 20A credits must be applied to a designated undergrounding district in the community. Any unused Rule 20A credits will be eliminated and all work credit balances will revert to zero.

With the equity benefits and flexibility of this new program design it is still possible that some of the smaller communities with fewer resources may have difficulty engaging in this program due to competing priorities or limited resources. To address this issue, it may be necessary to issue a one-time amount of work credits to historically underserved communities that have long paid into Rule 20A but received little benefit. The purpose of

this one-time allocation is to allow these communities to have the opportunity to complete an undergrounding project in the near term. One way to operationalize this one-time allocation of funds would be for the communities to apply into a grant program, such as the one described below in Option H.

D. Incentivize Municipal Undergrounding Surcharge Programs (Staff Recommendation)

As described earlier in the proposed program guidelines, Staff is interested in promoting more projects that can leverage local funding. Not only is Staff interested in increasing the subsidy that is available to Rule 20B applicants under certain circumstances, but Staff would also like to encourage municipalities to institute self-taxation programs such as the City of San Diego's program. To that end, Staff recommends instituting a dollar-per-dollar match of up to $2 million per year per participating municipality that would be funded by the IOUs. In order to be eligible, a community must have a self-taxation program such as a municipal utility surcharge that is operational.

There are several benefits that this proposal offers. Self-taxation programs significantly lessen the burden on the general ratepayer by requiring only the ratepayers or taxpayers within a given municipality to be responsible for most of the costs. This matching structure would provide a significant level of assistance to communities, while capping the rate impact of the matching funds.

Surcharge or self-taxation programs also simplify the ratemaking aspect of a utility's undergrounding program as the costs simply pass through to the ratepayers within a municipality. The costs would not need to be approved as part of a forecast in a utility general rate case. However, the matching funds would need to be approved in a general rate case which adds some complication to the process.

Options E and F described below assume that work credit allocations are to continue. Revising the work credit methodology will be unnecessary if Option C is adopted.

E. PG&E's, SCE's and SDG&E's proposal: Rule 20A allocation methodology based solely on overhead meters

During the April 2019 workshop, the investor-owned utilities (IOUs) recommended that the allocation methodology be changed so that the formula would be based entirely on the overhead fed meters in a community and eliminate the 1990 allocation baseline. According to the IOUs, this would simplify the calculation, which is currently based 50 percent on the total meters and 50 percent on the number of overhead fed meters for each community. Furthermore, it would eliminate the outdated "1990 base" from the calculations.

The effect of this allocation methodology change would be an increase in allocations to communities that have a higher ratio of overhead fed meters, such as the City of Long Beach, while lowering the allocations to communities that have a high ratio of underground served meters, such as Foster City. This could potentially reduce the buildup of unused work credits across the state and reduce work credit trading as the communities with more overhead facilities and greater interest in Rule 20A would receive more work credits than communities that are already underground and may not have much need for their work credits and prefer to sell them instead. However, this may not make much of a difference to communities with small allocation levels and they may still struggle to come up with enough work credits for constructing projects. Additionally, this change does not address the transparency and efficiency issues around the unregulated buying, selling, and reallocating work credits. Furthermore, overhead fed meters are not the most accurate proxy for the total volume of overhead facilities; they are only representative of the actual service lines to homes and businesses and not primary and secondary circuits, which make up a significant portion of the overhead facilities. It may be that there are communities with few overhead fed meters that would end up receiving fewer work credits under this new methodology despite having many overhead facilities within their boundaries.

F. Overhead line miles as the basis of determining work credits

Another option for modifying the allocation methodology that the IOUs brought up during the workshop is to have overhead distribution line miles within a community's boundaries serve as the basis for determining the work credit allocation. As mentioned earlier meters fed by overhead service are not the most accurate proxy for the total volume of overhead distribution facilities. Thus, by having at least a percentage of the allocation formula be based on overhead line miles, the allocation formula would better reflect the full scope of overhead distribution facilities within a community's boundary. However, the IOUs did not recommend what percentage of the allocation would be based on the overhead line miles. The challenge with using the line miles as a basis for the allocation is that communities may

receive a disproportionately large number of allocations simply by encompassing large geographic areas, such as Mono and Inyo Counties, though their population sizes and densities are small. Should the CPUC keep Rule 20A as an allocation-based program, then Staff recommends that line mileage should factor in no more than 25 percent of the allocation formula.

G. Allocation of mile points rather than work credits

Also referred to as "decoupling of dollars from miles," this proposed methodology that the IOUs shared as an alternative during the workshop would change the allocation of work credits based on dollars to mile points. The annual mileage allocation would be based on the equivalent number of miles afforded by the utility's 2019 work credit allocations unless otherwise changed in the GRC (e.g. SCE would allocate about 10 miles points among of its communities based on its 2019 allocation of $30.1 million). Some communities would be eligible for an additional one-time baseline allocation of points equal to 3000 feet (equal to 5 city blocks or roughly half a mile)[24] and be allowed to use a one-time conversion of their unused Rule 20A work credits to mile points if they meet one or more of the following:

- The community has never completed a Rule 20A project;
- The community has 80 percent or more of its population living within disadvantaged community census tracts; or
- The community received $100,000 or less in annual work credits in its 2019 allocation.

One advantage is that mile points protect against inflation and construction cost increases. Additionally, the mile points would not be marketable if the CPUC prohibits their selling, giving and trading. The borrowing-forward and reallocation provisions could still apply, so active communities would be able obtain additional points when needed. Furthermore, the proposed baseline and one-time conversion of work credits to points would help ensure that every community would have the opportunity to complete a project.

The challenges with the mile point system are that the mile point allocations may still be insufficient to reduce barriers to entry for smaller and disadvantaged communities as municipal administrative costs and constraints may prevent them from moving forward with a Rule 20A project. Moreover, mile points would not cover municipal administrative costs. Additionally, it is mile points would not apply to subsurface transformers, securing and paying for easements contaminated soils, and cultural resource findings without a change to the utilities' general conditions agreements. One additional challenge with mile points is assigning their value in GRC budgets. It would be hard to project the cost of mile points as a

[24] A project of this length for an individual community would come at an estimated cost of between $1.5 million and $3.45 million.

variety of factor can increase the cost of a project. Mile points could exasperate the unfunded liability problem already present with the existence of nearly half a billion dollars of unused work credits.

H. Replace the allocations with a grant program

While several of the modifications above (Options D, E and F) are focused on different variants of an allocation-based program for distributing work credits or mile points to the municipalities, this option would instead require municipalities to apply for grant funding to complete a project. With this Rule 20A program variant, the utilities would each separately create a pool of funds based on their approved Rule 20A budgets in the general rate case. The program administrator could award funds to communities based on a variety of criteria such as the population size and density of the community, if it is proposing a project in a disadvantaged community, if it is replacing aging or overhead infrastructure, if it would measurably enhance safety and reliability, scale of the project (i.e. large-scale), and if it has a benefit-to-cost ratio approaching 1:1 or better. This program design offers a centralized mechanism to award projects that will yield the highest societal benefits. Dedicated set asides in the funding pool for smaller and larger communities will ensure that large and small communities do not have to compete against each other for funding. Grant funding in the form of matching funds could also be provided to communities that establish a surcharge or self-taxation-based program such as in the case of the City of San Diego in the first year of such a program. The grant-based program could be part of the 10-year phaseout of Rule 20A.

There are several benefits that a grant-based program design would yield. For instance, a grant-based Rule 20A would create a more level playing field for cities and counties, particularly small and disadvantaged communities, as they would no longer be dependent on varying magnitudes of allocations or having to purchase work credits from other communities. The grant system would allow communities to move forward more quickly with projects by obtaining funds all at once rather than having to wait for many years to save enough work credit allocations. Grant funds if held in an interest-bearing, one-way balancing account could accumulate interest unlike a community's work credit balance, which loses value over time due to inflation and rising project completion costs. Furthermore, the grant program could incentivize projects that would yield high levels of benefits from various streams such as enhancing safety, reliability, efficiency/economies of scale, and/or by raising property values.

A grant-based Rule 20A would be challenging to administer regardless if it is administered by the utility, the CPUC, or a third-party such as the California Energy Commission. Additionally, it will take more time to design and implement relative to other options for continuing or modifying the current allocation-based program.

Questions for Parties:

4.2.i. Are there other allocation or grant designs from other utility or civil construction programs that could serve as a better model then ideas that have currently been proposed?

4.2.ii. What are some grant-based programs that could serve as an appropriate model for a grant-based Rule 20A program should one be adopted?

4.2.iii. Are there definitions for "urban," "suburban" (or "urban clusters") and "rural" areas that would be more appropriate for this proceeding and the Rule 20A program than U.S. Census Bureau's definitions?

4.2.iv. Is one block or 600 feet a reasonable minimum distance for Rule 20A and Rule 20B or would five blocks or 3,000 feet be more reasonable?

4.2.v. Are there other items that would be reasonable for the Tier 1 or Tier 2 categories that can be objectively measured? (Such as a threshold of annual vehicle-pole collisions?)

4.2.vi. Is it necessary to have a one-time transition allocation of Rule 20A work credits to under-served/disadvantaged communities at the start of the transition to a revised Rule 20 program? If so, how much would be appropriate and what criteria should be used to determine eligibility?

4.2.vii. Who should bear the cost of the approximately $93 million in work credit debt held among 58 communities if work credit balances are reverted to zero under the tiered Rule 20B program proposal? (See Section 6, page 50 for more information on communities in work credit debt)

4.2.viii. Should Rule 20B in its current or any revised form be subject to any annual limitations for the am amount of rate payer funds a community can spend or the miles of lines that a community can convert to underground?

4.2.ix. Are there ways that the CPUC can better encourage or incentivize self-taxation or surcharge programs among the cities and counties to accelerate undergrounding?

4.2.x. How should local surcharge programs interact with the Rule 20 program, for example matching funds?

4.3 Sunsetting the Rule 20A and 20D Programs

Background

The notion of sunsetting the Rule 20A program was considered in the Scoping Ruling in question 27, "If the Rule 20A program is discontinued, how should the existing program be sunset?" Only the City of San Jose and Town of Portola Valley responded in their filed comments on the Scoping Memo and recommended against discontinuing the program.

Rule 20D may no longer serve a function in light of the utilities' wildfire mitigation plans ("WMP") which are intended to fire harden overhead infrastructure in the same high fire threat areas that would be eligible for Rule 20D projects. The utilities' WMPs are not

precluded from including undergrounding as a mitigation measure. Rule 20D projects may place higher costs on ratepayers than simply installing steel poles and covered conductors. Furthermore, the program may be too slow to complete undergrounding projects in light of the growing wildfire risk. Not a single Rule 20D project has been initiated since the program began in 2014 and any projects could take up to seven years to complete.

Staff Recommendation

Staff recommends gradually phasing out the existing Rule 20A and 20D programs over a 10-year period, which would allow projects that are either underway or about to be initiated to be completed with the funds that the communities have already committed to them. Annual allocations of work credits would , and communities would not be allowed to sell their remaining work credits with each other, but county entities may donate them to cities that are within the county. Staff recommends that this gradual sunset of Rule 20A be combined with option 4.2.C. to modify the Rule 20B program to incorporate tiered ratepayer contributions shown on page 20.

Questions for Parties:

4.3.i. Is 10 years a reasonable and sufficient amount of time to phase out the Rule 20A program in its current form?

4.3.ii. Should unused, uncommitted Rule 20A work credits be applicable to Rule 20B following the sunset period? If so, should there be a limit to the percentage of a Rule 20B project that can be funded through legacy Rule 20A work credits?

4.4 Options for Obtaining Additional Rule 20A Work Credits

Background

When communities require additional funding for projects beyond what they can accumulate through their annual allocations, there are a few of options that they commonly turn to obtain additional work credits. The most common approach is for communities to borrow forward against their future work credit allocations from the utility. The Rule 20A tariff allows for communities to borrow forward for a maximum of five years.

If five years' worth of additional work credits is insufficient for funding a project, the tariff allows for the utilities to reallocate unused work credits from communities that have been inactive in the Rule 20A program. Inactive communities are defined as cities or unincorporated counties that have not formally adopted a utility undergrounding, started, or completed construction of an undergrounding conversion project within the last eight years, or have received Rule 20A allocations from the utility for only five years or fewer due to recent incorporation. Based on the language in the Rule 20A tariff and the precedent set in

Resolution E-4971, the reallocation provision may be invoked when additional funding is necessary for projects underway due to unforeseen funding shortfalls, but only after demonstrating that all alternatives for obtaining funding for the project have been exhausted. Rule 20A at Section 2.c states:

> "When amounts are not expended or carried over for the community to which they are initially allocated, they shall be assigned when additional participation on a project is warranted or be reallocated to communities with active undergrounding programs."

The reallocation provision in the Rule 20A tariff has been invoked only twice over the past two decades and many communities and the utilities have expressed concern over equity issues that the reallocation provision poses. In circumstances in which a community experiences an unexpected increase in the cost estimates or a cost overrun during construction, the utilities would more commonly work with the community to reduce the scope of the project to lower the cost, or recommend that the community come up with additional funding on their own rather than invoke the reallocation provision. This practice causes frustration for everyone involved. The utility is forced to minimize the project and the community must lower its expectations or apply more funding. Even if the project is excellent and clearly in the spirit of the Rule 20A Tariff, the parties have in some cases little option but to shrink the project and leave facilities overhead in some areas in order to fit into the budget constraints. In some cases, communities would either pause or cancel their projects altogether as a result of cost increases.

In other cases, communities have engaged in work credit exchanges – such as buying, selling, trading, loaning, and donating – as a work-around so communities can obtain additional work credits and move forward with projects that they otherwise would not be able to fund. This work credit trading is mentioned nowhere in the tariff and at least 87.6 million work credits have been exchanged in an informal, unregulated secondary market.[25] While work credit trading can lend to greater market efficiency by allowing communities with greater interest in the program to purchase additional work credits from communities that have no immediate interest in constructing a Rule 20A project, there is no CPUC regulatory oversight or reporting of the transactions to the CPUC. There are no set terms for buying and selling, there is no market clearing house, and only a handful of communities appear to be privy to the work credit informal market. Furthermore, there are no restrictions as to how the proceeds may be used and there are instances of communities using proceeds towards projects unrelated to the provision of safe and reliable electric services.[26] Additionally, the utilities claim to be largely uninvolved with the process, though they are complicit by

[25] Per the utility R.17-05-010 Staff data request responses transmitted to the parties via email in January 2020.

[26] For instance, the City of Sonora used proceeds from selling 500,000 work credits to the City of Half Moon Bay to fund the construction of public restrooms. For more information, see: http://www.uniondemocrat.com/localnews/5607248-151/sonora-council-approves-sale-of-utility-credits-to.

facilitating the final transfer of work credits from one community's work credit ledger to another.

Options (Assuming Rule 20A Continues)

A. Status Quo — unregulated work credit trading

Should no changes be made with regards to work credit trading, borrowing forward, and reallocation in this proceeding, it is likely that the communities that either receive high levels of allocations or are well versed in the program will continue to reap the benefits of the program while others struggle to get their projects underway. One can argue that the work credit trading process has demonstrated success and is able to reduce the unused work credit balance that has built up among the cities and counties. However, not many communities are aware that they can buy additional work credits and not all communities have the finances to purchase additional work credits.

Additionally, the reallocation process is controversial, as the utility must take away work credits without compensation and has been traditionally a slow process due to formal CPUC review and notification to inactive communities.

B. Regulated work credit trading

Under this scenario, the CPUC would formally recognize work credit trading as part of the Rule 20A program and implement guidelines with increased transparency for the process. For instance, communities would be free to sell to one another at rates between 25 cents to the dollar and dollar per dollar, but the final negotiated price must be included in a transaction request addressed to the utility. Communities that sell their work credits would be required to use their windfall for electric rate relief and would be prohibited from using their earnings to augment their general funds. The communities would be free to loan work credits to one another and are free to negotiate rates with one another at no higher than five percent subject to utility approval. Additionally, unincorporated counties would be free to donate work credits to cities within their boundaries subject to utility approval. The utility would be required to review all work credit transactions prior to granting approval and ensure that the buyers have a legislated undergrounding district for a workable project and that the seller's terms are reasonable. The utilities should be transparent about the guidelines by including this information in their updated Rule 20A guidebooks, in their annual allocation letters to the communities, during in-person meetings with the communities, and on their public websites. The utilities should also provide information about all work credit exchanges in their annual reporting to the CPUC.

By modifying the current work credit trading practices as described above, the process can potentially be made more transparent and more efficient at drawing down the balance of

unused, uncommitted work credits. Additionally, by requiring sellers to use profits specifically for rate relief, the CPUC can ensure that ratepayers who have been paying into the Rule 20A program for years but have had few or no projects constructed in their area would see some form of relief since they cannot opt-out of paying into the program.

However, even with these rule modifications and rate relief for selling communities, many communities that do not receive enough work credits relative to their needs and interest in the program will likely continue to inject public funds into Rule 20A projects by purchasing work credits from other communities. This is problematic as the intent of Rule 20A is to have the ratepayers fund these costs. It is unclear whether it is reasonable to require the municipalities to cover these costs simply because the Rule 20A allocation process does not efficiently allocate funds to communities with an expressed interest in the program.

C. Prohibit unregulated work credit trading and only allow intra-county transfers (Staff Recommendation)

Under this proposal, the CPUC would forbid the trading of work credits effective for the remainder of the Rule 20A program. However, one important exception to the prohibition on credit trading is to allow county governments to distribute county level work credits to municipalities within their county borders. There are several reasons to allow this type of non-monetary transfer activity, such as:

- The benefitting cities are part of the same county;
- The county can have a transparent way of deciding which cities in its jurisdiction to transfer credits to; and
- Small municipalities find it difficult to accumulate sufficient work credits to conduct a Rule 20A project. Sharing the county level allocations can help small municipalities reach a sufficient quantity of credits for a project.

One final additional exception should be allowing adjacent municipalities to pool their credits to enable an undergrounding project that benefits the county or the adjoining communities even if not in the same county. These types of non-monetary credit transfers should be allowed.

The benefit of ending work credit trading include:

- Ends an opaque trading process;
- Prevents work credits from being monetized for non-undergrounding purposes; the exceptions listed above will retain a means for communities to easily access additional work credits when the allocations and five-year borrow do not suffice without having to spend municipal funds to obtain additional work credits.

The downside of this proposal is that communities with no interest in participating in the Rule 20A program would no longer be able to monetize their unused work credits.

D. Borrowing forward up to ten years, or $1 million

Another potential modification to the Rule 20A Tariff aside from adjusting the rules for work credit trading and reallocation would be to allow communities to borrow forward ten years of allocations or $1 million, whichever is greater. As is the case under the current borrowing practice, it is clear from the experience of many of the communities that the five-year borrow is only effective for some communities and not those that receive small allocations of $250,000 or less. By allowing communities to borrow forward at least $1 million regardless of the size of the community, the program would allow communities of all sizes to move forward much faster with projects, rather than having to wait out a decade or more to accumulate the same level of work credits. As a result, project completion rates could potentially increase.

Conversely, allowing the communities to borrow forward at least $1 million per project could represent a higher potential ratepayer liability due to a potentially higher number of projects going into ratebase. Another issue is that communities would likely go into work credit debt for 10 years or longer, thus limiting their future participation in the Rule 20A program. Additionally, 10 years or $1 million may not be enough to meet a project's funding shortfall and the community may need to either put their project on hold or leverage its general fund in order to fund the project.

Another variant of this option would be to allow a community to request a "grant" to cover the work credit shortfall, especially if a community has not completed a project or if the project offers multiple benefits in addition to aesthetic enhancement. See Option H under Section 4.2.

Questions for Parties:

4.4.i. Is 90 calendar days enough time for cities and counties to form a workable underground utility district? Would 90 business days be more appropriate?
4.4.ii. Should the definitions for active and inactive communities be based on different criteria than project statuses or an active utility undergrounding district, such as having a current 5-year plan, 10-year plan, or sending the utility and the CPUC a letter of intent?
4.4.iii. How have the communities benefitted from Rule 20A work credit trading?
4.4.iv. Should the CPUC continue to allow work credit trading among the communities?
4.4.v. How should the CPUC approach work credit debt should the Rule 20A program continue?

4.5 Potential Rule 20D Modifications

Background

In comparison to the Rule 20A, 20B and 20C programs, Rule 20D is a fledgling program of limited scope that has yet to produce a project. Established in 2014 by D.14-01-002 exclusively for SDG&E's Fire Threat Zone (now recognized as part of the State's High Fire Threat District), Rule 20D was established to allow communities to work with SDG&E to identify undergrounding projects exclusively for wildfire risk mitigation.[27] To qualify, a project must be identified by SDG&E as a preferred method of wildfire mitigation for the given area. Rule 20D is structured to mirror Rule 20A with similar work credit-based structure, of which $1 million were allocated by SDG&E in 2019, that allows for a five-year borrow and work credit reallocation.

However, Rule 20D is only focused on undergrounding the high-voltage primary circuits on the poles. Under the current Rule 20D structure, poles could remain standing after a project is complete as the program does not pay for the undergrounding of the communications facilities, secondary and service lines below 600 volts, or panel upgrades to accept underground service. According to SDG&E, these costs are not included in the Rule 20D program as the Program is only designed to convert the high-voltage (distribution lines 600 volts or greater) to underground as these pose the greatest wildfire risk.[28] However, it is possible that the lower-voltage secondary and service lines may still pose a wildfire risk. Additionally, the Rule 20D and Rule 20A work credits are held in separate balances by the utilities and cannot be intermingled for use in Rule 20D projects.

Options

Options A-B are mutually exclusive

A. Status Quo – continue current Rule 20D program

Under the status quo scenario, the Rule 20D program will remain exclusive to SDG&E and continue to see limited use due to the program's relatively small allocation amounts and restrictions for only covering the costs of undergrounding primary distribution lines and from allowing communities to utilize Rule 20A funds. A benefit to this option is that the Rule 20D program does not interfere with SDG&E's priorities for wildfire mitigation as set in its 2019 Wildfire Mitigation Plan, as proposed Rule 20D projects are few and have been identified to be a preferred means of wildfire mitigation. However, due to the small

[27] Please see the following link for the full text of D.14-01-002: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M086/K541/86541422.PDF.
[28] See SDG&E Opening Brief of A.11-00-002 at page 12 http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M031/K744/31744373.PDF and SDG&E's Rule 20 Tariff.

allocation amounts and the limitations described above, it is unclear if any projects will be completed soon. Another downside to this option is that many of the communities outside of SDG&E's Fire Threat Zone that are eager to utilize Rule 20D would be unable to do so.

B. Expand a refined Rule 20D

In this scenario, the CPUC would expand a refined Rule 20D program to all the utilities and encompass the State's High Fire Threat District Tier 2 and Tier 3 areas rather than SDG&E's Fire Threat Zone.[29] The refinements would allow the program to cover the costs of undergrounding all the electrical and telecommunications facilities, such as in Rule 20A and allow the communities to leverage their Rule 20A work credits to fund Rule 20D projects.[30] A refined version of the Rule 20D program that is expanded to beyond SDG&E's Fire Threat Zone would facilitate significantly higher levels of Rule 20D project completion in communities throughout the state. Should the program be expanded as described above, the utilities will need to plan carefully with interested communities to ensure that the Rule 20D program does not interfere with the utilities' priorities for wildfire mitigation as set in their Wildfire Mitigation Plans.

C. Terminate the Rule 20D Program (Staff Recommendation)

Rather than expand the Rule 20D program which has little to show for in SDG&E's service territory, Staff Recommends terminating the program and sunsetting it gradually as described in Section 4.1. In the event that Rule 20 program modifications take place, such as expanding the Rule 20 public interest criteria and/or establishing a replacement for the current Rule 20A program, Rule 20D will no longer serve a purpose as communities will have other opportunities to underground for wildfire mitigation outside of the WMP framework. Rule 20 D program goals could be met through adding wildfire mitigation to the 20 A and B programs.

[29] During the April 22-23 workshop for R.17-05-010, the Joint Local Governments expressed interest in leveraging Rule 20D in PG&E's service territory..

[30] Cost sharing among the electric and telecommunications companies in the joint trench would be structured similar to the structure in Rule 20A in which the facility owners bear the costs related to converting their own infrastructure to underground.

5. Rule 20 Program Reporting, Communication and Transparency

Background

Under the current Rule 20 program, the utilities inform communities, the CPUC and the public about the program primarily through their annual allocation letters to the communities, the annual allocation and completion reports to the CPUC, and information on their undergrounding webpages to the extent that they have one. The utilities have also dedicated staff to collaborate with municipal agencies and participate in community meetings. For instance, PG&E has several regional Rule 20 liaisons that assist the project managers and coordinate directly with the government agencies.

The allocation letters are sent to each of the communities in each utilities' service territory that receives work credits to explain what a given community's work credit allocation is for the year. The letters also explain the community's total work credit balance, mention the five-year borrow as a means of obtaining additional work credits, and provide contact information to dedicated staff. Apart from these items, the allocation letters are otherwise sparse on information. The letters make no mention of how the allocation for a given community was determined, what the allocation formula is or any reasons behind changes from prior years. The letters do not convey what current or recent project costs are in nearby communities to put the work credit balance into perspective. Additionally, the letters do not mention anything about work credit reallocation, the community's active or inactive status, any relevant contacts at the utility or the CPUC, a program website or handbook, and whether the community can sell its work credits or purchase more. Moreover, the letters do not contain information as to who to contact and what the process is to file a complaint with the CPUC. See Appendix B for an example allocation letter that PG&E sent to Humboldt County in 2017.

The annual allocation reports to the CPUC are similarly sparse on information and only show the individual allocations to the communities and the total allocation for all the communities. There is no mention of how the allocation formula was applied, the change in allocations, the work credit balances, which communities are active and inactive, or which have borrowed forward five or more years of allocations. See Appendix C for an example allocation report that SCE sent to the CPUC in 2018.

The annual completion reports offer much more detail in comparison, but they could benefit from refinements. The conversion report shows high-level summary statistics for program expenditures and unexpended work credits for the year and cumulative, breakdowns by Rule 20A, 20B and 20C projects.

See Appendix D for an example completion report that SDG&E submitted for calendar year 2018. During the April 2019 workshop, the utilities and various parties pointed out shortfalls

with the current reporting structure such as the lack of data on Rule 20A project activity over the report year, particularly with projects in the queue or in-progress. The parties as explained that the reports omit data on actual project costs inclusive of the telecommunications costs, an explanation of the cost components, what the project costs estimates and any variances are, and costs on a dollar per foot/mile basis. Additionally, the utilities expressed concern over the sections that focus on Rule 20B and 20C given how labor-intensive it is to prepare that information for the report.

In addition to the undergrounding letters, reports and webpages, the utilities have also attempted to utilize a Rule 20 Guidebook, based on PG&E's 1996 "Underground Utilities Conversion Planning Guide" with the cities and counties, but it was never adopted by the League of California Cities (LOCC) and is not in use. From the 1980s to the early 2000s, PG&E, Pacific Bell (now AT&T) and the League of California Cities jointly developed and adopted two versions of a Rule 20 Guidebook to help inform the communities engaging in the program on topics ranging from project planning, funding, coordination and construction. It is unclear how widely these guidebooks were used, but during the April 2019 workshop, the City of San Jose had remarked that the guidebooks were inaccurate and had led the city to rely on inaccurate information. Following the CPUC's order in D.01-12-009 from the last Undergrounding Proceeding to revise the guidebook, the utilities attempted to work with Pacific Bell and the LOCC to update the Undergrounding Planning Guide but failed to do so as described earlier.

Despite the utilities' various forms of communication and reporting for the program, communities and ratepayer advocates have expressed that there is a lack of adequate transparency and the level of knowledge varies among the municipalities about basic information such as how the program works, how the allocations are calculated, how much the ratepayers are paying for the program, how much projects cost, what the cost components are and their unit cost ranges, how long projects typically take, what the responsibilities for all of the joint trench participants (the electric utility, the telecommunications companies and the governmental body) are, and what is in the Rule 20 Tariff.

Similarly, communities are often only able to obtain limited information regarding project cost increases and the utilities' bid results due to confidentiality protection, though the bids are for projects intended for the public benefit. The communities are often left with very little explanation when they encounter significant increases in their project cost estimates and in some cases have to request their city councils to authorize the purchase of millions of additional work credits from an unsanctioned secondary market for reasons they do not fully understand and are not communicated to them by the utility.

Options

Options B-G are not mutually exclusive.

A. Status Quo – continue current reporting requirements

While maintaining the current reporting and communications protocol may be convenient and less of an administrative burden than adopting new protocols, it has become clear that these protocols are insufficient for disseminating the information that the CPUC and communities need for planning purposes and for informing the public about the program. Should no changes occur here, then information about the program will continue to disseminate unevenly and the utilities may continue to report on areas such as Rule 20B and 20C in more detail than is needed and underreport on information concerning Rule 20A.

B. Implement refinements to the allocation letters and reports (Staff Recommendation)

Under this proposal, the utilities will modify their allocation letters to the communities and reports to the CPUC to provide some additional background and context. The updated letters and reports will briefly explain how the allocation was calculated based on the number of meters and the formula, include relevant citations to the Tariff and the most recent general rate case where the allocation totals were approved. The allocation letters and reports are to explain whether communities are inactive or inactive and include information as to how they can become active. Both the letter and report should include an attachment that shows the allocations over the past ten years for each of the communities with the allocation factors and meter totals similar to what the utilities provided the CPUC Staff as part of the R.17-05-010 data request. The utilities would also provide each community with a complete detailed invoice accounting for all the costs associated with any projects for which the community's work credit balance is deducted at project conclusion in the allocation letters. This could be supplemented with a year-end activity summary letter for communities that have active projects. In the allocation report specifically, the utilities should report the work credit balances, indicate and which communities have borrowed forward five or more years of allocations, and which obtained work credits through an exchange with another community. However, should Rule 20A be eliminated or be replaced by a grant-based program, then the allocation letter and report would no longer be necessary and can be replaced with an additional line item in the completion report detailing the growth or decline in funds available for projects. The letter template should be approved by the CPUC via Advice Letter.

C. Implement refinements to the completion reports based in part on the utilities' recommendations (Staff Recommendation)

During the workshop, the utilities shared some preliminary ideas for modifying their completion reports and better focusing the reports on data for Rule 20A for the year. The

utilities proposed removing the data reported on Rule 20B and 20C projects, which consists of the location, job/work order number, the project applicant's costs and the total net utility costs for each of the Rule 20B and 20C projects completed during the year. By removing the 20B and 20C sections, the utilities would be able to focus their time and attention to reporting data on the Rule 20A program, which they think would provide the most value to the CPUC.

The utilities recommended that the format could be more focused on expenditures for projects in various stages rather than just plant closing data. This would allow the utilities to provide more information regarding the annual expenditures and developments with projects underway rather than the final costs to projects that have been completed. The utilities also suggested that there could be a recap of the annual budget, expenditures by project and variance explanations for being above or below design cost estimates. The utilities further proposed modifying the exhibit for Rule 20A completed projects to be consistent with actual costs for each project. The utilities suggested the use of a consistent definition of "complete," which would be defined as "operational and either the poles removed or topped just above the telecommunications facilities".

Staff's additional refinements to supplement the utilities' proposal

To help make the completion report more understandable to the communities and the public would be for the utilities to include an introduction and expanded definitions section that clearly explained the contents of the report and defined all of the terms and explained all of the cost components that make up the expenditure statistics in the report. This could include an explanation for what costs the Rule 20A work credits pay for and what costs the municipalities and the telecommunications companies are responsible for. The utilities could also provide project costs on a per mile basis over the past five years averaged by county for on-going and recently completed projects to convey trends in project costs. The utilities could supplement this with aggregate costs that could be made public for the various project cost components (both hard and soft costs) from on-going and recently completed projects. In addition to this cost information, the utilities could also include the balancing account balances for Rule 20A and any other Rule 20 programs that have balancing accounts established as a result of this proceeding. All this information could provide significant value for planning purposes to the communities and the public and convey key insights into the program to the CPUC.

In addition to including this information in the introduction, the utilities could also include basic details about the projects completed such as job ID, project name, street location, length of the project, and a breakdown of costs to show what the costs were that all the entities were responsible for after any adjustments have been made to date. The utilities could also report on expenditures made since the last completion report was issued for the completed projects and those that are still underway. Additionally, the utilities should submit

an Excel version of the report in addition to the pdf version so the data would be more accessible to the CPUC Staff, the communities and the public.

An additional requirement to convey the utilities' program performance and allow the CPUC to evaluate and prescribe changes as needed would be for the utilities to report various program metrics. The completion reports could utilize similar metrics to the Balanced Scorecard methodology[31] that CPUC Staff used in the January 2017 "Program Review California Overhead Conversion Program, Rule 20A for Years 2011-2015".[32] The utilities could report on the following risk factors identified in the report:

1) compliance,
2) negative balance (number and magnitude),
3) low balance or allocation, and
4) program reporting.

These could be supplemented with performance factors such as:

1) accuracy of design cost estimates,
2) efficient timelines and planning, and
3) mileage converted relative to the size and number of customers served.

Based on the above factors, the CPUC Staff can evaluate the utilities management of the program and address any performance issues, such as lengthy project timelines or large deviations from design cost estimates. The utilities should be required to file a report template for CPUC approval via an Advice Letter.

In addition to the recommended improvements above, the utilities could file this report to the CPUC on a bi-annual basis and serve it publicly to the members of the R.17-05-010 and/or future undergrounding proceeding service list for comment.

D. Update and adopt the Rule 20 Guidebook (Staff Recommendation)

Another means of more effectively disseminating information about the Rule 20 program to the communities is by revising the 2007 draft Rule 20 Guidebook that was never adopted. The utilities could meet and confer with the CPUC Staff, AT&T, the LOCC, and the California State Association of Counties (CSAC) following the issuance of the phase I decision and any potential changes to the Rule 20 program. The Guidebooks should be comprehensive for Rule 20 and all of its sub-programs (A, B, C, and D) and would be

[31] The Balanced Scorecard is an established performance management tool that uses key performance indicators to track strategic performance in a program. For more information see: https://www.balancedscorecard.org/BSC-Basics/About-the-Balanced-Scorecard.

[32] See the following link for the full report: https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work_Products_(2014_forward)(1)/PPD_Rule_20-A.pdf.

standardized between the utilities.[33] The Guidebooks should largely be uniform across the IOUs. The Guidebooks would be subject to approval by the CPUC via Resolution or Decision and any subsequent updates to it would be submitted to the CPUC's Energy Division via Advice Letter. Once ratified, the utilities and CPUC Staff would put the Guidebooks on their respective public websites and circulate them among the cities and counties serve by the investor-owned utilities.

E. Publish all the relevant program information, documents, and reports on dedicated undergrounding webpages (Staff Recommendation)

To ensure that the information is widely available for the public, the communities, ratepayer and community advocates, the utilities and the CPUC should develop dedicated undergrounding webpages (to the extent that they have not already).[34] The webpages would include detailed information about Rule 20, information about the costs of projects and estimates bill impacts, links to information about related undergrounding programs (such as PUC Code Section 320), links to the Rule 20 Tariff, the updated Rule 20 Guidebook, and the allocation and completion reports for all years since the beginning of the program.[35] The utilities shall also maintain links to their maps that were presented during the April 2019 Workshop and update then on a quarterly basis. The utilities shall also detail the work credit balances of all the communities, include links to the project queues for Rule 20A, 20B, and 20C and have a calendar with upcoming undergrounding community meetings. The websites shall also have contact information and application forms and instructions for prospective Rule 20B and 20C applicants. This information should include the process for how to file a complaint with the CPUC and who to contact regarding recommended program changes. Additionally, there should be a web portal for governmental agencies to review data regarding project status and work credit balance. The webpages should be updated at least on a quarterly basis.

F. Implement the utilities' suggestions for improved communications

During the April 2019 workshop, the utilities proposed several different ways they could improve their in-person and written communications with the communities and the broader public. For instance, they proposed providing more frequent updates to the municipalities as to the availability of their work credits so they can be made more aware of their existence and better track any updates throughout the year such as from project true ups. The utilities also suggested improved collaboration with local governmental body and community groups and providing updates during construction to the wider group of impacted residents and

[33] Items that are specific to any individual utility can be called out specifically or footnoted for reference.

[34] Please see the following links to the PG&E and SCE undergrounding webpages. SDG&E, Liberty CalPeco, PacifiCorp and Bear Valley do not currently have dedicated undergrounding webpages.

[35] The Commission's undergrounding webpage includes the utilities allocation and completion reports that were filed since the late 1960s in pdf format.

businesses. This could improve transparency on the job progress and allow for community members to have a greater voice in the Rule 20 planning and construction process. Additionally, the utilities proposed to have a pole-out ceremony to mark the conclusion of projects with the communities and celebrate the accomplishment. While this could build rapport with the communities and the residents, it may not make sense in all cases due to costs unless they are larger projects in scope and were identified by the community to be a high priority.

While these suggestions could lead to greater input from the municipalities, it is not clear that they all will encourage a higher level of municipal engagement in the program. Thus, it may make sense to pilot different methods and fine-tune them accordingly.

G. Enhanced written communications to the communities (Staff Recommendation)

An additional suggestion that Staff recommends is to require the utilities to write to the communities to coordinate an annual in-person meeting to discuss ten-year plans with the communities that would like to participate in Rule 20. The utilities should maintain a service list of municipal program participants and stakeholders and should be updated annually in order to maintain a comprehensive and accurate list of phone and email contacts. The utilities could send a letter to each of the communities informing them about the program, provide a contact list for relevant utility and CPUC personnel, the community's annual allocation and work credit balance, and put the work credit balance in context with current project costs in their area. This could be a modified version of the current annual allocation letter. Additionally, the utilities should ask if the communities are interested in initiating a project within the next five years and require them to sign a form acknowledging that they have read the Rule 20 Tariff and that their work credits can be taken away from them if they do not participate in the program. For the communities that indicate that they are interested, they can indicate if they would be interested in having a coordination meeting with the utility to discuss their ten-year plan and any future or on-going projects.

H. Require the utilities to report on aggregate costs for project cost categories based on bids that the utilities receive (Staff Recommendation)

In order to provide information on the individual project cost categories (such as labor, parts, trenching, overhead costs, etc.) without disclosing confidential bid information, the utilities would report on aggregate costs for each of the individual cost categories under this proposal. This would allow the communities and the public to better understand what the major cost drivers are in a project and more effectively budget and plan for projects. Aggregating the costs could be accomplished based on a three-year averaging of costs and on a regional basis to help capture any regional variations in construction costs.

Questions for Parties:

5.i. Can the cities and counties sign a non-disclosure agreement with the utilities so they can have access to project bid information and other confidential information?

6. Rule 20 Project Completion Issues

Background

In the current Rule 20A program, the average project takes between two to seven years (not including delays) to complete from forming an underground utility district to the restoration of service following removal of the last pole.[36] The cost of the projects on average are around $3.8 million per mile across all the utilities' service territories. Over the course of the various planning, design and construction phases over the project lifecycle, the project cost estimates are continually refined, and the variability tends to decrease significantly. For instance, during the design phase (AACE Class 4), the costs can vary as much as 50 percent higher and 30 percent lower from design cost estimates. By the time the project has received bids in the pre-construction phase, the estimates (AACE Class 2) can be reasonably expected to vary by +20 percent and -15 percent.

There have a been several cases in recent years that have been of great concern due to high project cost variances that merit greater scrutiny in the project cost estimation process. For instance, the County of Napa and City of St. Helena's join project that was completed in 2013, the project was estimated to cost $8 million and more than doubled in cost to over $17 million. As a result, the County of Napa, which had a work credit balance of $6.15 million in 2010, an allocation of about $360 thousand Rule 20A work credits and was responsible for the majority of the costs ended up with over 75 years of work credit debt to the dramatic and unexpected rises in the project costs. 58 communities across the State are currently in work credit debt, and some have work debt that exceeds 50 years in equivalent annual allocations. As of 2019, these 58 communities held a cumulative work credit of approximately $93 million. See Figure 3 below for the communities with the highest levels of work credit debt. To date, the Rule 20A program does not offer any mechanisms for eliminating this debt and the utilities have chosen to continue allocating work credits to indebted communities and forbid them from initiating any projects until they have a positive balance.

[36] This is based on the average taken from all the utilities and assumes there are 261 workdays a year for projects. Within this timeframe, it takes about three to five years from project design to completion.

Figure 3. Top 20 Communities with the Highest Levels of Work Credit Debt

Community	Utility	2019 Allocation	2019 Balance	Years in Work Credit Debt
Chino Hills	SCE	$ 10,204	$ (893,909)	87.6
Napa County	PG&E	$ 152,605	$ (11,331,024)	74.3
Firebaugh	PG&E	$ 17,599	$ (989,237)	56.2
Anderson	PG&E	$ 40,122	$ (2,016,864)	50.3
San Marcos	SDG&E	$ 6,200.00	$ (296,131.00)	47.8
Riverbank	PG&E	$ 35,243	$ (1,653,339)	46.9
La Canada-Flintridge	SCE	$ 76,772	$ (3,465,161)	45.1
Belvedere	PG&E	$ 6,036	$ (262,373)	43.5
Angels Camp	PG&E	$ 16,682	$ (624,828)	37.5
Hillsborough	PG&E	$ 28,109	$ (861,117)	30.6
Manhattan Beach	SCE	$ 167,484	$ (4,028,934)	24.1
Laguna Hills	SDG&E	$ 1,833.00	$ (38,559.00)	21.0
Campbell	PG&E	$ 162,665	$ (2,911,057)	17.9
Fowler	PG&E	$ 16,848	$ (269,867)	16.0
Brea	SCE	$ 76,795	$ (1,222,996)	15.9
San Francisco	PG&E	$ 2,970,435	$ (42,687,251)	14.4
Atwater	PG&E	$ 68,848	$ (875,490)	12.7
Mill Valley	PG&E	$ 61,858	$ (674,340)	10.9
Irwindale	SCE	$ 10,237	$ (103,365)	10.1
Malibu	SCE	$ 39,702	$ (381,408)	9.6

(Source: IOU R.17-05-010 Data Request Responses and 2019 Allocation Reports)

While it did not enter work credit debt, the City of Tiburon was forced to cancel their Tiburon Boulevard Rule 20A project as the costs increased from $925,980 in 2014 at the initial estimate to $3,744,566 in 2018 before breaking ground on construction. According to the Town of Tiburon, this was in part attributed to increased construction costs due to shortages in the construction market.[37]

Similarly, the City of Newport Beach saw the initial project estimate of $4.1 million for a scope of 7,480 linear feet of overhead removal ($500 per foot) saw its design cost estimate more than double to $8.6 million and later receive a bid of $6.43 million. According to SCE, the high prices can be attributed to contractor bids that have become significantly less competitive and overhead costs that collectively represented 35 percent of the project cost

[37] According to the Town of Tiburon, the construction market in 2018 was constrained due to reconstruction efforts for the Oroville Dam, the Napa and Sonoma county rebuild post 2017 wildfires, increased spending by Caltrans, and labor shortages. For more information, see the May 2018 Town of Tiburon Staff Update on the Rule 20A Undergrounding project: https://townoftiburon.granicus.com/MetaViewer.php?view_id=5&clip_id=197&meta_id=9477.

estimate.[38] With SCE's approval, the City of Newport Beach decided to manage and re-bid the project on its own in 2019 and received a final bid at $4.5 million, which included both the Rule 20A component of the Balboa Blvd project and the Rule 20B components for the adjacent residential areas.[39]

Another issue that some communities have encountered is that the project timelines can get drawn out due to unforeseen circumstances. Situations behind such delays could include a lack of sufficient utility financial and personnel resources, third party delays such as from labor market shortages for contractors, encountering contaminated soils or archeological remains, project cost increases that require the community to obtain additional work credits, and disagreements over project cost and leadership responsibilities. For example, there were several communities in PG&E's service territory that were unwilling to move forward with projects both prospective and planned projects due to the legal and financial uncertainty surrounding PG&E's revision of its Rule 20A General Conditions Agreement (GCA). From 2012 to May 2018, PG&E worked with the LOCC, the CSAC and interested local governments to revise the GCA that was established in 2010 as it contained terms that were too burdensome for many of the communities. Many communities chose to hold out for six years on projects in hopes of constructing projects under more favorable terms. During this time, the CPUC was not only unaware of those negotiations but also unaware of the issues the communities were facing at that time. PG&E eventually filed two Advice Letters following the negotiations which were hotly contested by the Cities of San Jose and Cupertino and required the Commission to issue Resolution E-4919 to resolve the issues and adopt the revised PG&E GCA.

Also associated with increased project timelines are increased costs as described earlier. Typically, these increased costs have been paid for by communities which opt to purchase additional Rule 20A work credits or they are borne by the ratepayers. Given that the costs are often the result of third-party delays or unanticipated consequences, the CPUC in the 2006 Resolution E-4001 did not find it to be reasonable to require the ratepayers to bear these associated costs under all circumstances. In Resolution E-4001, the utilities were ordered not to commit the ratepayers to the costs of Rule 20A projects that cannot be paid for through banked work credits and the five-year borrow alone without prior CPUC approval. Any costs not approved by the CPUC are to be paid either by pre-arranged community funds (general funds) or by the utility shareholders.[40] However, having the communities trade for additional

[38] For more information see: https://www.latimes.com/socal/daily-pilot/news/tn-dpt-me-utilities-undergrounding-20180615-story.html.

[39] For more information see: https://www.latimes.com/socal/daily-pilot/news/tn-dpt-me-peninsula-utilities-20190412-story.html

[40] For more information on Resolution E-4001, see: http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_RESOLUTION/59265.PDF.

work credits or otherwise pay with pre-arranged funds from their general fund to proceed with a project is problematic as it is not aligned with the intent of the Rule 20A Tariff.

In addition to the above, some communities have expressed frustration over the lack of clarity over which pre-construction and construction tasks and costs the utility is responsible for and which the communities are responsible for. While the Rule 20A Tariff specifies that the utility "will at its expense, replace its existing overhead electric facilities with underground electric facilities," there is no explanation if the utility is responsible for all costs and tasks or if it is more reasonable for the communities to bear some of the burden. For instance, the Rule 20A tariff makes no mention of who is responsible for paying for underground transformers, which the utilities consider to be non-standard installations. To make up for this lack of guidance in the tariff, the utilities have clarified in their Rule 20A general terms and conditions which tasks and costs the community and the utility are responsible for subject to approval by the CPUC. This has led to a variable approach by the utilities which rely on terms that are inconsistent from one another. For example, PG&E's GCA allows communities to elect to install subsurface transformers and pay for them using their Rule 20A work credits, while SDG&E only installs pad-mounted, above ground transformers.[41] One consequence of this variable approach is that some communities have come to question whether the utilities' general terms and conditions are even consistent with the Rule 20A tariff and the CPUC's intent for the program. For instance, the utilities expect in the general terms and conditions that the communities to pay for securing easements, which appears contradictory to the Rule 20A Tariff which specifically says that the utility is to obtain the rights-of-way at its own expense.

Options

Note that Options B-E are not mutually exclusive.

A. Status quo – no Rule 20A project completion incentives

Under the status quo scenario, the CPUC would not implement any policy changes that aim to incentivize more efficient project completion and lower costs and would not require any changes to the way the utilities delineate which entities bear which cost and task responsibility. Currently, the utilities Rule 20A general terms and conditions documents in effect spell out the community and utility responsibilities for project planning and they are not subject to a significant level of debate. Thus, one could argue that it is not necessary to revise the Tariff and Guidebooks to delineate the project responsibilities and it is unclear if any of the responsibilities need to change to be consistent with the Rule 20A Tariff.

[41] PG&E requires in its GCA that the city or county that elects to install underground transformers to pay a one-time maintenance fee representing the difference in maintenance costs between a pad-mounted facility and a subsurface facility.

However, by not implementing any policy changes, it is unclear how effectively the utilities' and communities' incentives can be aligned to enhance the efficient and timely project completion. Additionally, the status quo scenario does nothing to resolve the issues surrounding growing costs and timelines and does not address the dilemma of who should bear the associated costs.

B. Require cities and counties to be the trench lead by default and allow for them to bid for their own contractors (Staff Recommendation)

Currently, the electric utilities are designated as the default trench lead unless a community elects to be the project lead. This means that the electric utility is responsible for the project design, planning, bid solicitations and contracting, coordination with the joint trench participants. By designating the community as the default trench lead – unless they assign the electric utility or one of the telecommunications utilities as the trench lead – the community can better ensure that project management and coordination matches their expectations and that these tasks do not get de-prioritized by the utility when circumstances like wildfires arise. Additionally, by allowing the communities to conduct their own bids, they may be able to receive lower bids than the electric utilities and that the results will be made public. To make up for the increased administrative costs for communities leading a project, the community's costs could be reimbursable by the electric utility. However, not all cities and counties would be able to take on this level of responsibility for managing the project and soliciting their own bids. Furthermore, there is little evidence that shows the bids communities receive are lower when they conduct them themselves given that they would still have to rely on a limited pool of pre-approved contractors.

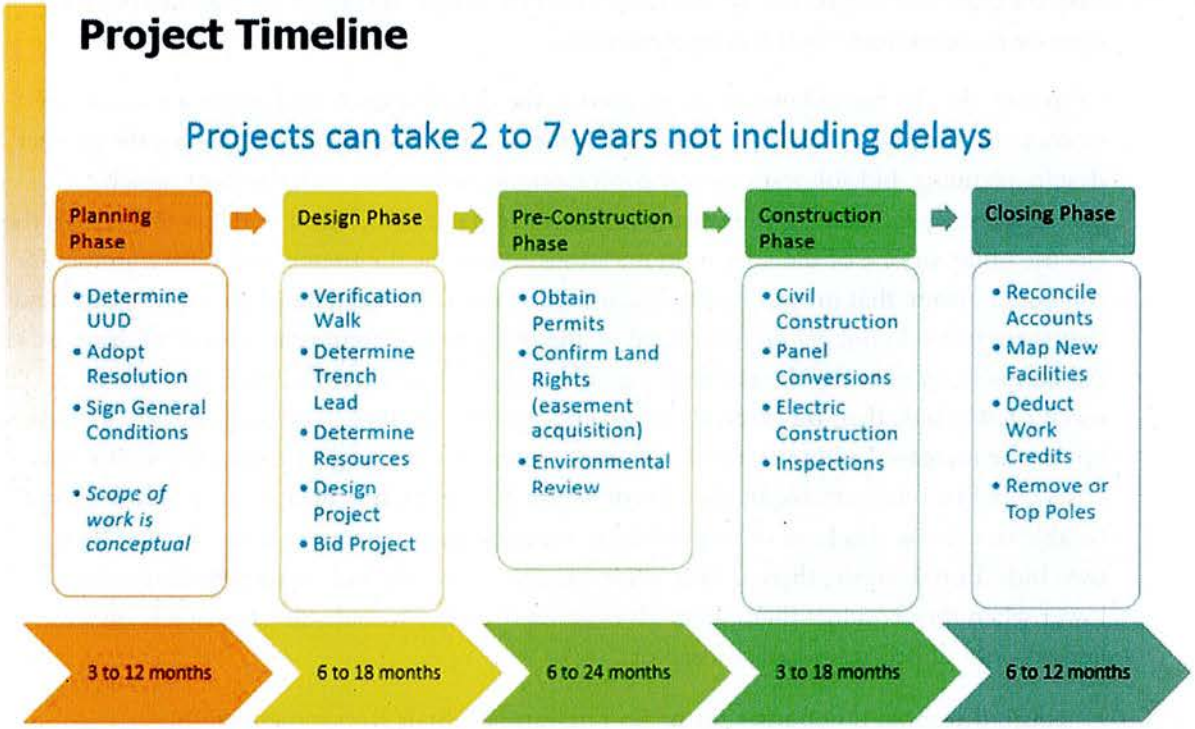
C. Establish threshold timeframes for project milestones (Staff Recommendation)

Under this proposal, the CPUC would specify what acceptable timelines are for project milestones in the design, pre-construction, construction and closing phases with a certain degree of flexibility for unforeseen circumstances. If any given milestone is not reached within a specified timeframe, then the utility shareholders will be required to bear any project costs associated with delays in excess of 30 days. When these timelines are exceeded, the utility must additionally notify CPUC Staff within 10 business with the following information in writing:

i. Background on the project
ii. Targeted timeline for all work steps involved project and actual timeline for completed steps
iii. An explanation as to why there is a delay and what efforts have been taken to resolve it
iv. An estimated timeline for the resolution of the delay and
v. Estimated cost impacts of the delay and how they are to be funded

Staff proposes to use the same timelines that the IOUs presented during the April 22-23 workshop for R.17-05-010 as common Rule 20A project timelines. These timelines are shown below in Figure 5.

Figure 5. Typical IOU Rule 20A Project Timeline



(Source: Joint IOU Presentation on Project Completion Issues. April 2019)

To illustrate how this would work, if the pre-construction phase was to exceed 24 months, the utility would be required to notify the CPUC in writing and bear any costs associated with delays in excess of 25 months.

By requiring the utility to report on the delays and bear the costs of excessive delays, this promotes greater transparency into delays and could directly incentivizes the utility to resolve them as quickly as possible.

D. Delineate costs and responsibilities for Rule 20A projects in the Tariff, General Terms and Conditions, and Updated Rule 20A Guidebooks (Staff Recommendation)

Under this proposal, the CPUC would require the Utilities to modify the Rule 20A Tariff, general terms and conditions, and the Rule 20A Guidebooks to include a complete list of community & utility responsibilities. This would help clarify for the

communities which costs and tasks they are responsible for versus what the utility is responsible for. This would also ensure that these terms are consistent with the Rule 20A Tariff and the CPUC's intent for the Rule 20A program and are communicated consistently by all the Rule 20A guiding documents to the communities. The IOUs' general terms and conditions documents should be largely the same among the IOUs and be subject to CPUC approval.

E. Establish one-way balancing accounts for the Rule 20A, 20B, and 20D programs to the extent the utilities do not have them (Staff Recommendation)

In order to prevent the utilities from redirecting funds the CPUC approves in the general rate case for the Rule 20 program, the CPUC could require that the utilities establish one-way balancing accounts for the program. This requirement will help ensure that the utility has adequate financial resources to devote to the program and can hire additional personnel as needed to best manage the program. Furthermore, it would help the utility pay for projects even if they were to exceed their GRC expectations if there are unused funds in the balancing account. Currently PG&E and SCE have one-way balancing accounts for their Rule 20A programs, but none of the utilities have one for their Rule 20B program nor does SDG&E for its Rule 20D program. Rule 20C is paid for almost entirely by the applicant, so establishing a one-way balancing account would be of little use.

Questions for Parties:

6.i. Are there other policies that the CPUC can implement to incentivize more efficient and less expensive project completion?

6.ii. What are reasonable time thresholds for the project milestones?

6.iii. Are there any additional project planning and construction processes that can be outsourced in order to achieve greater cost savings?

6.iv. Are there ways to incentivize more efficient construction processes? For instance, directional boring could potentially save time and money by eliminating the need for extensive trenching.

6.v. What are additional ways to help align the incentives of all the joint trench participants and enhance greater coordination?

6.vi. Should the costs and responsibilities currently borne by the telecommunications companies be modified to enhance project completion and minimize project costs on the electric ratepayers? If so, how can this be accomplished?