MEMORANDUM

TO: **UTILITIES ADVISORY COMMISSION**

FROM: **UTILTIES DEPARTMENT**

DATE: **March 6, 2019**

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SUBJECT: **Discussion and Status Update on the Electric Utility's Overhead to Underground Conversion Program**

RECOMMENDATION

The purpose of this report is to provide an update on the status of the Electric Utility's Overhead to Underground Conversion Program to the Utilities Advisory Commission.

BACKGROUND

The City of Palo Alto began a program to underground overhead electric, telephone, and cable television facilities in 1965. Since inception of the undergrounding program, 44 Underground Utility Districts ("UUDs") have been established, of which 42 have been completed and two are in the different stages of construction. As of today, approximately fifty-five percent (55%) of City's electric distribution lines are underground, either through the underground conversion program or having been placed underground when originally installed.

To establish the undergrounding program, the City amended the Municipal Code adding Chapter 12.16 titled Underground Utilities. In conjunction with Municipal Code, Utility Rule & Regulation 17 was created to cover the conversion of electric and communication facilities to underground. The undergrounding program is funded by a portion (2%) of electric revenues collected annually. It takes approximately two years of revenue to fund each project which depending on the size can cost $2.5 – $3.5 million. Each underground district will take approximately three and a half to four years to complete, from beginning the administrative process to establish a district to the completion of construction.

It should be noted that underground electric system equipment has a design life of 30 to 40 years. While conduits and other substructure typically last well beyond this time frame, electric equipment and cable needs to be replaced about every 40 years to maintain high levels of electric service reliability. In order to maintain the appropriate replacement cycle, staff is also rebuilding, on average, one district every other year at an approximate cost of $750k to $1.0 million per rebuild.

The most recent update to the UAC on the undergrounding program was on December 2, 2015. At that meeting Staff reported on Council's rejection of staff's recommendation that Council appoint an advisory body to solicit broad community input on potential changes to the City of Palo Alto Utilities electric overhead to underground conversion policy. That recommendation

was endorsed by both the Finance Committee on December 18, 2012 (Staff Report 3247) and UAC on September 5, 2012. In light of this direction from Council, staff has been proceeding with the underground program by identifying areas that meet the tariffs that govern AT&T and ensure their participation in cost sharing for substructure installation.

The poles within the City of Palo Alto are jointly owned with AT&T or in a few cases jointly owned with AT&T and PG&E. Comcast leases space on the poles from AT&T for attachment of their TV cables. Due to the joint ownership of the poles, Underground Districts require agreement on the project boundaries with the other joint owners. Once the agreement on the Underground District boundaries has been reached, the substructures are jointly installed to reduce the costs of the project. Coordinating the construction with AT&T and Comcast minimizes the impact on the neighborhoods.

To facilitate the coordination between the parties in an Underground District, a master agreement has been signed by the City, AT&T, and Cable TV. This master agreement is amended each time an underground district is formed to include the new Underground District.

DISCUSSION

Currently, UUD 47 (area bounded by Middlefield Road/Forest Avenue/Cowper Street/Addison Avenue) is waiting for a handful of properties to finish converting their services to underground, before the overhead lines can be removed. UUD 46 (area at the intersection of Arastradero Road/West Charleston Road/El Camino Real) recently completed the installation of substructures (conduits and boxes) and is waiting for staff availability for installation of electric cables and equipment. Two additional districts (UUD 42 & 43) were previously agreed to with AT&T for future construction.[1]

Staff had a series of meetings with AT&T to discuss new Underground Utility Districts. AT&T has agreed that several areas/districts proposed by staff meet California Public Utilities Commission (CPUC) guidelines and they are eligible for AT&T cost sharing. AT&T recognizes its involvement and has conveyed acceptance of the proposed boundaries to the City via email for the six (6) new UUDs: 48, 49, 50, 51, 52 & 53. Exhibit "A" shows the boundaries of the six new UUDs - 48, 49, 50, 51, 52 & 53. Completion of these six UUDs will result in the removal of total number of 149 utility poles, 30 pole mounted transformers and require a total of approximately 15,760' of trenching work, and, together with UUD 42 and 43, will result in approximately sixty (60%) of the City's electric distribution lines undergrounded.

Staff has estimated that it could take up to 31 years to complete the six new UUDs plus the previously agreed to UUDs (42 & 43). We have had a higher undergrounding conversion rate in the past, however, a consequence of undergrounding electric facilities is the need to replace the equipment as it reaches the end of its useful life (30-40 years). Failure to replace the equipment

[1] Missing in the number progression is District 8, which was defined in the 1960's but never established due to lack of community support to contribute to the cost

will result in increased outages. In addition to the added work or replacing underground facilities, staff anticipates upcoming retirements of Engineering staff will impact completing projects. Staff expects that each UUD in the future will take an average of 3.5-4 years. Staff is optimistic that new staff in engineering will gain experience and knowledge and the conversion program can be brought back to historical levels of conversion in the future.

Total projected cost for completing all eight UUDs is in the range of $20 to $24 million, present cost, anticipating that AT&T and Comcast will reimburse the City for their share of substructure costs. This projected cost is based on the current prevailing wages and market conditions. However, some of the unknown parameters that would influence the project cost, such as increase in material and labor, over the next 31 years are not factored into the projected cost.

The majority of the completed or proposed undergrounding work is in commercial areas or main thoroughfares of the City. Some residential areas have been undergrounded, but this was prior to AT&T advising City staff that future underground districts proposed in residential areas will not qualify for AT&T substructure cost sharing. At a future meeting, staff will seek guidance from the UAC on how to proceed with the undergrounding conversion work in residential areas, including funding options.

NEXT STEPS

Funding for Underground Districts

General Benefit Undergrounding is funded at approximately 2% of annual electric revenue. AT&T and Comcast reimburse the City for their share of substructure costs. Typically, the overall substructure cost is distributed to AT&T (30%), Comcast (20%), with the remaining 50% the City's share for installing electric and fiber optic substructure. This will be the method used for the next eight UUDs agreed to with AT&T.

Timeline

The following table shows the tentative time schedule for completing the newly identified UUDs. However, completion of these Underground Districts depends on the resources available to Engineering and Operation staff during the design and construction phases. It is possible to accelerate undergrounding conversion program, if we allocate more resources and have dedicated engineering staff to work on overhead to underground conversion projects, though this will impact other priorities in Engineering. The Electric Operations Division also needs to fill existing vacant positions to support present and upcoming engineering projects.

Funding and staffing needs required for the Overhead to Underground Conversion Program will be impacted by the future policy decisions or other initiatives undertaken by the Electric Engineering Division. The ability to complete these projects has already been impacted and delayed by approximately 5-7 years due to unanticipated projects such as the Caltrain Electrification, Grade Separation Project and small cell deployment, and issues related with current underground rebuild projects and aging infrastructure.

	Description	Commencement & Completion Date
1.	Underground Utility District No. 42 (Embarcadero Road between Emerson Street and Middlefield Road)	July 2020-December 2023
2	Underground Utility District No. 43 (Area bounded by Emerson Street/Lincoln Avenue/Alma Street/Kellogg Avenue)	July 2024-December 2027
3.	Underground Utility District No. 48 (Embarcadero Road between Louis Road and St. Francis Drive)	July 2028-December 2031
4.	Underground Utility District No. 49 (East Charleston Road between Fabian Street and Middlefield Road)	July 2032-December 2035
5.	Underground Utility District No. 50 (East Meadow Drive between Middlefield Road and Louis Road)	July 2036-December 2039
6.	Underground Utility District No. 51 (East Meadow Drive between Alma Street and Middlefield Road)	July 2040-December 2043
7.	Underground Utility District No. 52 (San Antonio Road between Middlefield Road and McKay Drive)	July 2044-December 2047
8.	Underground Utility District No. 53 (East Charleston Road between Middlefield Road and Alma Street)	July 2048-December 2051

RESOURCE IMPACT

Funding for the Underground Districts is approved by the City Council during the annual budget process. These future projects are not approved for construction until the budget for these projects is approved each fiscal year. Each year staff re-evaluates the future year recommendations and proposes changes based on additional information acquired since the last budget cycle including telephone company participation covering project costs.

POLICY IMPLICATIONS

The proposed undergrounding projects supports Utilities Strategic Plan's (USP) mission to provide safe, reliable, environmentally sustainable and cost effective services to residents. The undergrounding program also supports USP's Priority 4 – related to proactive infrastructure replacement for reliability and resiliency.

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ENVIRONMENTAL REVIEW

The UAC's discussion of the City's underground project is not subject to California Environmental Quality Act review, as it does not meet the definition of a project under Public Resources Code section 21065.

ATTACHMENTS

1. Attachment A: Exhibit "A" – Maps of Future Utility Underground Districts – 48, 49, 50, 51, 52 & 53

PREPARED BY: **GOPAL JAGANNATH,** Supervising Electric Project Engineer

REVIEWED BY: **HENRY NGUYEN,** Acting Engineering Manager, Electric Utilities

TOM TING, Engineering Manager, Electric Utilities

DEBRA LLOYD, Assistant Director, Utilities Engineering DocuSigned by: DEBRA LLOYD 7F8C50A6A96F4F5...

APPROVED BY:

DEAN BATCHELOR
Director of Utilities

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ATTACHMENT A

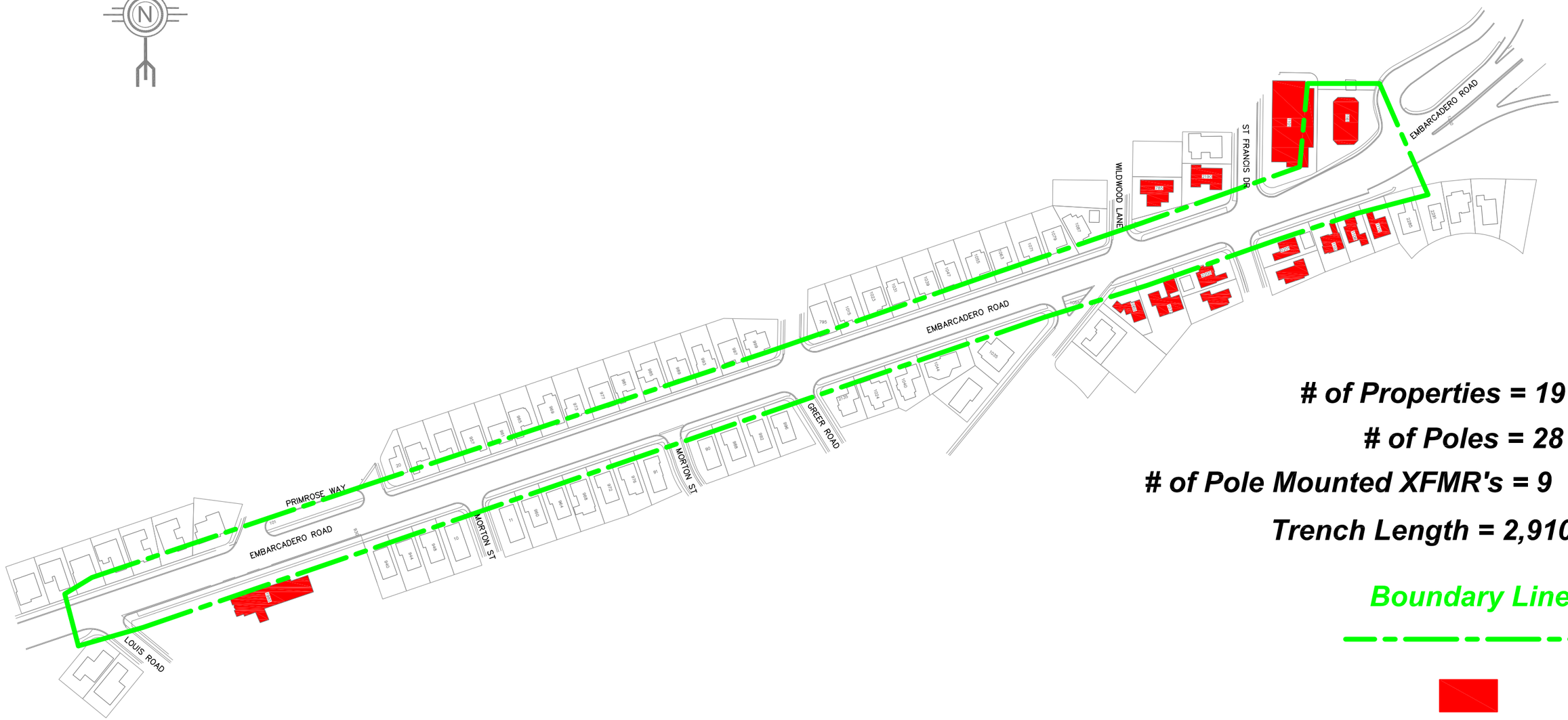
PROPOSED UNDERGROUND UTILITY DISTRICTS 2020-2051

EXHIBIT A:

CITY OF PALO ALTO
UTILITIES DEPARTMENT
ELECTRIC ENGINEERING

Underground District #48

EMBARCADERO ROAD BETWEEN LOUIS ROAD AND EDGEWOOD DRIVE



# of Properties = 19

# of Poles = 28

# of Pole Mounted XFMR's = 9

Trench Length = 2,910 ft

Boundary Line

Properties with OH Services

APPROVED ??	UG District #48 Boundary Drawing	REV. / DATE / APPR. / DESCRIPTION	
SR. ENGINEER / MANAGER			
ENGR. GJ	City of Palo Alto California	MAP # D4	CKT #
DRWN EM	UTILITIES, ELECTRIC ENGINEERING	SCALE NTS	W.O.# / DRAWING #
CHKD. GJ			
OPS. SW		SHEET 1 OF 1	

Underground District #49

EAST CHARLESTON / BETWEEN FABIAN WAY & MIDDLEFIELD RD

# of Properties = 11

# of Poles = 15

# of Pole Mounted XFMR's = 2

Trench Length = 1,810 ft

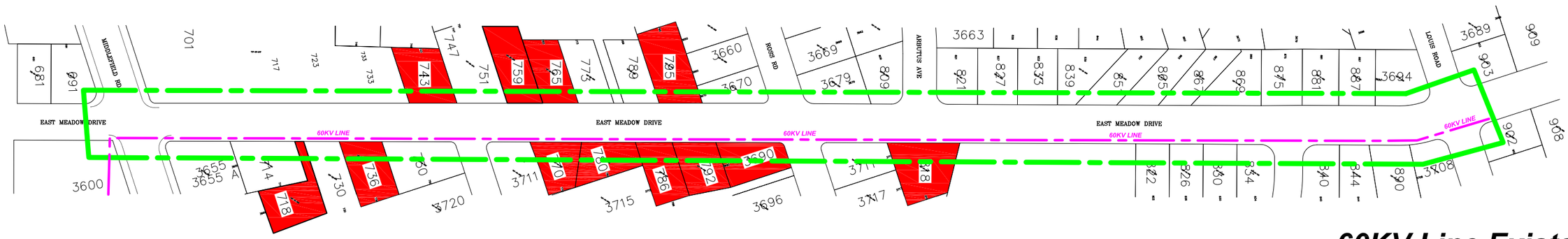
Boundary Line

Properties with OH Services

APPROVED ??	UG District #49 Boundary Drawing	REV. / DATE / APPR. / DESCRIPTION	
SR. ENGINEER / MANAGER	City of Palo Alto California UTILITIES, ELECTRIC ENGINEERING	MAP # G5 / CKT # / SCALE NTS / W.O.# / DRAWING #	
ENGR. GJ · DRWN EM · CHKD. GJ · OPS. SW		SHEET 1 OF 1	

Underground District #50

EAST MEADOW / BETWEEN MIDDLEFIELD RD & LOUIS RD



60KV Line Exists

# of Properties = 12

# of Poles = 15

# of Pole Mounted XFMR's = 3

Trench Length = 2,450 ft

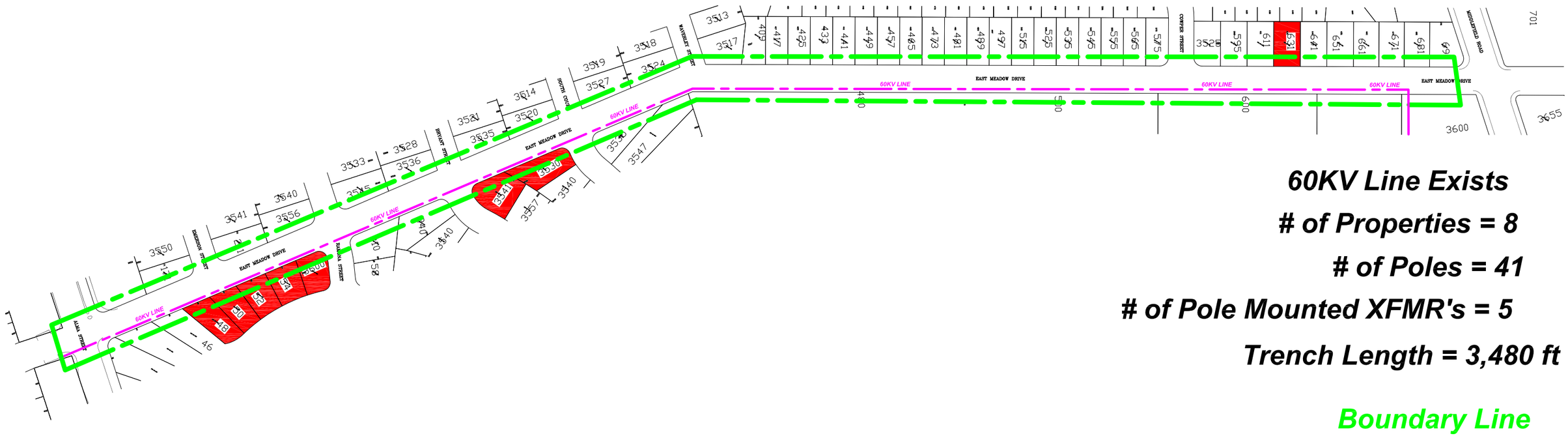
Boundary Line

Properties with OH Services

APPROVED ??	UG District #50 Boundary Drawing	REV. / DATE / APPR. / DESCRIPTION
SR. ENGINEER / MANAGER	City of Palo Alto California	
ENGR. GJ	UTILITIES, ELECTRIC ENGINEERING	MAP # F5 / CKT # / SCALE NTS / W.O.# / DRAWING #
DRWN EM		
CHKD. GJ		SHEET 1 OF 1
OPS. SW		

Underground District #51

EAST MEADOW / BETWEEN MIDDLEFIELD RD & ALMA ST



60KV Line Exists

# of Properties = 8

# of Poles = 41

# of Pole Mounted XFMR's = 5

Trench Length = 3,480 ft

Boundary Line

Properties with OH Services

APPROVED ??	UG District #51 Boundary Drawing	REV. / DATE / APPR. / DESCRIPTION	
SR. ENGINEER / MANAGER	City of Palo Alto California UTILITIES, ELECTRIC ENGINEERING	MAP # F5 F6 F7	CKT #
ENGR. GJ		SCALE NTS	W.O.# / DRAWING #
DRWN. EM			
CHKD. GJ			SHEET 1 OF 1
OPS. SW			

Underground District #52

SAN ANTONIO RD / BETWEEN MIDDLEFIELD RD & MACKAY DR

# of Properties = 12

# of Poles = 22

# of Pole Mounted XFMR's = 6

Trench Length = 2,000 ft

Boundary Line

Properties with OH Services

APPROVED ??	UG District #52 Boundary Drawing	REV. / DATE / APPR. / DESCRIPTION	
SR. ENGINEER / MANAGER	City of Palo Alto California	MAP #	G6 H6
ENGR. GJ	UTILITIES, ELECTRIC ENGINEERING	CKT #	
DRWN EM		SCALE	NTS
CHKD. GJ		W.O.# / DRAWING #	
OPS. SW		SHEET 1 OF 1	

Underground District #53

EAST CHARLESTON / BETWEEN MIDDLEFIELD RD & ALMA ST