TRANSPORTATION COMMISSION
REGULAR MEETING
AGENDA
January 16, 2020

Mission: Advise Council on transportation policies, facilities, and services

HR Multi-Purpose Room
1947 Center Street
Basement
Berkeley, CA 94704

Thursday
January 16, 2020
8:00 PM

A. PRELIMINARY BUSINESS
1. Call to Order
2. Roll Call
3. Public Comment on items not on the Agenda
4. Approval of Draft Action Minutes of **November 21, 2019***
5. Approval and Order of Agenda
6. Update on Administration/Staff
7. Announcements

B. DISCUSSION/ACTION ITEMS
* Written material included in packet
** Written material to be delivered at meeting
*** Written material previously mailed
The public may speak at the beginning of any item.

1. **Undergrounding Utilities Subcommittee Report***
   Transportation Commissioner Anthony Bruzzone and former Commissioner Raymond Yep
   Presentation of "Progress Report for Phase 3 Study to Underground Utility Wires in Berkeley" as well as "Projected Costs of Undergrounding Utilities along City of Berkeley's Evacuation Routes"

2. **Transportation Commission Chair and Vice-Chair Nominations**
   Action required

3. **Discussion of the Strategic Plan information session on January 16, 2020**
   Discussion only

C. INFORMATION ITEMS AND SUBCOMMITTEE REPORTS
Information items can be moved to Discussion or Action by majority vote of the TC.

1. Subcommittee Reports: Verbal Reports from Subcommittees, Liaisons to PWC, COD, and goBerkeley Advisory Group**
2. Council Summary Actions 2019*
3. Link to Council and Agenda Committee Agendas and Minutes https://www.cityofberkeley.info/citycouncil/
4. TC Mission Statement*
5. TC Work Plan*

D. COMMUNICATIONS

1. Eric Anderson – Final draft of the Berkeley Vision Zero Action Plan*

E. FUTURE AGENDA ITEMS

Transportation Commission Chair Election	

F. ADJOURNMENT 10:00 p.m.

Agenda Posted: January 9, 2020

A complete agenda packet is available for public review at the Main Branch Library and at the Transportation Division front desk.

ADA Disclaimer

This meeting is being held in a wheelchair accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services specialist at 981-6418 (V) or 981-6347 (TDD) at least three business days before the meeting date. Please refrain from wearing scented products to this meeting.

SB 343 Disclaimer

Any writings or documents provided to a majority of the commission regarding any item on this agenda will be made available for public inspection at the Public Works Transportation Division offices located at 1947 Center Street, 4th Floor.

Communications Disclaimer

Communications to Berkeley boards, commissions or committees are public record and will become part of the City's electronic records, which are accessible through the City's website. ***Please note: e-mail addresses, names, addresses, and other contact information are not required, but if included in any communication to a City board, commission or committee, will become part of the public record.*** *If you do not want your e-mail address or any other contact information to be made public, you may deliver communications via U.S. Postal Service or in person to the secretary of the relevant board, commission or committee. If you do not want your contact information included in the public record, please do not include that information in your communication. Please contact the secretary to the relevant board, commission or committee for further information.*

Commission Secretary: Farid Javandel, Transportation Division Manager, 1947 Center St., 4th Floor, Berkeley, CA, 94704, Telephone (510) 981-7061 / Fax: (510) 981-7060 / TDD: (510) 981-6903 email: Fjavandel@cityofberkeley.info

DRAFT ACTION MINUTES
Transportation Commission
Regular Meeting
November 21, 2019

City Corporation Yard, Building A
Willow Room
1326 Allston Way
Berkeley, CA 94702

Thursday
November 21, 2019
7:00 PM

A. PRELIMINARY BUSINESS

1. Call to Order
   Meeting called to order by Chair Lathbury at 7:00 pm

2. Roll Call

Commissioners present:	Anthony Bruzzone, Barnali Ghosh, Beverly Greene, Vivek Hutheesing, Daniel Lathbury, Karen Parolek, Terry Taplin, Sofia Zander
Commissioners absent:	Andy Garcia
Staff present:	Andrew Brozyna, Farid Javandel, Eric Anderson, Ken Jung

3. Public Comment on items not on the Agenda – no action

4. Approval of Draft Action Minutes of **October 17, 2019**
   Action: It was Moved/Seconded (Bruzzone/Zander) to approve the Minutes of October 17, 2019 as written.
   Ayes: Bruzzone, Ghosh, Greene, Hutheesing, Lathbury, Parolek, Zander
   Noes: None
   Absent: Garcia, Taplin
   Motion carried 7-0-0-2.

5. Approval and Order of Agenda
   Action: It was M/S/C (Bruzzone, Parolek) to modify the Agenda to hear the subcommittee report on undergrounding utilities between items B1 and B2.
   Ayes: Bruzzone, Ghosh, Greene, Hutheesing, Lathbury, Parolek, Zander
   Noes: None
   Absent: Garcia, Taplin
   Motion carried 7-0-0-2.

6. Update on Administration/Staff
   The Transportation Division hired one Traffic Engineering Inspector. Transportation is currently recruiting for the positions of Administrative Assistant, Associate Traffic Engineer, and Associate Civil Engineer (2 positions). The associate Planner and Traffic Engineering Assistant positions are vacant.

7. Announcements: Introduction of new Transportation Commissioners Terry Taplin and Vivek Hutheesing

B. DISCUSSION/ACTION ITEMS

1. Measure T1

Public Works Deputy Director Andrew Brozyna gave a presentation and update on Phase 1, and provided information about the Phase 2 Public Process. No action.

Item C.1. (reordered) **Utility Undergrounding Update**

Transportation Commissioner Anthony Bruzzone and former Public Works Commissioner Ray Yep provided an update on the Utility Undergrounding Subcommittee report referred to the Transportation Commission by the Public Works Commission. The Public Works Commission reviewed the report and voted its approval on November 7, 2019 to forward a completed progress report to City Council. The PWC also agreed that the original Council referral be deemed concluded. The Disaster and Fire Safety Commission will have this report on their agenda on December 4, 2019, and the Phase 3 subcommittee will have this report on their agenda on 12/5. The planned evaluation has yet to be completed. The Transportation Commission will review this report and table it for action at a future meeting. No Action.

2. Vision Zero

Eric Anderson, Vision Zero Senior Planner for the Transportation Division, gave a presentation on the Vision Zero Action Plan.

9:21 pm: **Action:** It was M/S (Bruzzone/Zander) to extend the meeting to 9:50 pm.
Ayes: Bruzzone, Ghosh, Greene, Hutheesing, Lathbury, Parolek, Taplin, Zander
Noes: None
Absent: Garcia
Motion carried 8-0-0-1.

9:50 pm: **Action:** It was M/S (Ghosh/Bruzzone) to extend the meeting to 10:15 pm.
Motion carried 8-0-0-1.

10:00 pm: **Action:** It was M/S (Ghosh/Parolek) that the Transportation Commission recommend the draft Vision Zero Action Plan, as revised and with added language from Chair Donald Lathbury, for approval by the Berkeley City Council. The added language is as follows:

"The Transportation Commission recommends that the Vision Zero Action Plan be approved by the Berkeley City Council with the following concerns explicitly incorporated into the final plan:

- *Vision Zero prioritization is engineering first, education second, and enforcement last, only when necessary, and with the best possible data.*
- *To the extent enforcement is recalibrated, it should be focused in areas where engineering and education have already been implemented."*

Ayes: Bruzzone, Ghosh, Green, Hutheesing, Lathbury, Parolek, Taplin, Zander
Noes: None

Absent: Garcia
Motion carried 8-0-0-1.

3. **Railroad Quiet Zone Project**
   Ken Jung, TranSystems gave a presentation on project background, current project status, and findings, and described the scope of the quiet zone options. The Commissioners discussed the difficulty and challenges of implementing a railroad quiet zone, and indicated that if a quiet zone is not feasible then, as a minimum, they would like this project to improve pedestrian and bicycle safety at railroad crossings.

10:06 pm: **Action:** It was M/S (Bruzzone/Ghosh) to extend the meeting until 10:30 pm.
Ayes: Bruzzone, Ghosh, Green, Hutheesing, Lathbury, Parolek, Taplin, Zander
Noes: None
Absent: Garcia
Motion carried 8-0-0-1.

Action: It was M/S/C (Bruzzone/Ghosh) to extend the meeting until 10:45 pm.

Action: It was M/S/C (Bruzzone/Ghosh) to extend the meeting until 10:50 pm.

C. INFORMATION ITEMS AND SUBCOMMITTEE REPORTS

1. Subcommittee Reports (Verbal Reports from Subcommittees, Liaisons to PWC, COD, and goBerkeley Advisory Group)
   The Pedestrian subcommittee reviewed the Pedestrian Plan.
   The Transit First subcommittee met to review the scope of work for Transit Reliability. The next meeting is on January 23, 2020.
2. Council Summary Actions 2019
3. Link to Council and Agenda Committee Agendas and Minutes
   http://www.ci.berkeley.ca.us/citycouncil/
4. TC Mission Statement
5. TC Work Plan

D. COMMUNICATIONS

(Received at 11/21/19 meeting)

1. Ken Jung, Associate Civil Engineer, Transportation Division – PowerPoint: Railroad Crossing Safety Improvement/Quiet Zone Project

E. FUTURE AGENDA ITEMS

Transit-First Implementation Plan and Report from Subcommittee – January 23, 2020	Pedestrian Plan – January 2020
Undergrounding Utilities subcommittee report to Council with Public Works Commission	

F. ADJOURNMENT

Action: It was M/S/C (Ghosh/Taplin) to adjourn the meeting at 10:50 pm.
Ayes: Bruzzone, Ghosh, Green, Hutheesing, Lathbury, Parolek, Taplin, Zander
Noes: None
Absent: Garcia
Motion carried 8-0-0-1.

Speakers: 4

ADA Disclaimer

This meeting is being held in a wheelchair accessible location. To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services specialist at 981-6418 (V) or 981-6347 (TDD) at least three business days before the meeting date. Please refrain from wearing scented products to this meeting.

SB 343 Disclaimer

Any writings or documents provided to a majority of the commission regarding any item on this agenda will be made available for public inspection at Public Works-Transportation Division located at 1947 Center Street, 4th Floor.

Communications Disclaimer

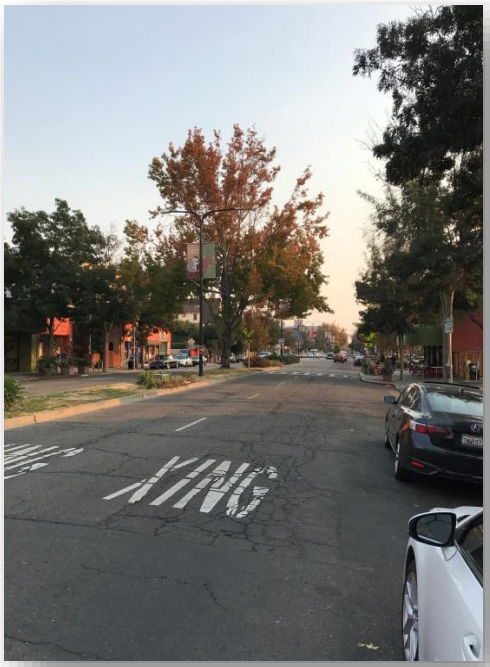
Communications to Berkeley boards, commissions or committees are public record and will become part of the City's electronic records, which are accessible through the City's website. ***Please note: e-mail addresses, names, addresses, and other contact information are not required, but if included in any communication to a City board, commission or committee, will become part of the public record.*** *If you do not want your e-mail address or any other contact information to be made public, you may deliver communications via U.S. Postal Service or in person to the secretary of the relevant board, commission or committee. If you do not want your contact information included in the public record, please do not include that information in your communication. Please contact the secretary to the relevant board, commission or committee for further information.*

Commission Secretary: Farid Javandel, Transportation Division Manager, 1947 Center St., 4th Floor, Berkeley, CA, 94704, Telephone (510) 981-7061, Fax: (510) 981-7060 TDD: (510) 981-6903 email: Fjavandel@cityofberkeley.info

PROGRESS REPORT FOR PHASE 3 STUDY TO UNDERGROUND UTILITY WIRES IN BERKELEY

PREPARED BY BERKELEY'S

PUBLIC WORKS COMMISSION
DISASTER AND FIRE SAFETY COMMISSION
TRANSPORTATION COMMISSION
PUBLIC WORKS DEPARTMENT



Draft – January 7, 2020

ACKNOWLEDGEMENTS

Participating Commissions

The following Commissioners participated in the preparation of this Conceptual Study:

Public Works Commission
Sachu Constantine, Shane Krpata and former commissioners Nic Dominguez and Ray Yep

Disaster and Fire Safety Commission
Paul Degenkolb, Bob Flasher and former commissioner Victoria Legg

Transportation Commission
Tony Bruzzone

City of Berkeley

Phil Harrington, Public Works Director

Andrew Brozyna, Deputy Public Works Director

Keith May, Berkeley Fire Department

Hamid Mostowfi, Transportation Department

Ray Yep, Public Works Department program specialist

Other Participants

Charles Scawthorn, Earthquake and Fire Risk mitigation specialist

Gordon Wozniak, Former City Councilmember

Bellecci and Associates

TABLE OF CONTENTS

This page intentionally blank.

Executive Summary

2017 was the hottest year on record in California, following 5 years of drought that killed 129 million trees in California. Seven of the ten deadliest and most destructive fires in California's history took place during the last 10 years, each one worse than ever experienced before. Berkeley faces a wildfire risk that threatens the lives and safety of residents throughout the City. We anticipate a fast-moving wildfire with only minutes for people to escape. Moving utilities underground on evacuation routes can save lives in a wildfire by preventing downed power lines, allowing residents to get out and first responders to get in. Berkeley's City Council issued a resolution in October 2019 declaring wildfire prevention and safety a top priority.

Undergrounding is part of the solution and needs to be implemented in conjunction with vegetation management, evacuation planning, homeowner responsibilities, advanced warning systems, actions by PG&E and other factors. Undergrounding utilities is expensive, but is necessary on evacuation routes to save lives in a fast-moving wildfire.

In 2014, Berkeley's City Council issued a referral to "develop a comprehensive plan for the funding of the undergrounding of utility wires on all major arterial and collector streets in Berkeley". This is a progress report on the Phase 3 study of that referral. This phase includes identifying priority streets and funding options for undergrounding. The Undergrounding Subcommittee has identified a preliminary 15-year program for undergrounding, as follows.

Year	Street	Section	Council districts
1	Dwight Way	Fernwald Rd. to Shattuck Ave.	3, 4, 7, 8
2	Dwight Way	Shattuck Ave. to San Pablo Ave.	2, 3, 4
3	Marin Avenue	Tulare Ave. to Grizzly Peak Blvd.	5, 6
4	Grizzly Peak Blvd.	Spruce St. to Marin Ave.	6
5	Grizzly Peak Blvd.	Marin Ave. to Arcade Ave.	6
6	Ashby Ave., Tunnel Road	Vicente Rd to Telegraph Ave.	7, 8
7	Ashby Ave.	Telegraph Ave. to San Pablo Ave.	2, 3, 7
8	Cedar Street	La Loma Ave. to MLK Way	4, 5 6
9	Cedar Street	MLK Way to San Pablo Ave.	1, 5
10	Hopkins Street	Sutter St. to Gilman St.	5
11	Gilman Street	Gilman St. to San Pablo Ave.	1, 5
12	Spruce Street	Grizzly Peak Blvd. to Rose St.	5, 6
13	Rose Street, Oxford Street	Rose from Spruce to Oxford and Oxford from Rose to Cedar	5
14	Claremont Ave., Alcatraz Ave.	Ashby Ave. to Telegraph Ave.	8
15	Alcatraz Avenue	Telegraph Ave. to San Pablo Ave.	2, 3

The estimated cost of this undergrounding program is $90 million in 2019 dollars. The centerline length of the proposed undergrounding is 15.1 miles.

The Undergrounding Subcommittee has evaluated several options to fund the undergrounding and recommends the following approach.

- Increase the Utility User Tax from 7.5% to 10.0% (increase of 2.5%). This will produce additional revenue of $4.5 - 5.0 million per year.
- Allocate $2.0 - 2.5 million per year from the General Fund for undergrounding.
- Purchase Rule 20A credits, as available. We estimate $1.0 - 2.0 million per year.

This will produce revenue in the range of $7.0 – 9.5 million per year for undergrounding. This means that the program can be completed in about 15 years, which is important to minimize the impact of construction cost escalation, which is currently running at ~4%/year. We also recommend that the City issue a GO bond in the range of $35 million to jump start the program as each year of delay increases the total program cost of ~$3.5 million.

The Undergrounding Subcommittee recommends to Council the following next steps:

1. Review this report and provide direction on whether to proceed with Phase 4.
2. Work with the Council's Facilities, Infrastructure, Transportation, Environment, and Sustainability Policy Committee on further development of the undergrounding program.
3. Review the funding options and provide direction to staff on the preferred approach. Consider funding from the General Fund during the fiscal year budgeting process. Also, consider ballot measures in November 2020 for an increase in the Utility User Tax and to authorize a General Obligation bond.
4. Implement a public engagement process in 2020.
5. Staff to prepare a Program Plan for undergrounding.
6. Close out the original Council referral to the participating commissions. We recommend forming an Undergrounding Task Force to ensure public input in the future planning of utility undergrounding. The oversight for the task force should be with the Office of Councilmember Susan Wengraf.

Section 1
INTRODUCTION AND BACKGROUND

City Council Referral

The Berkeley City Council (Council) referred a request to "develop a comprehensive plan for the funding of the undergrounding of utility wires on all major arterial and collector streets in Berkeley" to the Public Works Commission, Disaster and Fire Safety Commission and the Transportation Commission on December 16, 2014.

Reports to Council

The three commissions organized an Undergrounding Subcommittee to respond to the referral. This subcommittee structured the study into four phases, as follows.

Phase 1: Conduct a baseline study to summarize Berkeley's current status of undergrounding utilities, cost to complete the undergrounding of arterial and collector streets, and examples of where undergrounding programs have been implemented.

Phase 2: Conduct a conceptual study to determine the feasibility of utility undergrounding and report back to the City Council. The work in this phase includes our synthesis of literature on undergrounding, guiding our two Goldman School Masters candidates' thesis project on matters related to undergrounding, meetings with utility and communications service providers, and meetings with municipalities having robust undergrounding programs.

Phase 3: Prepare a financial and implementation plan for the recommended streets to be undergrounded. The work shall include community input, refinement of cost estimates, financing plan, relationship with utility service providers, implementation program design and schedule and other related matters.

Phase 4: Organize the financing, design and construction and performance monitoring of the approved program.

The Subcommittee presented progress reports to the Council on September 29, 2015 and March 28, 2017. The 2017 report included an updated work plan, the Harris and Associates baseline study, a proposal for studies by U.C. Berkeley's Goldman School of Public Policy graduate students, and notes from meetings held with utility and communications service providers. The Council authorized the Subcommittee to complete the work through Phase 2 and report back to them.

The Subcommittee presented the Phase 2 report to the Council on February 27, 2018. The comprehensive report was well received and Council provided direction to proceed with the Phase 3 study.

Progress Report for Phase 3 Study

A recommended work scope for the Phase 3 study was included in the Phase 2 report. This work was planned as a shared responsibility between the participating commissions and Public Works Department (PWD) staff. PWD did not have staff available for the work and a funding request was made to hire temporary staff. That request was approved by Council in November 2018. The PWD made attempts to retain a temporary staff person, but it was not successful due to a shortage of qualified technical candidates. Consequently, staff procured consulting services from one of the City of Berkeley's (City) on-call design firms specializing in overhead utility undergrounding using the allocated funds in lieu of a temporary hire.

The Phase 3 study began at the beginning of 2019 with staffing from the PWD, Fire Department, participating commissions, and with technical expertise as needed from Bellecci & Associates, the City's on-call consultant. This is a progress report with what has been accomplished to date. The following is a summary of the work tasks and the work progress.

Phase 3 Work Tasks	Work Progress
Task 1 – Define the Phase 3 projects	
A. Major and Collector Streets – The original work scope was to identify the major east/west routes to be undergrounded that would facilitate the travel of first responders and evacuation of residents.	This work was done with input from Berkeley's fire department and transportation department Also, we conducted a review of other fire mitigation measures underway in the Berkeley area.
B. Coordinate with Microgrid Development – The original work scope was to evaluate microgrids as a way to increase power reliability after a major disaster	This work will be changed to a separate study by the PWD.
C. Review code standards – The original work scope was to evaluate codes that would limit the loads carried by utility poles.	This work will be changed to a separate study by the PWD.
Task 2 -- Develop the financing plan	
A. Refine cost estimate for undergrounding. The original work scope was to refine the cost estimates previously prepared by Harris & Associates.	This work has been done with a consultant from the City's pre-approved consultant list and from other references.
B. Participate in CPUC Rule 20 review – The original work scope was to monitor activities with the CPUC regarding Rule 20 modifications.	This work will be done by the PWD and the recommended task force.
C. Evaluate funding options. The original work scope was to evaluate funding options for Phase 3 projects in Berkeley.	This work has been done.
Task 3 – Conduct community input The original work scope was to conduct community outreach and workshops.	This work will be done following Council input on this progress report.

Task 4 – Coordinate with utilities The original work scope was to meet with PG&E and telecom companies regarding the phase 3 projects.	This work will be done at the appropriate time.
Task 5 – Prepare an implementation plan The original work scope was to prepare an implementation plan.	This work will be done following Council approval to proceed to implementation.

Section 2
PROGRESS WITH PHASE 3 STUDY

A lot has happened regarding our understanding of the risks of wildland fires and actions being taken to mitigate the risks since the Phase 2 undergrounding report. Section 3 of this report summarizes the current information. Another important action is the Berkeley City Council's resolution declaring wildfire prevention and safety a top priority in the City of Berkeley. This occurred in October 2019 and the Council agenda item is in Appendix A.

This section provides information on the progress with the Phase 3 study.

Undergrounding Along Key Evacuation Routes

Our community has significant barriers to ensuring safe evacuation from major disasters. These barriers include our narrow-crowded roadways, hilly terrain, a daily commuting population, an aged overhead electrical distribution system and other factors. We look to undergrounding utility wires on designated evacuation routes as part of an overall suite of options to ensure that our community can safely escape advancing fire and first responders can access areas to fight fires.

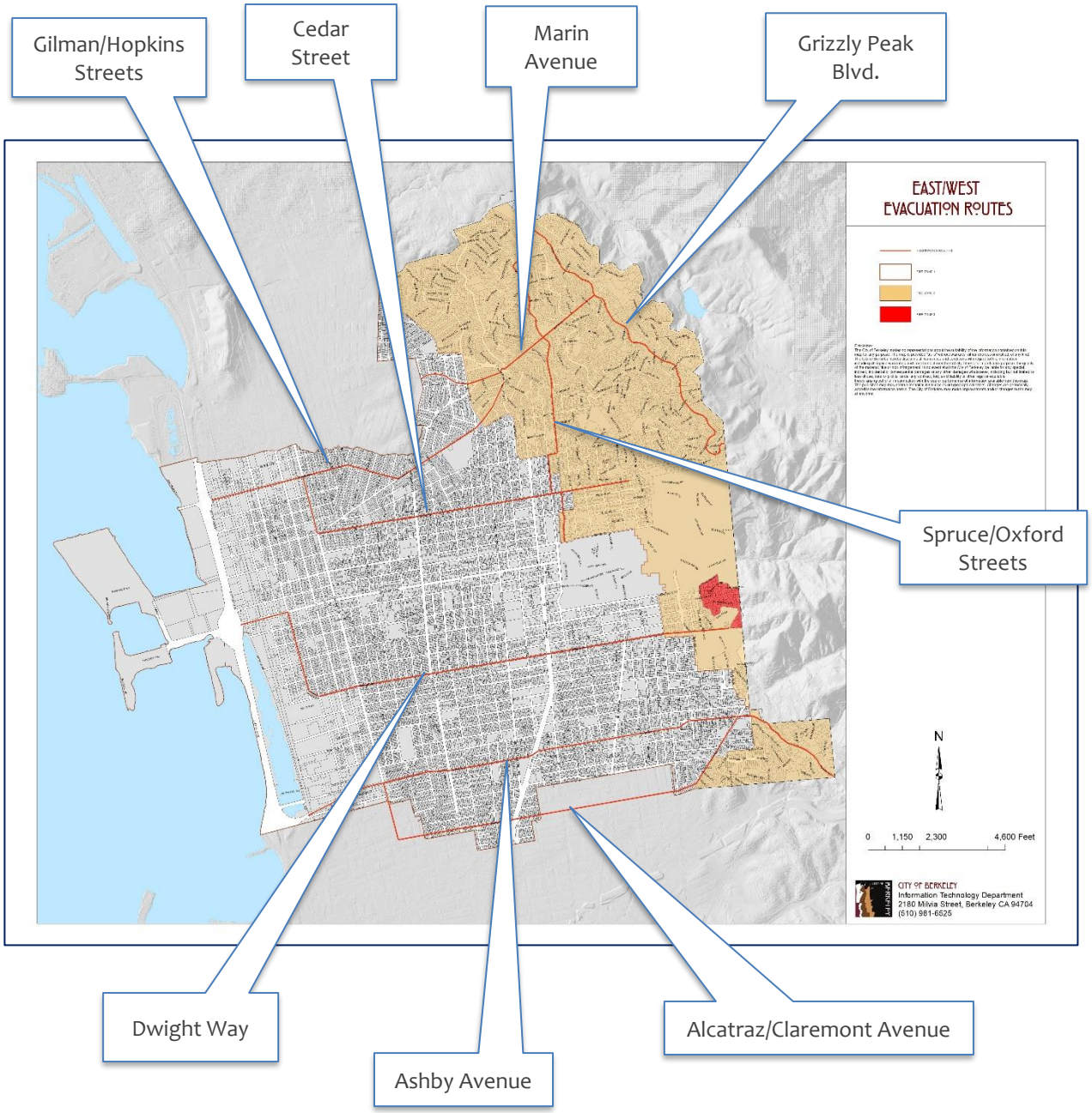
There are multiple cases of downed powerlines blocking critical escape routes. Images of persons trapped because of downed power lines in the 1991 Tunnel Fire are seared in our memory. One common cause of tragic death by wildfire is the inability to outrun fire because of downed power lines and poles blocking roadways. Supporting an undergrounding program for emergency routes is one tool we have to reduce loss of life in wildfires by creating safer egress for community members and ingress for first responders to protect our community.

Representatives from Berkeley's Fire Department, Public Works Transportation Division and participating commissions met to review the critical evacuation routes in the City. The evaluation included the following factors:

- Realize that a major wildland fire can affect all of Berkeley, just as the Tubbs Fire did in Santa Rosa.
- Consider the criticality of the routes for ingress and egress, including movement of people north/south and east/west.
- Review any barriers to the use of these routes, including width of street, capacity or blockages.
- Review the presence of overhead utility wires and the potential to underground them.

The routes selected for this study are shown on Figure 1. Other arterial and collector streets in Berkeley, such as University Avenue, Telegraph Avenue, Shattuck Avenue, Martin Luther King Jr Way, Sacramento Street and San Pablo Avenue are already undergrounded. The history of undergrounding in Berkeley goes back at least to the 1970's. Of the 25.6 miles of arterial streets, 12.5 miles have been undergrounded (49%). Of the 36.1 miles of collector streets, 11.3 miles have been undergrounded (31%). A map showing the undergrounding completed or scheduled to be completed in Berkeley is in Appendix B.

Figure 1 – Undergrounding Along Major Evacuation Routes



The development of these undergrounding routes assumed that those avoiding a major fire are leaving by vehicle to get to I-80. This assumption depends on the severity and spread of the fire. Other factors include people walking to get to shelter areas, vehicles driving to shelter areas instead of I-80 and that undergrounding all the way to I-80 may not be necessary.

Estimated Cost of Undergrounding

The project team researched the cost of undergrounding from many sources. During Phase 1 of this study, an estimate was prepared by Harris and Associates. This was supplemented with the actual costs from Palo Alto, San Diego and published sources. The work scope of the Phase 3 study was to refine the cost estimates and the engineering firm Bellecci and Associates was retained to do the work. Their analysis is summarized on Table 1 and their report is included in Appendix C.

Table 1 – Estimated cost to underground overhead wires, in 2019 dollars

Street	Undergrounding length, miles	Total cost, $
Alcatraz/Claremont Avenues	2.30	9,384,000
Ashby/Tunnel Road	2.81	18,292,000
Dwight Way/6th/University	3.31	19,829,000
Cedar Street	1.87	10,173,000
Gilman/Hopkins Streets	1.97	11,744,000
Marin Avenue	1.24	7,589,000
Grizzly Peak Blvd.	1.35	6,426,000
Spruce/Oxford/Rose Streets	2.07	9,853,000
Total	**16.92**	**93,290,000**
Total with 10% contingency		**102,618,000**
Average cost/mile		**6,100,000**

The estimate shown in Table 1 includes the following factors:

- The cost estimate is inclusive of trenching, conduits, wiring, service conversions, street lighting and engineering.
- The estimate is in 2019 dollars.
- Undergrounding all of the routes will be done as an overall program to achieve economies of scale.
- The estimates have considered levels of complexity for undergrounding in the various streets.

If we assume that the program will start in 2023, the estimated cost will be $120 million. If the undergrounding is done as individual projects (not as a program), the estimated cost is $139 million.

Funding Strategies

The City's General Fund (GF) gets the majority of its money from: a) property taxes and property-based revenues; b) economically sensitive revenues such as sales taxes, business license tax, transient occupancy tax, etc.; and c) interest and fees such as ambulance fees and parking and traffic fines. The balance of the City budget is comprised of other funding sources such as grants, special tax revenue (e.g. parks, libraries and paramedic services), and fees for specific services (marina berth fees, garbage and sewer fees, building permits, etc.).

California property taxes are set at 1% of the assessed value of the property. The City receives about a third of every property tax dollar collected in Berkeley and schools get 43% of every property tax dollar. Sales tax is 9.25 cents of every dollar and the City gets 1.00 cent. Other potential sources of revenue are General Obligation (GO) Bonds and Revenue bonds. In June of 2019, Moody's Rating

Agency upgraded the City's GO bonds from Aa2 to Aa1, which is the 2nd highest for long-term debt. In its credit analysis report, Moody's stated that "*The City of Berkeley, CA (AA1) has a robust tax base and economy benefiting from its central Bay Area location. The city's assessed valuation (AV) is large and growing, supported by strong resident wealth indicators. The city has a very strong fiscal position, with growing revenues, high available fund balances and strong financial management policies and practices. The city's debt level is moderately low, but the unfunded pension liability is high, which the city is proactively addressing through establishing and funding an irrevocable pension trust.*"

In summary, Berkeley has an exceptionally strong tax base and its economy benefits from its central Bay Area location. The City has a very strong financial profile, and in the last six years has significantly improved its reserve levels and liquidity.

Financing Options for Undergrounding

Rule 20 Funding

The California Public Utilities Commission (CPUC)'s Tariff Rule 20 is the vehicle for the implementation of underground programs. Rule 20 provides three levels, A, B, and C, of progressively diminishing ratepayer funding for the projects. There is also rule 20D adopted in 2014, which currently applies only to San Diego for undergrounding and other fire hardening techniques in their designated Very High Hazard Fire Zone. Under Rule 20, the CPUC requires the utility to allocate a certain amount of money each year for conversion projects. Upon completion of an undergrounding project, the utility records its cost in its electric plant account for inclusion in its rate base. Then the CPUC authorizes the utility to recover the cost from ratepayers until the project is fully depreciated. Rule 20 requires the utility to reallocate funds to communities having active undergrounding programs in amounts initially allocated to other municipalities but not spent. Cities may also commit to future 20A allocations for five years. The following table is a summary of the Rule 20 categories.

Table 2 -- Summary of Rule 20 Categories and Ratepayer Contribution

Rule 20 categories	California Ratepayer Contribution	Applicability
20 A	About 100%	Primarily ratepayer financed
20B	20%	Shared ratepayer and homeowner financed
20C	Minimal	Primarily homeowner financed
20D	About 80%	Used by San Diego Gas & Electric

Two existing Rule 20A funded undergrounding districts, formed in the early 1990s, are scheduled for completion in 2020 and 2025 respectively.

- Berkeley Grizzly Peak Summit, UUD #48 – in the engineering phase
- Berkeley Vistamont, UUD#35A - in the planning phase

Both undergrounding districts have paid their share for connection from the street to service boxes and for street light replacement.

Rule 20A is the preferred option for cities because the utility pays almost all of the cost for undergrounding. Unfortunately, the funds available are very small compared to the costs of

undergrounding. Berkeley's current Rule 20A allotment is ~$0.53 million/year. The account balance as of March 31, was $9,009,095. Most of this, if not all of it, will be used on the UUD 48 project. A 5-year borrow amounts to about $2,660,390.

For most cities, the annual 20A allotment is inadequate to sustain an ongoing undergrounding program. Because cities and counties are able to trade or sell unallocated Rule 20A credits, some cities have begun to sell their unused credits at a substantial discount of ~50%. If Berkeley could find willing sellers of unused 20A credits, it could use $3 million/year of GF monies to annually purchase $6 million credits, which would allow it to underground ~1 mile per year.

The City rolled out 20B project guidelines in 2000 for neighborhoods interested in forming Rule 20B districts. Although many neighborhoods have expressed interest and continue to do so, one neighborhood, Thousand Oaks Heights, formed and completed an undergrounding district. A good source of information on Rule 20B procedures is from Berkeley Citizens for Utility Undergrounding. Their website is: www.berkeleyundergrounding.com

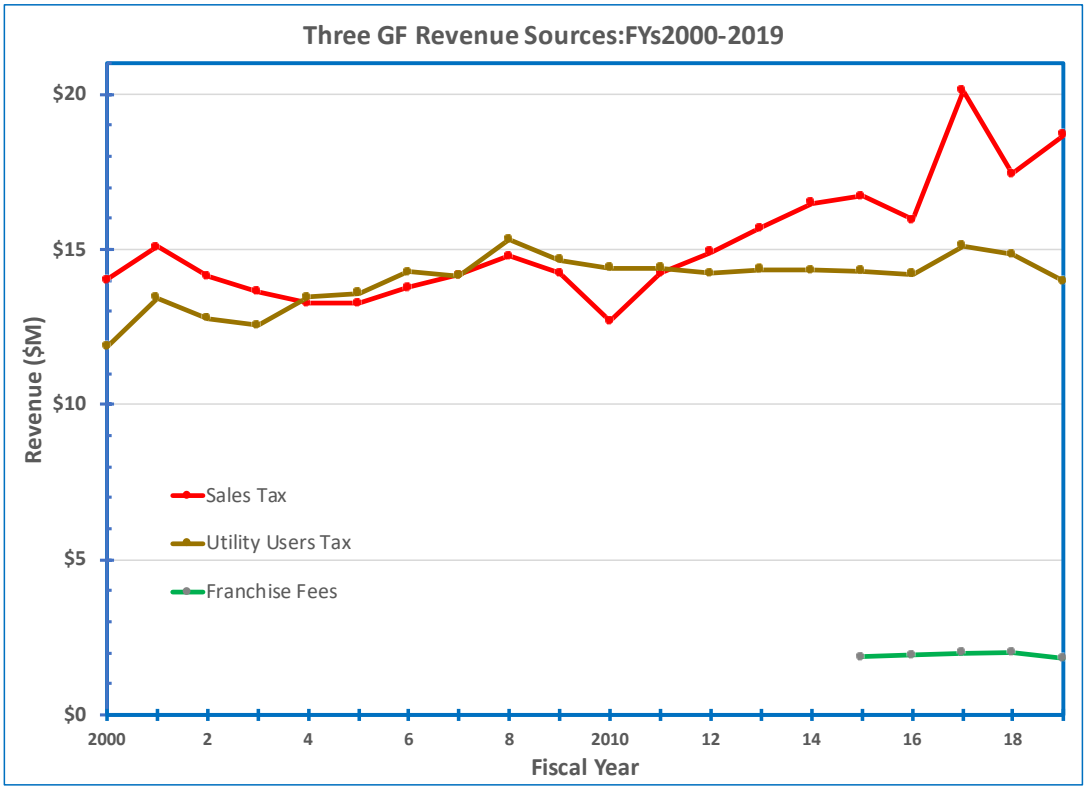
Eleven Cities in California are leading the appeal to the CPUC to redefine eligibility for 20A funds to include and increase 20A fund allocations to communities in California's Very High Hazard Severity Fire Zones for the express purpose of fire safety. A supporting resolution was presented by the League of California Cities at their annual conference in October 2019. The League took no action on the resolution and sent it back to the Committee on Environment for further review. Despite this action, the League continues to lobby the CPUC.

Utility User Tax or Sales Tax Funding

Another strategy for funding undergrounding projects would be the adoption of a local sales tax or Utility User's Tax that would be dedicated to funding utility undergrounding projects. Both of these would be a "special tax" as defined by Proposition 218 and Proposition 26 and require a 2/3 voter approval for adoption. Bonds could be secured by the sales tax or utility user's tax to fund the costs of the undergrounding projects. One benefit of this approach is that it could be done on a citywide basis and it may spread the tax burden across a broader base of taxpayers beyond just property owners.

1. **Utility Users Tax (UUT)**
   The UUT is the 4th largest source of GF revenue for the City of Berkeley. The annual revenue has been very stable between $12 and $15 million over the last two decades. See Figure 2. The UUT is charged at a rate of 7.5% to all users of a given utility (electricity, gas, telephone, cable, and cellular), other than the corporation providing the utility. The tax is not applicable to State, County, or City agencies, or to insurance companies and banks. About 60% of the UUT revenues are generated from gas and electric services and about 40% from telecommunications.

Figure 2 – Revenue from UUT, Sales Tax, and Franchise Fees for FY2000 - 2019



Because the UUT revenues have been very stable over the last two decades and the 7.5% tax rate has not increased in two decades, raising the UUT rate could generate a substantial cash flow that could be used to issue revenue bonds for a large-scale project, such as utility undergrounding. For example, if the UUT was increased by 2.5, or 5.0 percentage points, additional annual revenue could be generated of $5, or $10 million. The additional cash flow could fund revenue bonds and pay-as-you-go funding to underground all of the emergency evacuation routes in Berkeley.

Since the General Fund is currently running an annual surplus of ~$20 million/annum, another option that would reduce the ratepayer burden would be to assign $5 million of the current UUT revenue to undergrounding and only implement a 2.5 percentage point increase in the UUT. This option would also generate $10 million of revenue for undergrounding.

Table 3 shows the existing revenue and potential new revenue if the UUT was increased to 10.0%, and 12.5% percentage points.

Table 3 – Existing and Potential New Revenue from UUT

UUT	**7.5%**	**10.0%**	**12.5%**
Revenue ($millions)	$15	$20	$25
Additional Revenue ($millions)	0	$5	$10

2. **Sales Tax**
   The total sales tax rate for Alameda County is currently 9.25% and Berkeley receives 1.00%. Over the last twenty years, the sales tax revenue has increased from about $14 million in 2000 to ~$18 million in 2019. If Berkeley were to increase its sales tax rate from 1.0 to 1.5%, additional revenue of ~$8.5 million/year could be generated that could be used to finance the undergrounding of utilities along emergency exit routes.

Franchise Fee Funding

Cable and Electric & Gas companies pay the City a franchise fee to use the public right-of-way. In 2018 franchise fees totaled ~$2.0 million and are projected to increase slightly to $2.1 million by 2021. The rate of the franchise fees is fixed by state law and cannot be changed by the City.

Currently, franchise fees accrue to the General Fund. However, as stated in the Moody's Rating Agency Report, the City's ration of General Fund operating revenues to expenses is a strong 1.08 times. The City ended fiscal 2018 with general fund available balance of $80 million or a very strong 41.8% of general fund revenue. This followed a $20.2 million surplus for the year, resulting from strong revenue growth and strong expenditure management.

Since franchise fees are generated by private utilities that utilize the public right-of-way, it would be appropriate to consider assigning these funds to a public right-of-way account to finance revenue bonds for undergrounding utilities.

Unlike the City of Berkeley, Santa Barbara imposed a 1% franchise fee on its electric provider, after Proposition 13 had passed and before Propositions' 26 and 218 were passed. In 1999, Santa Barbara increased that fee to 2%. In 2001, the City of San Diego increased its franchise fee and imposed a franchise surcharge to pay for undergrounding its residential streets. These costs were then passed on to the utility users by the utility providers.

Santa Barbara was sued by a local businessman who argued that the imposition of this additional fee was an illegal tax because, contrary to Proposition 218, it was imposed without voter approval. A similar lawsuit was filed against San Diego whose surcharge fee was specifically earmarked for undergrounding residential streets, had an end date of 2065 and a provision that what was not spent in any given year would be deposited in the city's General Fund.

The trial court accepted the City of Santa Barbara's argument that the franchise fee increase was not a tax as defined by Propositions 26 and 218. This decision was later overturned by an Appeals Court but a California Supreme Court decision in June 2017 ruled in favor of Santa Barbara. The decision was based on Proposition 13 law which preceded Propositions 26 and 218. The decision is briefly summarized as follows:

- Fees for use of government property are not taxes requiring voter approval as the fee payor gets something of value in return
- Such fees generate discretionary (General Fund) revenues to be used for any lawful purpose of the agency
- Standing to challenge a revenue measure is limited to those having a legal duty to pay it
- Fees must not exceed any reasonable value of the franchise but be reasonably relating to the value of the franchise

- The 2% franchise fee imposed by the municipality on Southern California Edison must recover cost of fee only from customers in the city imposing the fee and shown as a separate line item on the utility billing statement

The lawsuit filed against the City of San Diego alleging that the surcharge was an illegal tax imposed by the City without voter approval was dismissed by a Superior Court judge in August 2018, who agreed with the City that the surcharge is a fee paid to the City in exchange for the right to use the City's electric infrastructure.

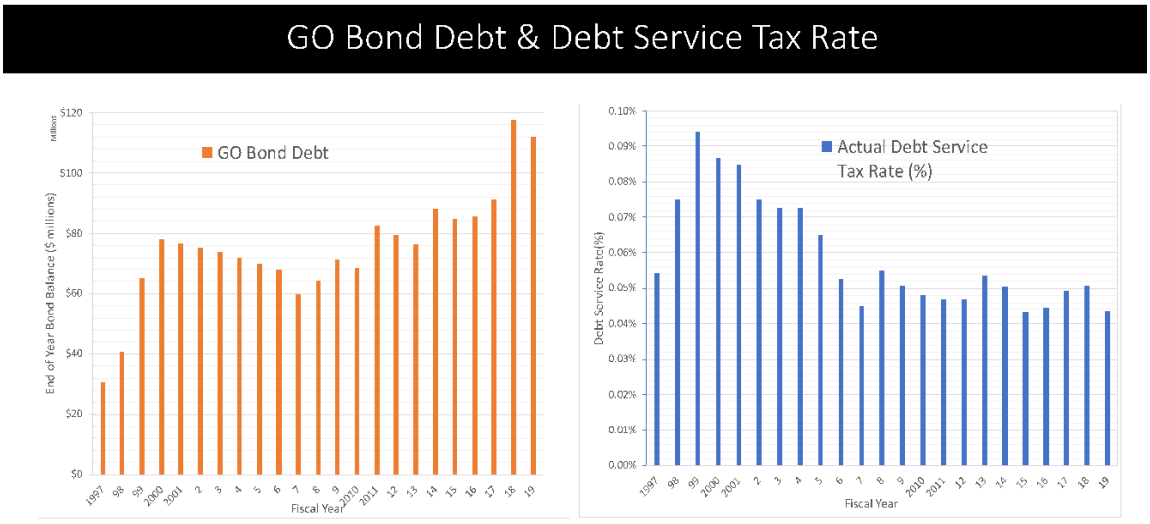
General Obligation Bond Funding

From 1997 to 2000, the City increased its General Obligation (GO) bond debt from $30 million to $80 million. However, due to a strong increase in total property assessed values (AVs), the debt-service rate only doubled from 0.05% to 0.09%. Moreover, during the next six years, the debt-service rate decreased back to ~0.05%, as AVs of Berkeley property continued to increase and bond principal was paid down.

After the Financial Crisis of 2008, interest rates fell dramatically. The City took advantage of the lower rates to refinance old debt and to issue new debt: Measures FF, M & T1. *From 2007 to 2019, the City doubled its bond debt, while keeping its debt service rate constant due to lower interest rates and the strong appreciation in* property *AVs.*

Because of Berkeley's robust tax base and strong economy, which benefits from its central Bay Area location, it should be able to issue additional GO bonds during the coming decade, while keeping the debt-service rates within the historic range.

Figure 3 -- GO Bond Debt & Debt Service Tax Rate for FYs1997-2019



Recommended Financing Option for Berkeley

The project team has evaluated a wide range of funding options. We have considered the level of required funding, the number of years to carry out the undergrounding program, advantages and disadvantages of each option and other factors. The project team recommends the following financing option.

- Increase the Utility User Tax from 7.5% to 10.0% (increase of 2.5%). This will produce additional revenue of $4.5 - 5.0 million per year.
- Allocate $2.0 - 2.5 million per year from the General Fund for undergrounding.
- Purchase Rule 20A credits, as available. We estimate $1.0 - 2.0 million per year.

This will produce revenue in the range of $7.0 – 9.5 million per year for undergrounding. This means that the program can be completed in about 15 years. We also recommend that the City issue a GO bond in the range of $35 million to get the program started quickly so as to minimize the impact of construction cost escalation on the total program cost.

Section 3
FIRE RISKS AND MITIGATION MEASURES

This section describes the potential for a major Wildland Urban Interface fire in Berkeley. It also presents the range of actions that can be taken by Berkeley and other agencies to reduce the risk of having a fire and to mitigate the impacts from a fire.

Fire History and Environmental Risk Factors

Fire Risk in California

2017 was the hottest year on record in California, following 5 years of drought that killed 129 million trees in California. Seven of the ten deadliest and most destructive fires in California's history took place during the last 10 years, each one worse than ever experienced before. The most destructive fires in California, in order were:

- **CAMP FIRE - (Butte County), November 2018**
  Structures destroyed: 18,804
  Acres burned: 153,336
  Deaths: 86

- **TUBBS FIRE - (Napa County, Sonoma County), October 2017**
  Structures destroyed: 5,636
  Acres burned: 36,807
  Deaths: 22

- **TUNNEL FIRE - Oakland Hills (Alameda County), October 1991**
  Structures destroyed: 2,900
  Acres burned: 1,600
  Deaths: 25

- **CEDAR FIRE (San Diego County), October 2003**
  Structures destroyed: 2,820
  Acres burned: 273,246
  Deaths: 15

- **VALLEY FIRE (Lake, Napa & Sonoma County), September 2015**
  Structures destroyed: 1,955
  Acres burned: 76,067
  Deaths: 4

- **WITCH FIRE (San Diego County), October 2007**
  Structures destroyed: 1,650
  Acres burned: 197,990
  Deaths: 2
- **WOOLSEY FIRE (Ventura County), Nov. 2018**
  Structures destroyed: 1,643
  Acres burned: 96,949

Deaths: 3

- **CARR FIRE (Shasta County, Trinity County), July 2018**
  Structures destroyed: 1,614
  Acres burned: 229,651
  Deaths: 8

- **NUNS FIRE (Sonoma County), October 2017**
  Structures destroyed: 1,355
  Acres burned: 54,382
  Deaths: 3

- **THOMAS FIRE (Ventura County, Santa Barbara), December 2017**
  Structures destroyed: 1,063
  Acres burned: 281,893
  Deaths: 2

2017 was a devastating fire year highlighted by the Tubbs Fire, 2018 was highlighted by the Camp Fire, and 2019 is another severe fire year in northern and southern California. The Tubbs Fire in Santa Rosa made it clear that the flatlands are not immune from catastrophic fires. Fire raced down from the hills and flying embers started multiple smaller fires that burned down the Coffey Park neighborhood.

The following is an excerpt from the State of California's Fourth Climate Change Assessment, 2018, regarding projections on wildfires:

Impact: Climate change will make forests more susceptible to extreme wildfires. By 2100, if greenhouse gas emissions continue to rise, one study found that the frequency of extreme wildfires burning over approximately 25,000 acres would increase by nearly 50 percent, and that average area burned statewide would increase by 77 percent by the end of the century. In the areas that have the highest fire risk, wildfire insurance is estimated to see costs rise by 18 percent by 2055 and the fraction of property insured would decrease.

Fire Risk to Berkeley

The Berkeley and Oakland area has had a long history of wildland fires. The following is excerpted from the Hills Wildfire Working Group, Wildfire Problem Statement, as posted on the East Bay Regional Park District website:

Fire records for the East Bay Hills are sketchy, yet newspaper clips and old fire planning studies document an active and dangerous fire history. During the 75-year period between 1923 and 1998, eleven Diablo wind fires alone burned 9,840 acres, destroyed 3,542 homes, and took 26 lives, with over 2 billion dollars in financial loss. During the same period, three large west wind fires burned 1,230 acres of grass, brush, trees, and 4 homes.

News reports document the major fires that have threatened the East Bay Hills:

- ***1923 Berkeley**- A Diablo wind fire that started East of the Main ridge at 12 noon on a Monday in September destroyed 584 homes North of the U.C. Campus. No conflagration was ever more out*

of control. None ever demonstrated more vividly its power to defy all defensive resources once it gained headway. It was extinguished only by an act of providence.

Figure 4 – 1923 Fire in Berkeley
Photo by Cal Alumni Assoc.

- ***1931 Leona****- 5 homes were lost and 1,800 acres burned by a Diablo wind fire that started at 7 a.m. on a Monday morning in November. "Splitting of the fire into two huge infernos left the hundreds of fire fighters almost helpless to combat the double conflagration."*
- ***1933 Redwood/Joaquin Miller****- 1 life and 5 homes were lost with 1,000 acres burned by a Diablo wind fire that started on the ridge at 7 a.m. on a Monday morning in November. "The fire traveled along the tops of the thick groves of trees for great distances, never reaching the ground until after the main blaze had passed."*
- ***1937 Broadway Terrace****- 4 homes were lost and 1,000 acres burned by a West wind fire that started at 3 p.m. on a hot Saturday afternoon in September. "Lack of water caused by exhaustion of reservoirs in the hills hampered fire fighters. The fire at times crept slowly through the brush and at other times leaped from treetop to treetop."*
- ***1946 Buckingham/Norfolk****- 1,000 acres were burned by a rekindled ridge top Diablo wind fire* ***at 5****:00 am on a Monday morning in September. "Sheer-walled canyons were quickly raging infernos. Flames raced so fast in the stiff wind they formed a fiery canopy over stands of pine and eucalyptus." In the ten years following this fire, at least 2 other large fires occurred in Claremont Canyon (Claremont above water tank to Stonewall) and Panoramic Hill (South of Panoramic to fire road) that did not involve structures because few existed at the time.*
- ***1960 Leona****- 2 homes were lost and 1200 acres were burned by a Diablo wind fire that started at* ***11 a.m.*** *on Saturday morning in October. "The 84-degree temperature and low humidity aided the flames which roared with express train speed up steep slopes. Flames roared 50 ft. into the air."*
- ***1970 Buckingham/Norfolk****- 37 homes lost, 36 damaged, and 204 acres burned in a Diablo wind fire that started near the ridge* ***at*** *10 a.m****.*** *on a Tuesday morning in September. The wind was swirling in every direction. The heat was so great that some houses were exploding before the fire actually reached them.*
- ***1980 Berkeley/Wildcat****- 5 ridge top homes were lost in a Diablo wind fire that started at 2 p.m. on a Saturday afternoon in December. The blaze, fed by thick underbrush and tree (eucalyptus) debris, was so hot and fast that homes literally exploded.*

- ***1991 Oakland/Berkeley****- The fire was rekindled at 10:45 a.m. below Buckingham/Norfolk roads, on a Sunday morning in October by a ridge top Diablo wind. The firestorm burned over 3 square miles, killed 25 people, gutted 2,900 homes and caused $1.68 billion in damage. It was the most destructive wildfire in California history until 2017.*

Figure 5 – 1991 Oakland Hills fire
Photo by SF Chronicle

- ***1994 Castro Valley****- 3 homes were lost in a windy October afternoon near Lake Chabot Road when fireworks ignited a grass fire in a horse pasture below homes that provided no defendable space behind their residences.*

If a fire occurs in Berkeley or the East Bay hills, how rapidly will it spread, and to where? While fires can occur under a wide variety of conditions, fires are most likely to rapidly spread and grow when high winds typically from the northeast direction coincide with hot dry conditions. This condition, winds descending the western slopes of the Coast range and known locally as a Mono or Diablo wind, is similar to the Santa Ana winds in southern California.

Given specified wind speed, fuel moisture and other data, fire spread can be computed using methods such as embodied in FlamMap (https://www.firelab.org/project/flammap). Such calculations are beyond the scope of this study. However, an estimate of how rapidly a fire might spread under Red Flag conditions can be gleaned by studying fire spread for events similar to those of concern. Such events include:

- The 1991 Oakland Hills fire began about 11 am during a Diablo wind – within 15 minutes it had run 2km (6,600 ft) downhill – six hours later it had run 4.5 km (15,000 ft). From Wildcat Canyon Road at Berkeley's border with Tilden Park, to the Marin Avenue intersection at the Marin Circle, is 2.2 km. In other words, the East Bay Hills fire would have spread from Tilden Park to Marin Circle in about 20 minutes.
- The 2017 Tubbs fire spread at a rate of about 2 miles per hour, meaning it would have spread from Tilden Park to Marin Circle in about 37 minutes.

The North Berkeley Hills are a Wildland Urban Intermix area with about 26,000 residents and 7,453 assessor parcels. The likelihood of a major fire in this area similar to the Oakland Hills fire is about 0.002 per year, with Tilden Park itself having much higher likelihood (as much as 0.01 per year). Climate change may be increasing this likelihood, although how much is difficult to say. Diablo winds ("Red Flag" conditions) occur on average about 2.5 times each year, with about half those occurrences being in October to November when wildland fuels are very dry. Major WUI fires often burn the same areas that have burned in previous years. This is another reason why Berkeley is at risk.

CalFire has expanded its designation of high and extreme hazard fire zones as a result, with the subsequent loss of home insurance by many who live in these hilly and windy areas of Berkeley.

Cities that expect to rebuild after fires must develop a resilience strategy ahead of time to ensure that they don't lose citizens and businesses.

Reducing the Risk of a Fire

With the increasing risks of wildland fires from extreme climatic conditions, there are actions that the City of Berkeley, our residents, and local agencies can take to reduce the risk of a fire. The following summarizes the actions we can take through educating the public of the risks, reducing vegetation that fuels fires, and PG&E's plans to shut off power during high risk climatic conditions.

Public Education

The National Weather Service issues Red Flag Warnings & Fire Weather Watches to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity. A Red Flag Warning is issued for weather events which may result in extreme fire behavior that will occur within 24 hours. During these times extreme caution is urged by all residents, because a simple spark can cause a major wildfire. The type of weather patterns that can cause a warning include low relative humidity, strong winds, dry fuels, the possibility of dry lightning strikes, or any combination of the above.

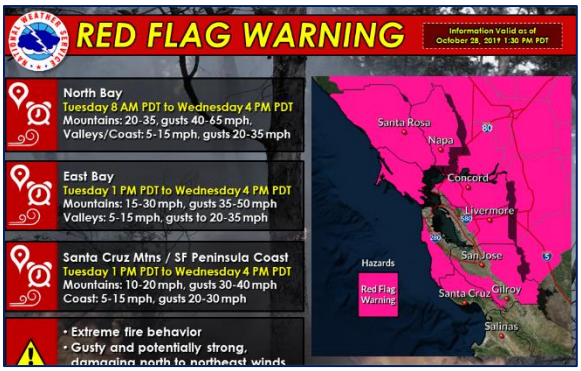


Figure 6 – AC Alert with Red Flag Warning

East Bay Regional Parks District

The East Bay Regional Parks District issues the following restrictions to the danger of fires on Red Flag days:

- No open fires, campfires, wood burning or charcoal barbecues are permitted.
- Campground visitors must clear all flammable material for ten feet from their camp stove.
- Smoking is prohibited in all East Bay Regional Parks.
- No use of gasoline powered equipment (generators).
- Increased monitoring, patrol and strict enforcement of these restrictions.

City of Berkeley

The public is notified of Red Flag conditions through AC Alert, City of Berkeley notifications, Mayor and Coucilmember newsletters and local news broadcasts. Berkeley Councilmembers Susan Wengraf, Lori Droste, and Sophie Hahn hold an annual Fire Safety Town Hall every May. Representatives from the Berkeley Fire Department, the East Bay Regional Parks, the Orinda Fire Department, CalFire and UC Berkeley give presentations about what their jurisdictions are doing to mitigate and prevent wildfires. Topics covered included:

- Safe Passages pilot program (vehicle access and egress)
- Evacuation routes

- Vegetation management
- Notification and warning systems
- East Bay Regional Parks fire mitigations
- New technologies
- State legislation
- What neighboring jurisdictions are doing

Vegetation Management

Wildland fire behavior is controlled by three factors: fuels, weather and topography. Because it is impractical to control the weather and topography around us, the only practical way to modify fire is by managing its fuel source. Fire fuel refers to anything that has the ability to burn and spread fire, like trees, shrubs and dried grass.

State of California

In March 2019, Governor Newsom proclaimed a state of emergency throughout California ahead of the coming fire season. The Governor directed his administration to immediately expedite forest management projects that will protect 200 of California's most wildfire-vulnerable communities. This action follows the release of a report earlier by the California Department of Forestry and Fire Protection (CalFire), which identified 35 priority fuel-reduction projects that can be implemented immediately to help reduce the public safety risk for wildfire. The state of emergency provides time-saving waivers of administrative and regulatory requirements to protect public safety and allow for action to be taken in the next 12 months, which will begin to systematically address community vulnerability and wildfire fuel buildup through the rapid deployment of forest management resources. But will there be funding to maintain wildland fuelbreaks in the years that follow?

Regional Agencies

The East Bay Regional Park Fire Department uses several different methods to modify or reduce the amount or availability of wildland fuels for any fire that may occur. Ladder and surface fuels such as grass, brush, forest litter, and down logs and branches are modified or removed by hand crews, prescribed fire, mowing, weed-eating, masticating, or animal grazing. Dense tree stands are often thinned to remove some of the trees that contribute to fuel loading and to reduce the potential for wildfire to spread in the tree canopies. Visitors to the East Bay Regional Parks may encounter cattle, sheep or goats grazing on the grasslands. The District uses grazing animals as a practical and economic resource management tool. Grazing helps reduce fire hazards by controlling the amount and distribution of grasses and other potential fuel.

The Orinda-Moraga Fire District entered into an agreement with CalFire in May 2019 to begin planning and work on the North Orinda Shaded Fuel Break (NOSFB) project. The project area encompasses 1,515 acres along 14 miles of open space in the East Bay between the eastern portions of Tilden Regional Park and Pleasant Hill Road. This project is being carried out to reduce dangerous wildfire fuels in a deliberate manner designed to minimize environmental impacts to wildlife and

protected plants. This area receives seasonal "Diablo winds", that were the dominant influence in several major nearby wildfires. These fuels are understory vegetation, dead/dying trees, and highly combustible brush. Reducing the quantities of these fuels will lower the intensity and speed of a wildfire. This fuel break will provide essential opportunities for firefighting success by providing areas of lower fire intensity and enhanced fire line production rates.

Figure 7 – North Orinda Fuel Break Map from SF Chronicle

City of Berkeley

Berkeley currently has an active vegetation management program both for its public space and for property owners in the Very High Hazard Fire Zone. Property owners can learn about appropriate vegetation management on its Wildfire Evacuation- City of Berkeley webpage. We know that effective vegetation management includes reducing fire laddering fuels, removing dead limbs, limbing up trees, regulating the height of hedges, and maintaining at least 5 feet of vegetation-free space next to homes. Currently, compliance is largely voluntary except for annual inspections of vacant properties in the Very High Hazard Fire Zone (VHHFZ) and all properties in the Extreme Hazard Fire Zone (EHFZ).

PG&E

PG&E also has a vegetation management program. The following is from the PG&E website:

In response to the growing risk of wildfire in our state, we are enhancing our vegetation and safety work. Our focus will be on addressing vegetation that poses a higher potential for wildfire risk in high fire-threat areas as designated by the California Public Utilities Commission (CPUC). Our Enhanced Vegetation Management program involves multiple steps to help further reduce the risk of trees, limbs and branches from coming into contact with power lines in high fire-threat areas.

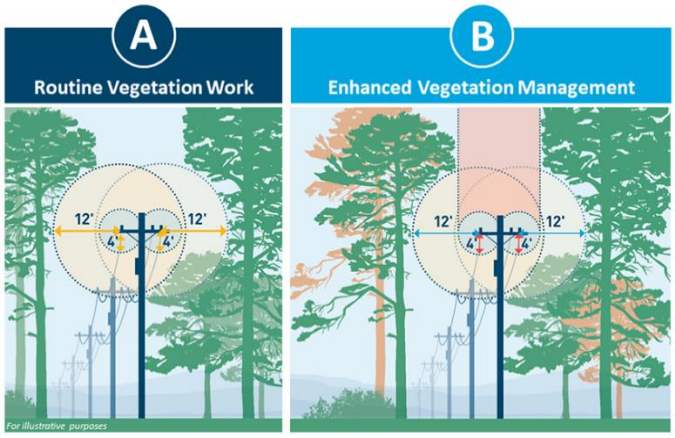


Figure 8 – PG&E Vegetation Management

The San Francisco Chronicle reported in October 2019 that PG&E was behind schedule in carrying out their vegetation management program. The following is an excerpt from their report:

As the most dangerous part of California's wildfire season continues, Pacific Gas and Electric Co. says it has finished only about 31% of the aggressive tree-trimming work it planned this year to prevent vegetation from falling on power lines and starting more deadly infernos.

PG&E told a federal judge Tuesday that as of Sept. 21, the company had completed 760 miles out of the 2,455 miles of power lines where it intends to take extra steps to cut back vegetation. The company said its ability to meet the tree-trimming target by the end of the year depends on whether it can "significantly increase the number of qualified personnel engaged" in the effort.

Electrical Power Service Curtailments

The cause for some of the recent wildland fires has been traced back to faulty overhead electrical wires or equipment. As an extreme measure to help reduce the risk of a fire, PG&E has proposed shutting electricity to high risk areas under Red Flag conditions. This program, called Public Safety Power Shutoff (PSPS), has been approved by the CPUC. It has now been done twice.

CPUC

The CPUC has reviewed the risks of wildfires and worked with the State's investor-owned utilities and determined the following:

Wildfires are more destructive and deadlier than in the past, and the threat of wildfires is more prevalent throughout the state and calendar year. The overall pattern shows the emerging effects of climate change in our daily lives.

Throughout the year, the CPUC works with CalFire and the Office of Emergency Services to reduce the risk of utility infrastructure starting wildfires, to strengthen utility preparedness for emergencies, and to improve utility services during and after emergencies. Interagency coordination, and cooperation from the utilities is essential when the threat of wildfires is high.

The State's investor-owned electric utilities, notably Pacific Gas and Electric Company (PG&E), Southern California Edison, and San Diego Gas & Electric (SDG&E), may shut off electric power, referred to as "de-energization" or Public Safety Power Shut-offs (PSPS), to protect public safety under California law, specifically California Public Utilities Code (PU Code) Sections 451 and 399.2(a).

On July 12, 2018, the CPUC adopted Resolution ESRB-8 to strengthen customer notification requirements before de-energization events and ordered utilities to engage local communities in developing de-energization programs. Utilities must submit a report within 10 days after each de-energization event, and after high-fire-threat events where the utility provided notifications to local government, agencies, and customers of possible de-energization though no de-energization occurred.

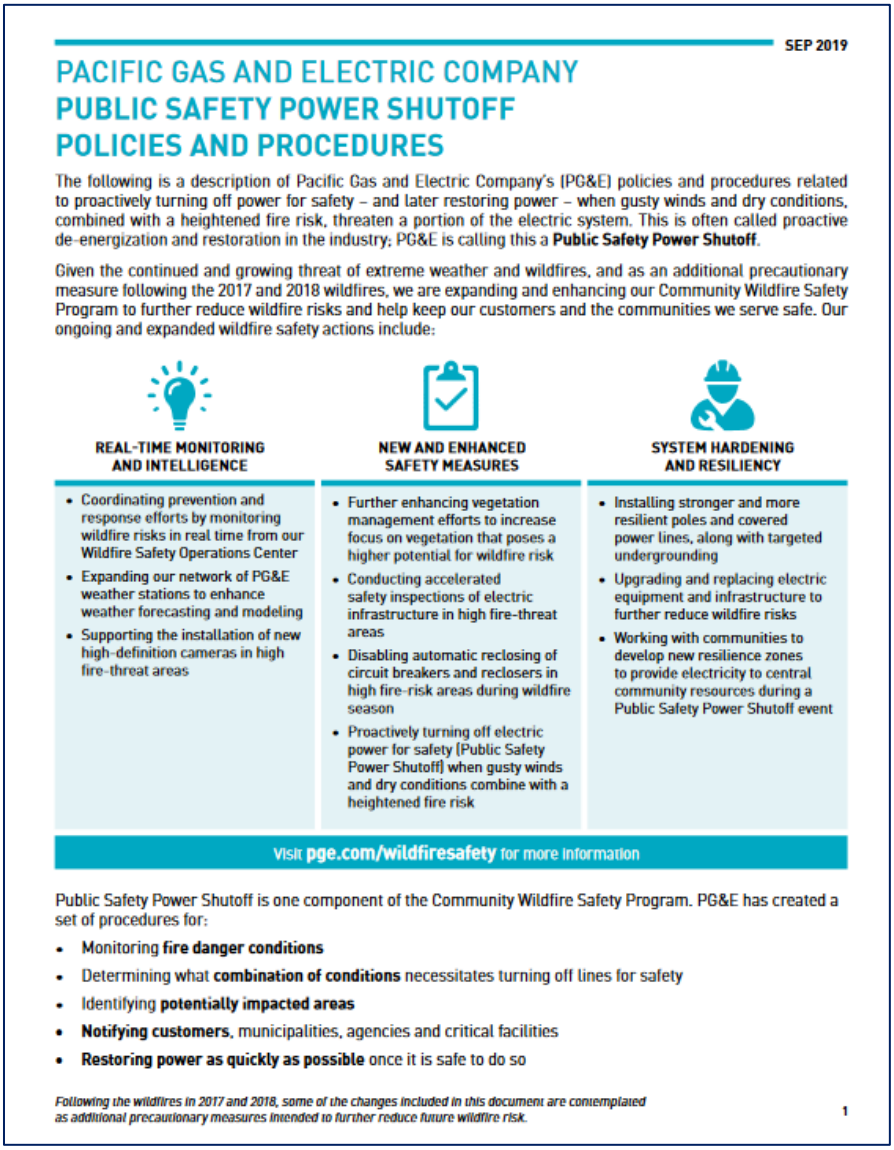
PG&E

PG&E has implemented the PSPS program. October 2019 saw the occurrence of dry conditions, Red Flag days and strong Diablo and Santa Ana winds in California. The following events have happened:

- **October 9 – 10, 2019** -- PG&E implemented its first major PSPS. About 800,000 homes and businesses in 34 counties lost power. This event tested the readiness of PG&E's public notification system and saw their website overwhelmed with contacts. Also, other facilities (such as the Caldecott Tunnel) scrambled to find back up power.

- **October 26 - 28, 2019** -- PG&E implemented a PSPS that affected about 1 million homes and businesses in 36 counties. The total number of people affected was more than 2.5 million. This was the largest intentional power shutoff in PG&E's history. This shutoff was in response to a very strong Diablo wind condition and very dry conditions.

Other shutdowns are proposed, depending on climatic conditions. PG&E's policies and procedures require inspection of their power lines and equipment before re-energizing. An outage can last several days. Figure 9 shows a summary of PG&E's PSPS policies and procedures.



SEP 2019

PACIFIC GAS AND ELECTRIC COMPANY
PUBLIC SAFETY POWER SHUTOFF
POLICIES AND PROCEDURES

The following is a description of Pacific Gas and Electric Company's (PG&E) policies and procedures related to proactively turning off power for safety – and later restoring power – when gusty winds and dry conditions, combined with a heightened fire risk, threaten a portion of the electric system. This is often called proactive de-energization and restoration in the industry; PG&E is calling this a **Public Safety Power Shutoff**.

Given the continued and growing threat of extreme weather and wildfires, and as an additional precautionary measure following the 2017 and 2018 wildfires, we are expanding and enhancing our Community Wildfire Safety Program to further reduce wildfire risks and help keep our customers and the communities we serve safe. Our ongoing and expanded wildfire safety actions include:

REAL-TIME MONITORING AND INTELLIGENCE

- Coordinating prevention and response efforts by monitoring wildfire risks in real time from our Wildfire Safety Operations Center
- Expanding our network of PG&E weather stations to enhance weather forecasting and modeling
- Supporting the installation of new high-definition cameras in high fire-threat areas

NEW AND ENHANCED SAFETY MEASURES

- Further enhancing vegetation management efforts to increase focus on vegetation that poses a higher potential for wildfire risk
- Conducting accelerated safety inspections of electric infrastructure in high fire-threat areas
- Disabling automatic reclosing of circuit breakers and reclosers in high fire-risk areas during wildfire season
- Proactively turning off electric power for safety (Public Safety Power Shutoff) when gusty winds and dry conditions combine with a heightened fire risk

SYSTEM HARDENING AND RESILIENCY

- Installing stronger and more resilient poles and covered power lines, along with targeted undergrounding
- Upgrading and replacing electric equipment and infrastructure to further reduce wildfire risks
- Working with communities to develop new resilience zones to provide electricity to central community resources during a Public Safety Power Shutoff event

Visit **pge.com/wildfiresafety** for more information

Public Safety Power Shutoff is one component of the Community Wildfire Safety Program. PG&E has created a set of procedures for:

- Monitoring **fire danger conditions**
- Determining what **combination of conditions** necessitates turning off lines for safety
- Identifying **potentially impacted areas**
- **Notifying customers**, municipalities, agencies and critical facilities
- **Restoring power as quickly as possible** once it is safe to do so

Following the wildfires in 2017 and 2018, some of the changes included in this document are contemplated as additional precautionary measures intended to further reduce future wildfire risk.

1

Figure 9 – PG&E's PSPS Policies and Procedures

Issues that have arisen from the shutdowns have included:

- The Diablo winds were very strong with speeds up to 100 miles per hour in the upper peaks. The high winds caused tree limbs to take down overhead power lines in the shutdown and non-shutdown areas.
- Public notification on the timing and extent of the shutdowns were critical. The shutdown on October 9th saw the PG&E website overwhelmed from the volume of contacts. AC Alert, City of Berkeley notifications, and local news broadcasts were effective.
- The shutdowns have been a major disruption to people and businesses. Especially affected were people with medical, mobility and other needs. UC Berkeley cancelled classes and many school districts closed. The economic impact has been estimated to be more than $1 billion.
- Governor Newsom has criticized PG&E for decades of mis-management and for not maintaining their system.
- The local news reported that PG&E is beginning to think that undergrounding overhead utility wires may be needed to improve safety.

Reducing the Impacts from a Fire

If a wildland fire occurs in Berkeley or in neighboring areas, we need to be prepared to reduce the impacts. The following are some options for Berkeley to prepare itself, including evacuation planning, undergrounding overhead wires and creating defensible space around our homes.

Evacuation Planning

When a wildland fire occurs, it will be important to evacuate the area with or without notice from public safety officials. Berkeley has established evacuation procedures posted on the City's website (www.cityofberkeley.info/wildfireevacuation/). Some of the important features of the plan include:

- **Safe Passages** – The Berkeley Safe Passages pilot program is designed to blend traditional parking restrictions with innovative road markings and signage. Many roads in Fire Zones 2 and 3 are too narrow for parking and safe passage of vehicles when emergencies arise. Three locations will be selected so staff and the public can evaluate the efficacy and impact. The Fire Chief listed three actions that need to be done for the Safe Passages Program:
  - Identify, paint, and provide signage for new "Keep Clear" pinch points on streets
  - Expand "No Parking" areas throughout dangerously narrow streets
  - Identify funding to enable additional capacity for parking enforcement
- **Evacuation Routes** – Berkeley's evacuation routes are shown on Figure 10. The City has also shown the location of temporary evacuation sites, fire stations and schools.
- **CERT and Simulated Exercises** -- In a catastrophic disaster, government resources (people and supplies) may not be available for several days following the event. The Community Emergency Response Team (CERT) Program provides education in disaster preparedness and provides training in basic emergency skills. By preparing neighborhoods and community groups with basic emergency skills, we can lessen the effects of a disaster and help sustain

ourselves until assistance can arrive. Berkeley held simulated evacuation exercises in three parts of the City in the summer of 2019.

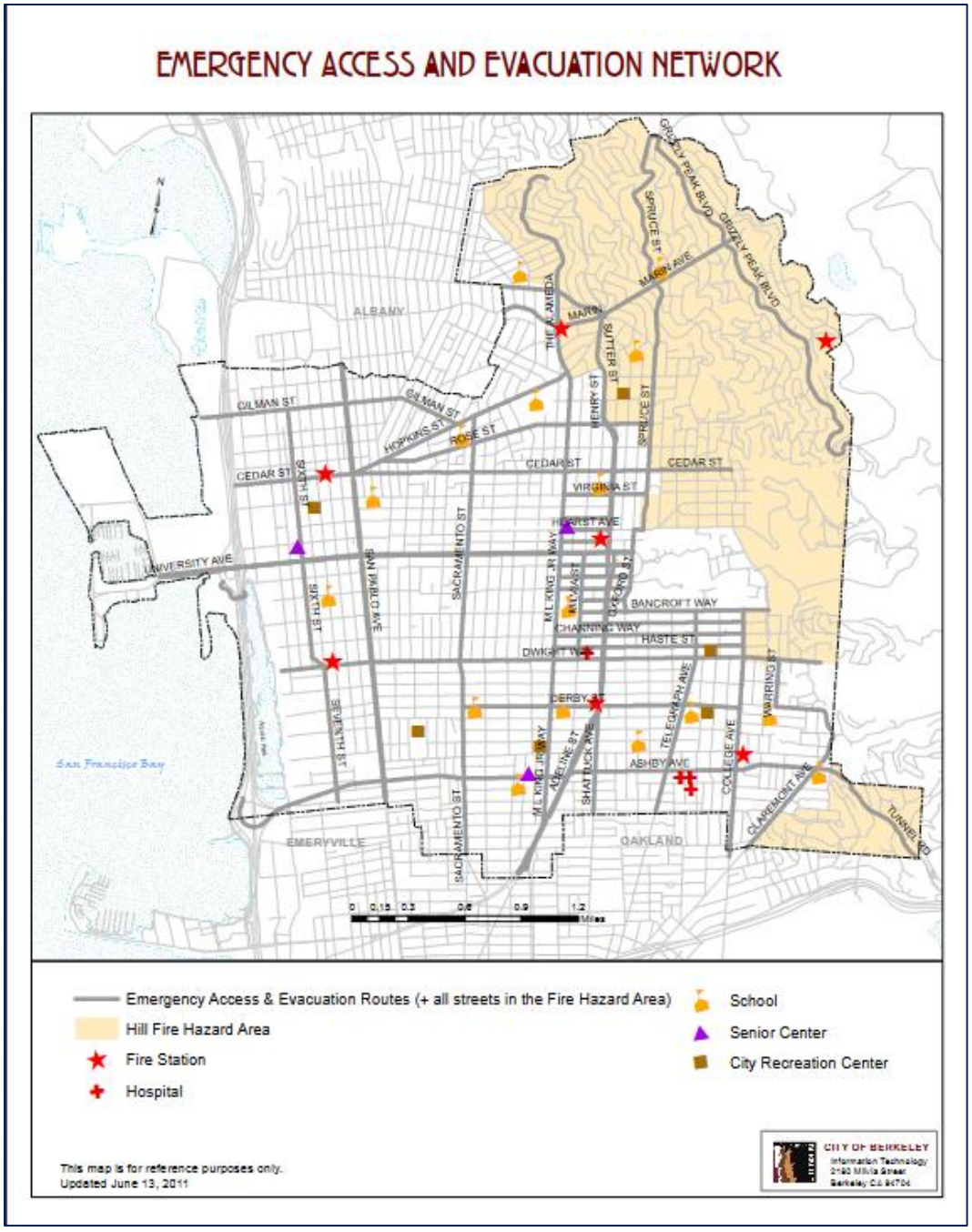


Figure 10 – Berkeley's emergency access and evacuation network

Undergrounding Overhead Wires

Each wildland fire in California is investigated for the cause of the fire. In many cases, problems with PG&E's overhead wires or equipment have been contributing factors. Overhead wires not only can spark and cause a fire, but fallen poles and wires can impact ingress and egress on evacuation routes. This can be caused by high winds or fire damage. Figure 11 shows some of the downed wires and poles during the Tubbs Fire in 2017.

During the October 2019 power shutdown by PG&E, the intent was to reduce the potential for overhead energized wires to cause a fire. We found that the winds were so strong that they caused tree branches to take down overhead wires in shutdown and non-shutdown areas. In Berkeley's Northbrae area, a power line came down with a felled tree branch from the strong winds on October 27, 2019 (see Figure 12).

Figure 11 - Downed power poles and lines in 2017 Tubbs Fire
Photo by LA Times

Figure 12 – Downed power lines in Berkeley's Northbrae area
Photo by Berkeleyside

This shows that Red Flag conditions can affect all of Berkeley and not just the high hazard fire zones.

Property owner Responsibilities

A Fire Assessment District was created in 1992 (Berkeley City Ordinance 6129-N.S.) which funded fuel abatement and inspection programs in the Berkeley hills, including 3 full-time inspectors and a comprehensive fire fuel reduction program. The assessment district expired in 1997 following the passing of California Proposition 218 in 1996. With the primary funding source removed, dedicated Fire Prevention staffing was lost, although some programming continues to this day in the form of the Fire Fuel Chipper and Debris Bin programs. On-duty firefighters now annually inspect a small proportion of properties in Berkeley's hills.

Without a City inspection program, it is important that property owners create defensible space and harden their homes to reduce the impacts from a fire. Guidance information is available from the California Fire Safe Council (www.cafiresafecouncil.org).

- **Hardening Your Home --** Fire hardened means your home is prepared for wildfire and an ember storm. It does not mean fireproof. Home hardening addresses the most vulnerable components of your house with building materials and installation techniques that increase resistance to heat, flames, and embers that accompany most wildfires.
- **Key Elements of a Defensible Space**
  - Keep your gutters and roofs clear of leaves and debris.
  - Maintain a 5-foot noncombustible zone around your home and deck.
  - Break up fuel by creating space between plants and between the ground and the branches of trees.
  - Mow grass to a height of less than 4 inches.
  - Keep mulch away from the house. Bark mulch helps plants retain water but ignites and becomes flying embers during a wind-driven fire.
  - During a wildfire, move anything burnable—such as patio furniture or gas BBQ tanks—30 feet away from structures.

Section 4
PROGRAM RECOMMENDATIONS

This section presents the project team's recommended undergrounding program. After five years of research and study and the increasing climate change driven concerns, we believe there is a good public safety basis to underground the overhead utilities in our main evacuation streets. Undergrounding is only part of the solution and needs to be implemented in conjunction with vegetation management, evacuation planning, homeowner responsibilities, advanced warning systems, actions by PG&E and other factors.

Phase 3 Completion

The original Phase 3 work scope has been partially completed and we recommend that the balance of the work be carried forward into the Phase 4 work. We recommend the following work activities.

Phase 3 Work Tasks	Recommendations
Task 1 – Define the Phase 3 projects	
A. Major and Collector Streets – The original work scope was to identify the major east/west routes to be undergrounded that would facilitate the travel of first responders and evacuation of residents. This work was done with input from Berkeley's fire department and transportation department Also, we conducted a review of other fire mitigation measures underway in the Berkeley area.	This work is largely completed. We recommend working with the Fire Department and their consultant to understand the latest planning on evacuation planning.
B. Coordinate with Microgrid Development – The original work scope was to evaluate microgrids as a way to increase power reliability after a major disaster.	Remove this task from the Phase 3 study and for City staff to evaluate the use of microgrids in a separate study when the City has determined a path forward.
C. Review code standards – The original work scope was to evaluate codes that would limit the loads carried by utility poles.	Remove this task from the Phase 3 study and for City staff to evaluate code standards in a separate study when timing is appropriate.
Task 2 -- Develop the financing plan	
A. Refine cost estimate for undergrounding. The original work scope was to refine the cost estimates previously prepared by Harris & Associates.	This work is completed.
B. Participate in CPUC Rule 20 review – The original work scope was to monitor activities with the CPUC regarding Rule 20 modifications.	Remove this task from the Phase 3 study. The PWD staff and recommended task force shall monitor activities in this area.

C. Evaluate funding options. The original work scope was to evaluate funding options for Phase 3 projects in Berkeley.	We recommend that Council and the City's Finance Department review the funding options, consider other City priorities, and develop a preferred approach to fund undergrounding.
Task 3 – Conduct community input The original work scope was to conduct community outreach and workshops.	We recommend developing and implementing a robust public engagement program in 2020.
Task 4 – Coordinate with utilities The original work scope was to meet with PG&E and telecom companies regarding the phase 3 projects.	We recommend coordinating with PG&E, Comcast, ATT, and other service providers as the study moves forward.
Task 5 – Prepare an implementation plan The original work scope was to prepare an implementation plan.	We recommend preparing an implementation plan that includes the organizational resources to carry out a sustained program, the priority of the evacuation routes, duration of the program, reporting requirements, and other elements.

We recommend that the remaining Phase 3 work be shifted to Phase 4. Phase 3 is now considered concluded.

Phase 4 Recommendations

Phase 4 is the implementation of a program to underground overhead utilities along key evacuation streets in Berkeley. We recommend the following program for Council consideration.

Recommend a 15-year Undergrounding Program

Considering the urgency to improve safety and the complex infrastructure conditions in Berkeley, we are recommending a 15-year program to underground the utilities along the key evacuation routes. To determine the priority of the streets to underground, we recommend preparing a set of criteria that will include the following:

- Coordination with Berkeley's Fire Department on their evacuation planning and safe passages analysis
- The time needed for coordination with Caltrans, PG&E, and telecom companies
- Dividing each street into manageable project lengths (approximately 1 mile each)
- Consider undergrounding the more complex and costly streets early in the program
- Coordinate with street paving and other utility work in the public right of way
- Undergrounding to benefit all Council districts
- Other criteria

The project team prepared the following preliminary priority list to illustrate a 15-year program.

Year	Street	Section	Council districts
1	Dwight Way	Fernwald Rd. to Shattuck Ave.	3, 4, 7, 8
2	Dwight Way	Shattuck Ave. to San Pablo Ave.	2, 3, 4
3	Marin Avenue	Tulare Ave. to Grizzly Peak Blvd.	5, 6
4	Grizzly Peak Blvd.	Spruce St. to Marin Ave.	6
5	Grizzly Peak Blvd.	Marin Ave. to Arcade Ave.	6
6	Ashby Ave., Tunnel Road	Vicente Rd to Telegraph Ave.	7, 8
7	Ashby Ave.	Telegraph Ave. to San Pablo Ave.	2, 3, 7
8	Cedar Street	La Loma Ave. to MLK Way	4, 5 6
9	Cedar Street	MLK Way to San Pablo Ave.	1, 5
10	Hopkins Street	Sutter St. to Gilman St.	5
11	Gilman Street	Gilman St. to San Pablo Ave.	1, 5
12	Spruce Street	Grizzly Peak Blvd. to Rose St.	5, 6
13	Rose Street, Oxford Street	Rose from Spruce to Oxford and Oxford from Rose to Cedar	5
14	Claremont Ave., Alcatraz Ave.	Ashby Ave. to Telegraph Ave.	8
15	Alcatraz Avenue	Telegraph Ave. to San Pablo Ave.	2, 3

This preliminary list has the following assumptions:

- The Fire Department has stated that Dwight Way is a high priority due to the risks in the Panoramic Hills area.
- Ashby Avenue will take significant time to coordinate the work with Caltrans.
- The work on Alcatraz Avenue is uncertain due to coordination with the City of Oakland.
- The street sections for specific projects are planned to be approximately 1 mile in length each.
- Undergrounding is planned only east of San Pablo Avenue. The cost estimates prepared by Bellecci and Associates includes undergrounding between San Pablo Avenue and I-80. We now consider those areas too far from the fire areas and those areas are subject to high groundwater levels. The total centerline length of streets to be undergrounded is now 15.1 miles and the total cost is about $90 million (in 2019 dollars).

Use a Program Approach

Research by the project team and information from Bellecci and Associates shows that it is important to develop an overall program approach to undergrounding. This is to promote cost effectiveness and to achieve completion in a reasonable schedule. Upon authorization to proceed from Council, we recommend that a Program Plan be prepared that includes the following:

- Outcome objectives
- Project priorities, work scopes, budgets and schedules
- Program organization, staffing, consultants and resources needed
- Design criteria
- Coordination with utilities and telecom companies
- Change management process
- Reporting and oversight
- Other

Use “Dig Once” Approach

The undergrounding work shall be coordinated with street paving, water lines, sewer lines and other utility work in the public right of way. Also, consideration should be given to adding extra conduits to facilitate broadband expansion in Berkeley.

Community Engagement

Upon authorization from Council to proceed, a robust community engagement process shall be implemented. This shall include community workshops, methods for the public to submit questions, regular updates and other actions. Public input will be valuable in determining the priority and extent of undergrounding.

Section 5
NEXT STEPS

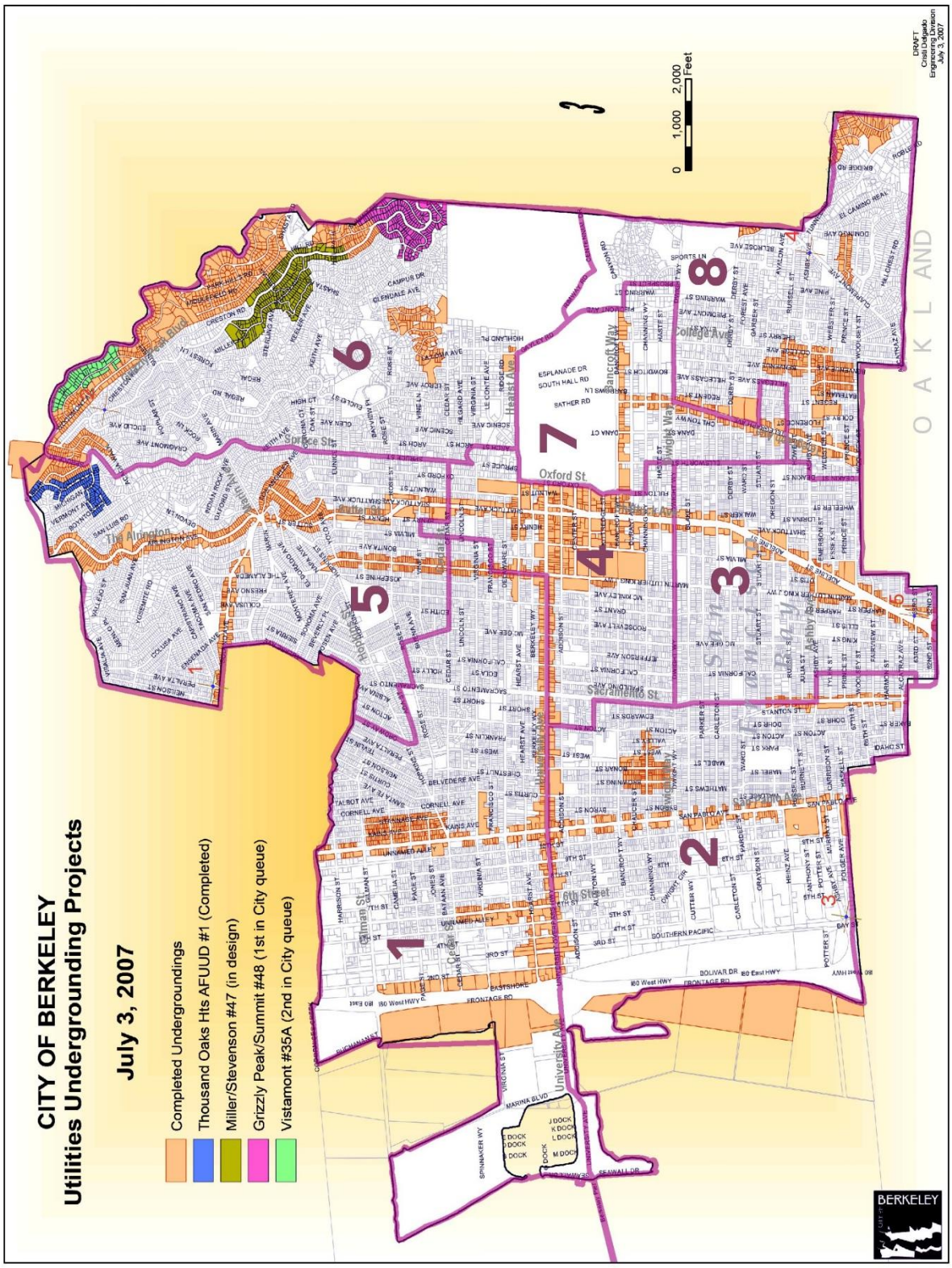
The project team recommends the following next steps for Council consideration.

1. Review this report and provide direction on whether to proceed with Phase 4.
2. Work with the Council's Facilities, Infrastructure, Transportation, Environment, and Sustainability Policy Committee on further development of the undergrounding program.
3. Review the funding options and provide direction to staff on the preferred approach. Consider funding from the General Fund during the fiscal year budgeting process. Also, consider ballot measures in November 2020 for an increase in the Utility User Tax and to authorize a General Obligation bond.
4. Implement a public engagement process in 2020.
5. Staff to prepare a Program Plan for undergrounding.
6. Close out the original Council referral to the participating commissions. We recommend forming an Undergrounding Task Force to ensure public input in the future planning of utility undergrounding. The oversight for the task force should be with the Office of Councilmember Susan Wengraf.

Appendix A

Declaring Wildfire Prevention and Safety a Top Priority in the City of Berkeley

Appendix B
Utilities Undergrounded in Berkeley



Appendix C
Report on Undergrounding Costs by Bellecci and Associates

Projected Costs of Undergrounding Utilities along City of Berkeley's Evacuation Routes

City of Berkeley

December 2019

Bellecci & Associates

7077 Koll Center Pkwy, Suite 210
Pleasanton, CA 94566

p. 925-681-4885
www.bellecci.com

Table of Contents

Acknowledgements

City of Berkeley Staff:

- Andrew Brozyna, PE – Deputy Director of Public Works

PREPARED BY:

Bellecci and Associates, Inc.:

- Daniel Leary, PE, PTOE, Project Manager
- Anoop Reddy Admal, PE, Senior Civil Engineer
- Emma Schoenthal, EIT, Assistant Engineer

Section I – Executive Summary

In December 2014, the Berkeley City Council directed City staff to "develop a comprehensive plan for the funding of the undergrounding of utility wires on all major arterial and collector streets in Berkeley," with support from the Public Works Commission, Disaster and Fire Safety Commission, and the Transportation Commission. An Underground Subcommittee was formed of representatives from these commissions, and has begun a four-phase study for the City Council's referral. Phase 1 was a report titled “Baseline Study for the Development of a Utility Undergrounding Program,” prepared by Harris & Associates in 2016. Phase 2 conducted a “Conceptual Study to Underground Utility Wires in Berkeley”, which was presented by the Public Works, Disaster and Fire Safety, and the Transportation Commissions in 2018. The program is proceeding into the third phase, which involves multiple tasks: defining the phase 3 projects, developing the financing plan, conducting community input, coordinating with utilities, and preparing an implementation plan. Phase 4 will include implementing the plan, including financing, design and construction.

The priority evacuation routes, which have been designated in the City’s General Plan, are the routes along state highways and major streets that would allow citizens to evacuate in case of emergencies and disasters. The City provides a map for East/West evacuation routes along with fire zones (Appendix A). With the considerations of both safety and power reliability, these routes are the highest priorities for utility undergrounding and are the focus of this report.

This report mainly studies the utility status along the evacuation routes and provides a planning level cost estimate for undergrounding the overhead utilities along the routes. The major objectives are to:

a) Summarize the current status of overhead and underground facilities along the City's major evacuation routes;
b) Identify the segments of the City's major evacuation routes with existing overhead facilities to be undergrounded;
c) Prepare a tabular documentation with percentage of overhead and underground facilities for each roadway;
d) Provide an opinion of probable construction costs for undergrounding the existing overhead facilities along these evacuation routes.

Section II – Methodology

The City's major East/West evacuation routes are the highest priorities for utility undergrounding and a map of these routes is included in Appendix A. These routes include:

- Spruce Street, Oxford Street, Rose Street, Grizzly Peak Boulevard
- Marin Avenue
- Gilman Street, Hopkins Street
- San Pablo Avenue, Cedar Street
- University Avenue, 6th Street, Dwight Way
- Ashby Avenue, Tunnel Road
- San Pablo Avenue, Alcatraz Avenue, Claremont Avenue

The presence of overhead and underground facilities along these routes were verified using a combination of these three methods: a) utility maps, b) field visits, and c) Google Street View.

Utility Maps

The major utility companies that possess dry utilities within the City are PG&E, AT&T, Comcast, Verizon and Century Link (Level 3). Utility map request letters were sent to the aforementioned utility companies in June 2019. The utility maps provided by PG&E, AT&T, and Comcast identified the status of their existing dry utilities. However, these maps are not included in this report due to the utility companies' confidentiality clauses.

- The Comcast maps were received on June 27, 2019.
- The AT&T maps were received on July 22, 2019.
- The PG&E Electric maps were received on August 20, 2019.
- Verizon maps were received on September 18, 2019
- Century Link Level 3 utility maps were received on August 1, 2019

The utility maps listed above were evaluated for the presence of existing overhead and underground wires, conduits, joint trenches and duct banks. While other dry utilities exist within the city, it is assumed that the utility maps listed above provide sufficient coverage of existing overhead and underground facilities.

Field Visits

Field visits of the City's major evacuation routes were performed by driving along each route and noting the presence of utility poles and overhead wires. The field visits were conducted on July 2 and 3, 2019. The observations from the field visits were compared with the utility maps and the images from Google Street View to verify the presence of existing utility poles and overhead wires. Photos were taken for perceptual understanding with selected photos shown below. More photos from the field visits are included in Appendix C.

Street View Images

Google Street View provides panoramic images from positions along streets and other paths of travel. The entirety of each of the City's major evacuation routes were captured in Google Street View. The Google Street View images were compared with the utility maps to evaluate the presence of existing utility poles

and overhead wires. Google Street View, by default, shows the most recently captured images. If available, previously captured images can be shown for the location. At the time of this report, the majority of the Google Street View images along the major evacuation routes were most recently captured within the past six (6) months.

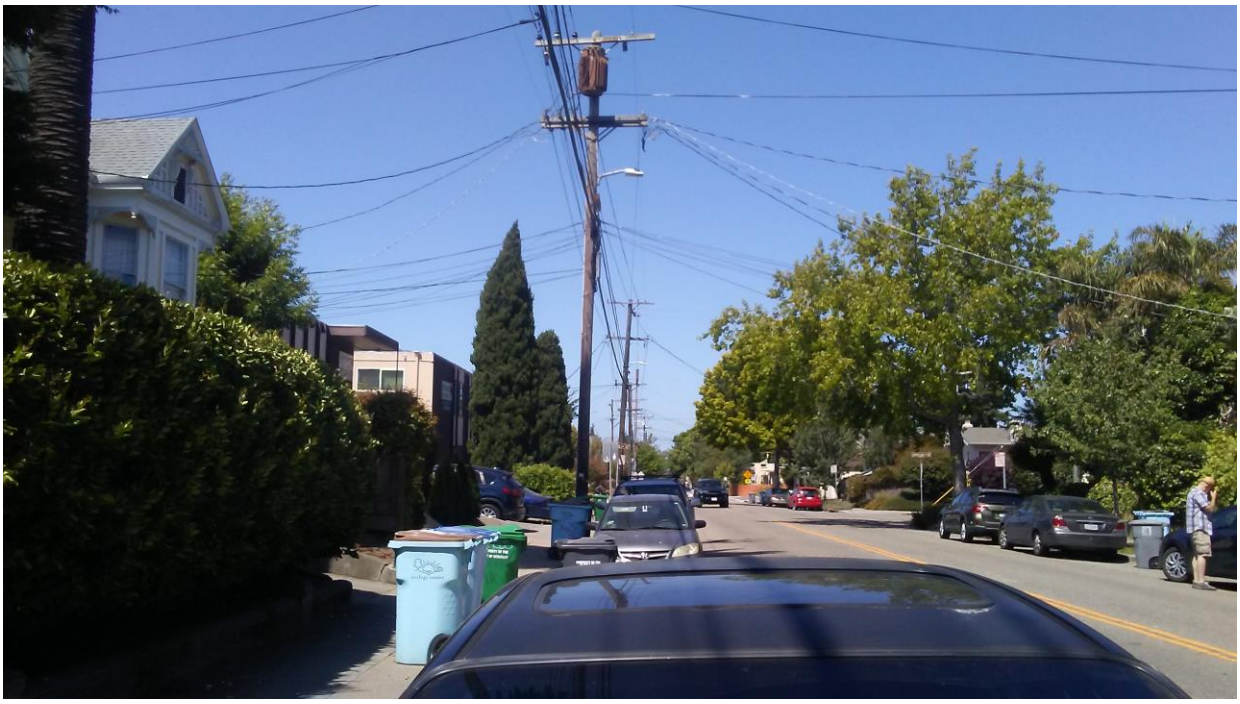


Photo 1: Taken from Dwight Way facing West near Jefferson Avenue with poles and overhead utilities

Photo 2: Taken from Grizzly Peak Boulevard facing West near Hill Road with no overhead utilities

Section III – Analysis

In general, utility maps provide a comprehensive understanding of the utility status along the City's major evacuation routes. However, utility maps can be outdated. When discrepancies between utility maps and the field visit observations are spotted, Google Street View provides insight by showing the changes in the status of undergrounding over time. For example, along Grizzly Peak Boulevard between Latham Lane and Arcade Avenue, the utility map shows overhead Comcast utilities. However, the utility poles and overhead wires were removed between May 2011 and March 2015, based on Google images captured during those times. And field visits verify the findings from Google Street View by providing the current conditions. With the information combined and verified by all three methods, a mapping exhibit that shows the presence of overhead and underground facilities along the City's major evacuation routes was created and included in Appendix B, with overhead facilities marked in red and underground facilities marked in green. A route by route analysis is presented below with tables and figures showing utility status with descriptions. The length of overhead utility (OH) is the length of street that exists with overhead utilities. It also includes segments of street that have both overhead and underground utilities, indicating that the undergrounding status is incomplete. The length of underground utility (UG) is the length of street with only underground dry utilities. There are more north-south segments of streets that are completely undergrounded than east-west segments. Because the evacuation routes are established to bring emergency access to citizens through the Interstate 80/580, the streets that travel east-west form the basis of the evacuation routes, while the undergrounded streets that travel north-south do little to optimize evacuation. However, evaluation and adjustments of the existing evacuations routes are not part of the scope of this report, and will not be discussed further.

Street classifications are based on the volume of traffic, services, and functions that the streets are intended to provide. From the Highway Design Manual, a highway is "in general a public right of way for the purpose of travel or transportation"; an arterial highway is "a general term denoting a highway primarily for through travel usually on a continuous route"; and a collector road is " a route that serves travel of primarily intra county rather than statewide importance in rural areas or a route that serves both land access and traffic circulation within a residential neighborhood, as well as commercial and industrial areas in urban and suburban areas". The Federal Highway Administration provides definitions to the following applicable terms:

- The Interstate System is the highest classification of roadways in the United States. These arterial roads provide the highest level of mobility and the highest speeds over the longest uninterrupted distance. Interstates nationwide usually have posted speeds between 55 and 75 mph.
- Other Arterials include freeways, multilane highways, and other important roadways that supplement the Interstate System. They connect, as directly as practicable, the Nation's principal urbanized areas, cities, and industrial centers. Land access is limited. Posted speed limits on arterials usually range between 50 and 70 mph.
- Collectors are major and minor roads that connect local roads and streets with arterials. Collectors provide less mobility than arterials at lower speeds and for shorter distances. They balance mobility with land access. The posted speed limit on collectors is usually between 35 and 55 mph.
- Local roads provide limited mobility and are the primary access to residential areas, businesses, farms, and other local areas. Local roads, with posted speed limits usually between 20 and 45 mph, are the majority of roads in the U.S.

Spruce Street, Oxford Street, Rose Street, Grizzly Peak Boulevard Route

This evacuation route is within or along the perimeter of Fire Zone 2, indicating a relatively high potential of fire. It is composed of primarily residential areas with high population density. Grizzly Peak Boulevard and half of Spruce Street are hilly and winding with fire potential due to the presence of vegetation. Around three-quarters of the route has incomplete utility undergrounding as shown in Table 1 and Figure 1.

Spruce Street is a north-south minor arterial street. It is primarily residential and provides access to Cragmont School, Step One Nursery School, and Congregation Beth El pre-school and synagogue. There are bulb-outs at the intersection of Spruce Street and Rose Street, which narrow Spruce Street. The evacuation route along Spruce Street is 2 miles long. Overhead lines are present for 1.8 miles between Michigan Avenue and Rose Street, and between Cedar Street and Hearst Avenue. All the overhead utilities are distribution lines.

Oxford Street is a north-south minor arterial street. It is primarily residential with a few houses and apartment buildings. The evacuation route along Oxford Street is 0.25 miles long from Rose Street to Cedar Street. Overhead lines are present for the entire length. All of the overhead utilities are distribution lines.

Rose Street is an east-west residential hillside collector street. The evacuation route along Rose Street is 0.06 miles connecting Oxford Street and Spruce Street, with overhead lines present for the entire length.

Grizzly Peak Boulevard is a north-south minor arterial street and is a major access road for mutual responders from both El Cerrito and Oakland, and provides access to the Space Sciences Laboratory and other University of California properties. Shepherd of the Hills Lutheran Church resides near the intersection of Grizzly Peak Boulevard with Spruce Street. The evacuation route along Grizzly Peak Boulevard is 2.29 miles long from the City limit near Centennial Drive to Spruce Street. Overhead lines are present for 1.4 miles from Cragmont Avenue to Latham Lane and from Hill Road to the City limit near Centennial Drive.

Evacuation Route: Spruce/Oxford/Rose/Grizzly Peak (4.60 miles)						
Street	**Segment**			**Segment Length (mi)**	**Utility Length (mi)**	
					OH	**UG**
Grizzly Peak	Centennial Dr	to	Arcade Ave	0.60	0.44	0.16
Grizzly Peak	Arcade Ave	to	Lathan Ln	0.67	-	0.63
Grizzly Peak	Lathan Ln	to	Spruce St	1.02	0.91	0.06
Spruce St	Grizzly Peak Blvd	to	Rose St	1.69	1.45	0.24
Rose St	Spruce St	to	Oxford	0.06	0.06	-
Oxford	Rose	to	Cedar	0.25	0.25	-
Spruce St	Cedar	to	Hearst Ave	0.31	0.31	-
Total of each OH/UG Utilities					3.42	1.09
Percentage of each OH/UG Utilities					76%	24%
Total Utilities					4.51	

Table 1: Detailed utility status for route Spruce/Oxford/Grizzly Peak

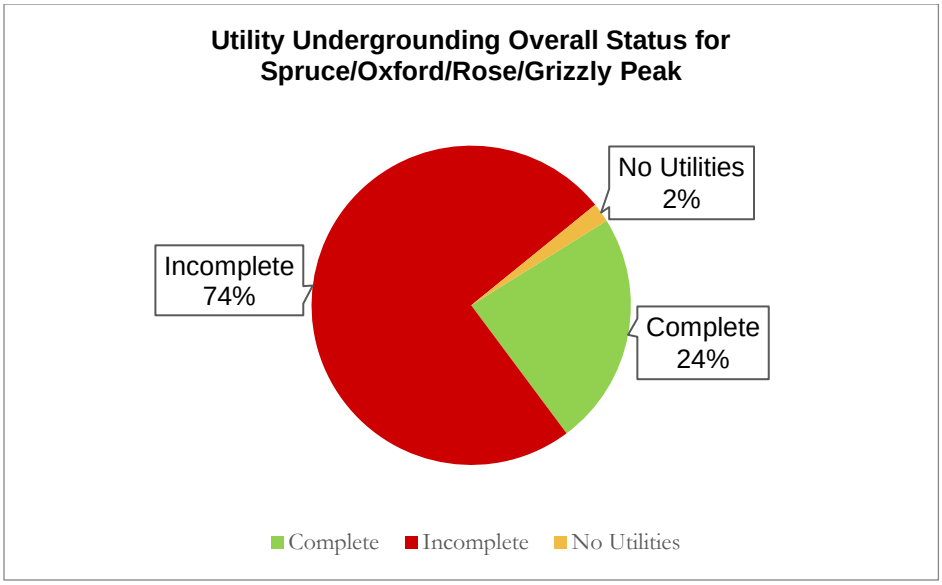


Figure 1

Marin Avenue Route

Marin Avenue is an east-west principal arterial street with primarily residential land uses along the evacuation route. It provides access to Cragmont School at the intersection with Spruce Street, Angel Academy Pre-school near the intersection with Oxford Ave, and Fire Station 4 at the intersection with The Alameda. Around 70% of the route is inside the boundary of Fire Zone 2. The evacuation route along Marin Avenue is 1.3 miles long from Tulare Avenue to Grizzly Peak Boulevard. Overhead lines are present for almost the entire length with a 94% incompletion rate for utility undergrounding as shown in Table 2 and Figure 2.

Evacuation Route: Marin Ave (1.32 miles)						
Street	**Segment**			**Segment Length (mi)**	**Utility Length (mi)**	
					OH	**UG**
Marin Ave	Tulare Ave	to	The Traffic Circle at Arlington Ave	0.53	0.53	-
Marin Ave	The Traffic Circle at Arlington Ave	to	Grizzly Peak	0.79	0.71	0.08
Total of each OH/UG Utilities					1.24	0.08
Percentage of each OH/UG Utilities					94%	6%
Total Utilities					1.32	

Table 2: Detailed utility status for route Marin Avenue

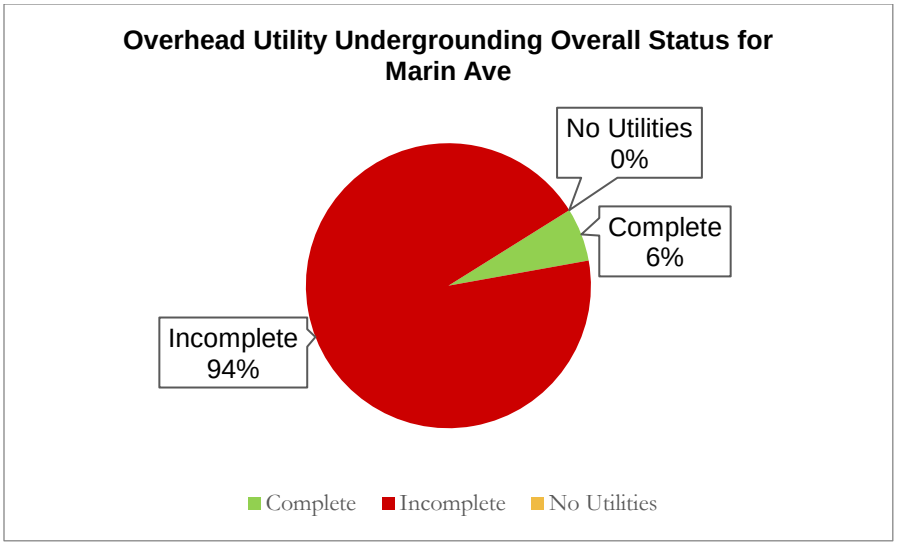


Figure 2

Gilman Street, Hopkins Street Route

This evacuation route is partially inside the boundary of Fire Zone 2 and connects to Interstate 80/580 with a railroad crossing near Interstate 80. It is composed of mostly residential areas towards the east side and mostly commercial areas towards the west side. It has over 90% incompletions for utility undergrounding as shown in Table 3 and Figure 3.

Gilman Street is an east-west principal arterial street connected to Interstate 80, and provides access to St. Ambrose Church. It is mostly commercial between Interstate 80 and San Pablo Avenue. However, between San Pablo Avenue and Hopkins Street, it is mostly residential. The evacuation route along Gilman Street is 1.2 miles long. Overhead lines are present for over 90% of the entire length.

Hopkins Street is an east-west major collector street. It is primarily residential with a few commercial buildings and a park, and it provides access to the North Branch Public Library, a couple of preschools, school facilities for Martin Luther King Junior High School, and two churches. The evacuation route along Hopkins Street is 0.9 miles long from Gilman Street to Sutter Street. Overhead lines are present for almost 90% of the entire length.

Evacuation Route: Gilman/Hopkins (2.16 miles)						
Street	**Segment**			**Segment Length (mi)**	**Utility Length (mi)**	
					OH	**UG**
Gilman	Interstate 80 Ramp	to	San Pablo Ave	0.62	0.57	0.05
Gilman/Hopkins	San Pablo Ave	to	The Alameda	1.23	1.20	0.03
Hopkins	The Alameda	to	Sutter St	0.31	0.20	0.11
Total of each OH/UG Utilities					1.97	0.19
Percentage of each OH/UG Utilities					91%	9%
Total Utilities					2.16	

Table 3: Detailed utility status for route Gilman/Hopkins

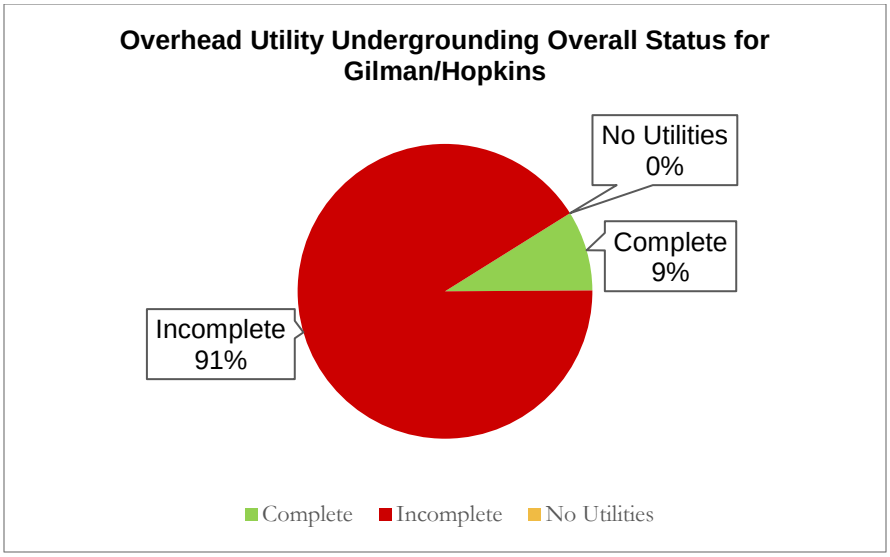


Figure 3

San Pablo Avenue, Cedar Street Route

This evacuation route is partially inside the boundary of Fire Zone 2 and connects to Gilman Street, which leads to Interstate 80. It has almost 80% incompletions for utility undergrounding as shown in Table 4 and Figure 4.

San Pablo Avenue is a north-south principal arterial street and is also State Highway Route 123 under Caltrans jurisdiction, with commercial land uses along the street frontage. The evacuation route along San Pablo Avenue, connecting Gilman Street and Cedar Street, is 0.4 miles long. There are no overhead lines along the evacuation route, and the whole street connecting Albany and Oakland has been completely undergrounded.

Cedar Street is an east-west minor arterial street. It is primarily residential, with a few businesses and provides access to two churches. The evacuation route along Cedar Street is 2.0 miles from San Pablo Avenue to La Loma Avenue. Overhead lines are present for almost the entire length.

Evacuation Route: San Pablo/Cedar (2.38 miles)						
Street	**Segment**			**Segment Length (mi)**	**Utility Length (mi)**	
					OH	**UG**
San Pablo	Gilman	to	Cedar	0.37	-	0.37
Cedar	Cedar	to	Juanita Way	0.39	0.32	0.04
Cedar	Juanita Way	to	MLK Jr Way	0.71	0.71	-
Cedar	MLK Jr Way	to	La Loma Ave	0.91	0.84	0.07
Total of each OH/UG Utilities					1.87	0.48
Percentage of each OH/UG Utilities					80%	20%
Total Utilities					2.35	

Table 4: Detailed utility status for route San Pablo/Cedar

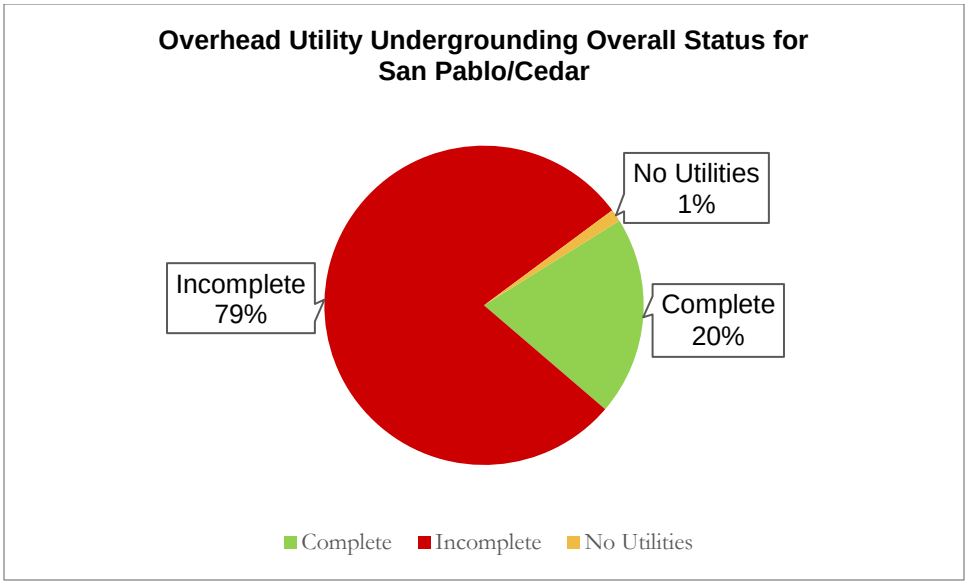


Figure 4

University Avenue, 6th Street, Dwight Way Route

This evacuation route is partially inside the boundary of Fire Zone 2, reaches the edge of Fire Zone 3, and connects to Interstate 80. It is composed of mostly residential areas towards the east side and mostly commercial areas towards the west side. Around one-third of the route only allows one-way traffic to the east, which is from Martin Luther King Junior Way to Piedmont Crescent on Dwight Way. It has around 93% incompletions for utility undergrounding as shown in Table 5 and Figure 5.

University Avenue is an east-west principal arterial street connected to Interstate 80 with primarily commercial land uses along the street frontage. The evacuation route along University Avenue is 0.3 miles from Interstate 80 to 6th Street. For the entirety of the street spanning from Interstate 80 to the University of California campus, there is only a small segment with overhead lines near Interstate 80. This street might be a better option for an evacuation route that provides safer access to citizens than many existing routes with overhead lines.

6th Street is a north-south minor arterial street. It is primarily residential with a few businesses. The evacuation route along 6th Street is 0.6 miles long connecting University Avenue and Dwight Way. Overhead lines are present for the entire length.

Dwight Way is an east-west minor arterial street. It is primarily residential with a few businesses and provides access to two urgent care centers, a couple of churches, a preschool, university residence halls, and many apartment buildings. The evacuation route along Dwight Way is 2.68 miles long from 6th Street to the street end near Fernwald Rd. Overhead lines are present for the entire length. Almost half of this segment only allows for one-way traffic to the east, however, evacuation routes should provide access to the Interstate 80 in the west side. Therefore, further investigations and discussions should be carried out for modifying the existing evacuation route.

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

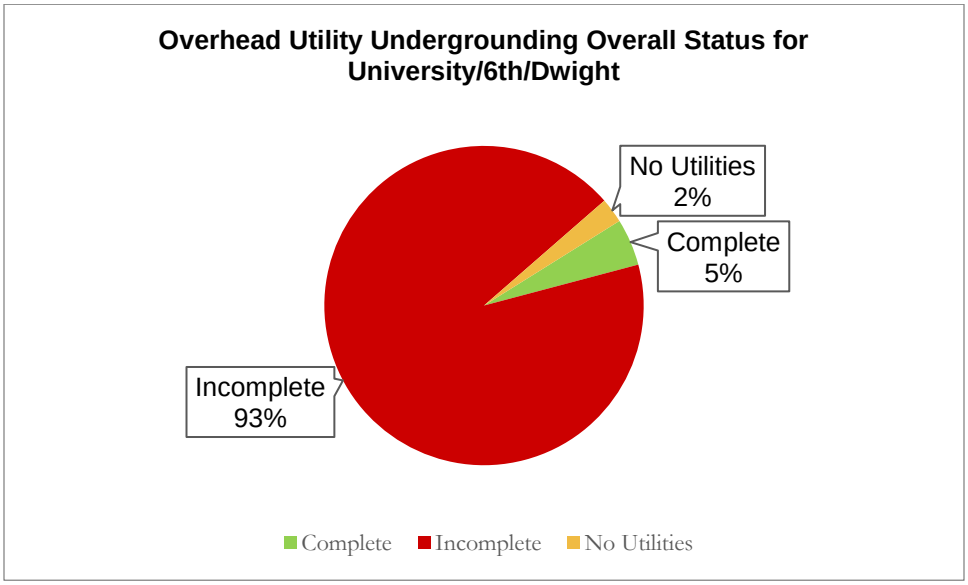


Figure 5

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

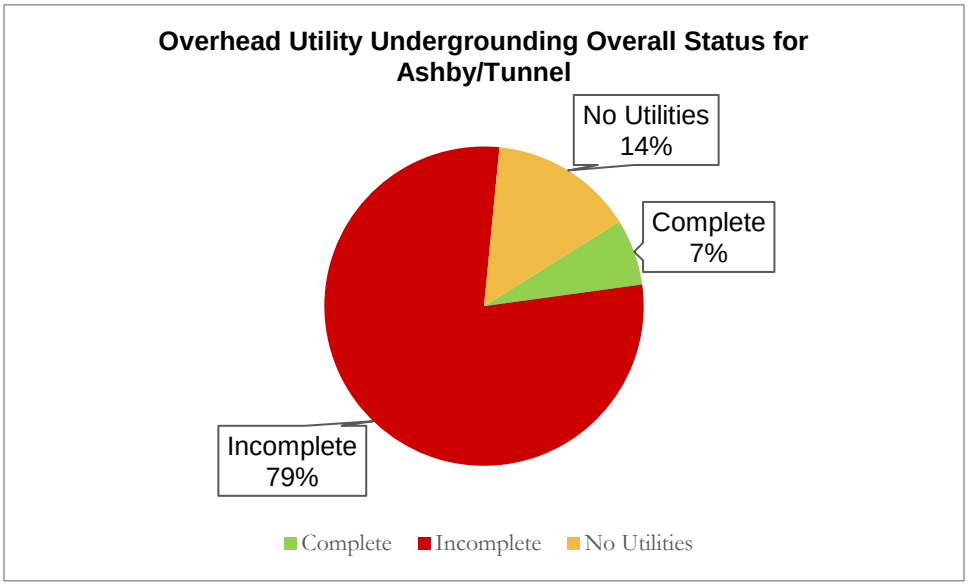


Figure 6

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

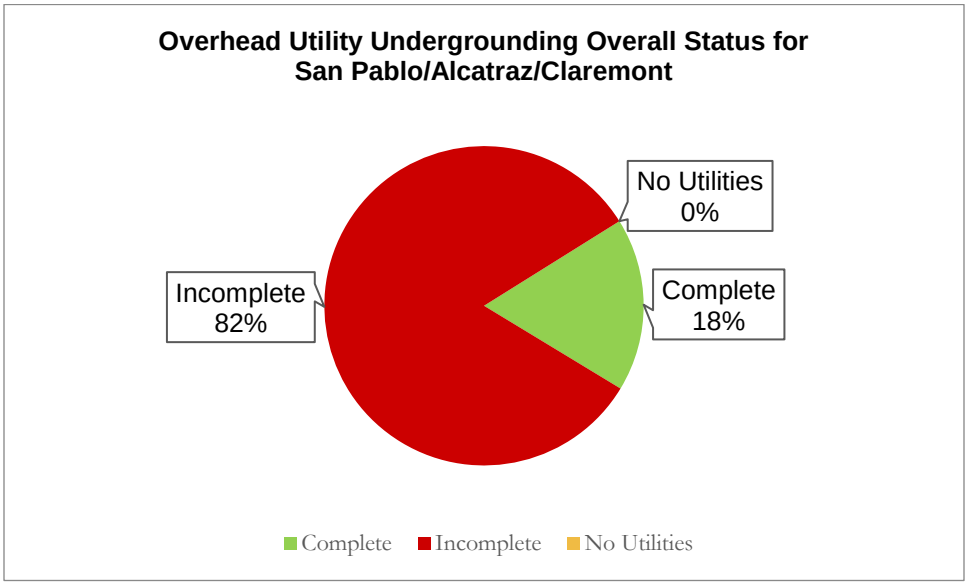


Figure 7

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

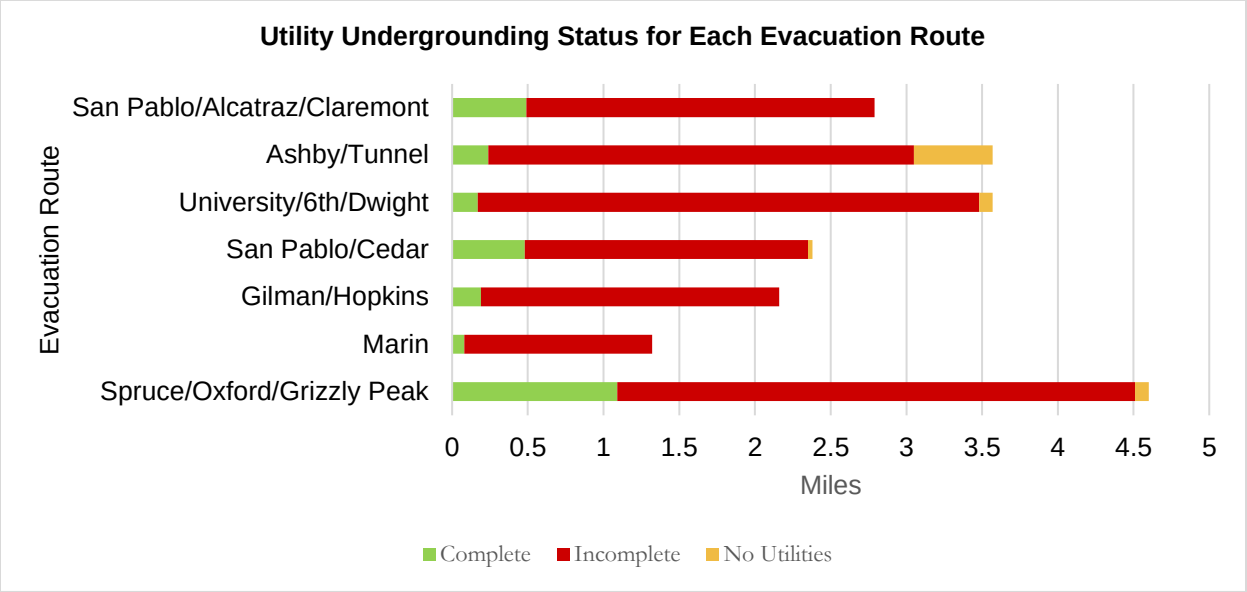


Figure 8

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 recent bid unit prices from recent local agency utility undergrounding projects determined a general cost for utility undergrounding in the San Francisco Bay Area. These projects are publicly bid, represent 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, FY 2023-Programmatic Approach and FY 2023-CIP Approach, refer to Appendix D.

Streetlights

The cost for streetlight improvements is $500,000 per mile (FY 2019) and $585,000 per mile (FY 2023).

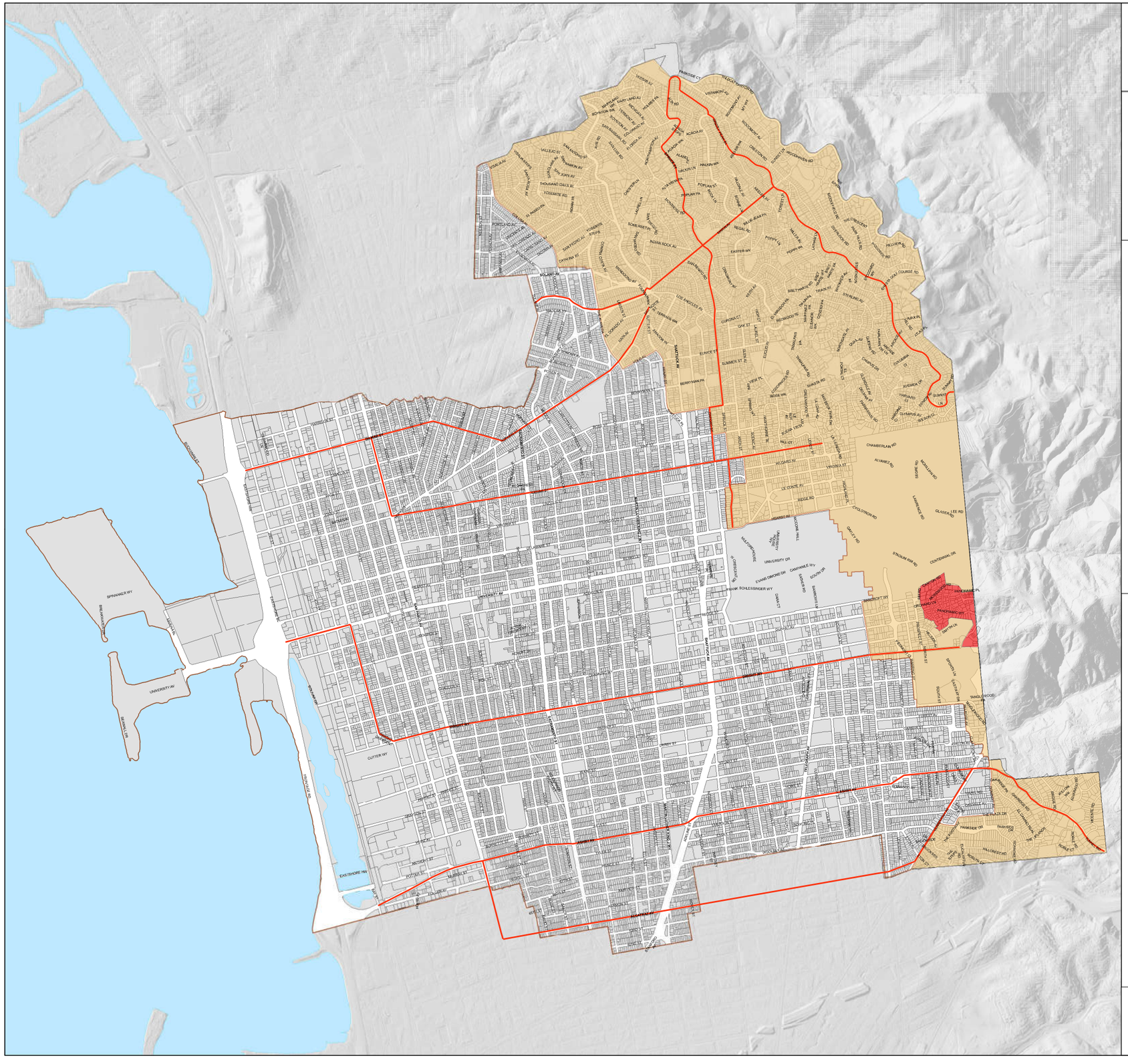
Summary of Total Program Undergrounding Costs

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

EAST/WEST EVACUATION ROUTES



Disclaimer:
The City of Berkeley makes no representations about the suitability of the information contained on this map for any purpose. The map is provided "as is" without warranty, either express or implied, of any kind. The City of Berkeley hereby disclaims all warranties and conditions with regard to this information, including all implied warranties and conditions of merchantability, fitness for a particular purpose, the quality of the material, title or non-infringement. In no event shall the City of Berkeley be liable for any special, indirect, incidental or consequential damages or any other damages whatsoever, including but not limited to loss of use, data or profits, under any contract, tort, strict liability or other legal or equitable theory arising out of or in connection with the use or performance of information available from this map. The published map may contain technical inaccuracies or typographical errors. Changes are periodically added to the information herein. The City of Berkeley may make improvements and/or changes to the map at any time.

N

0 1,150 2,300 4,600 Feet

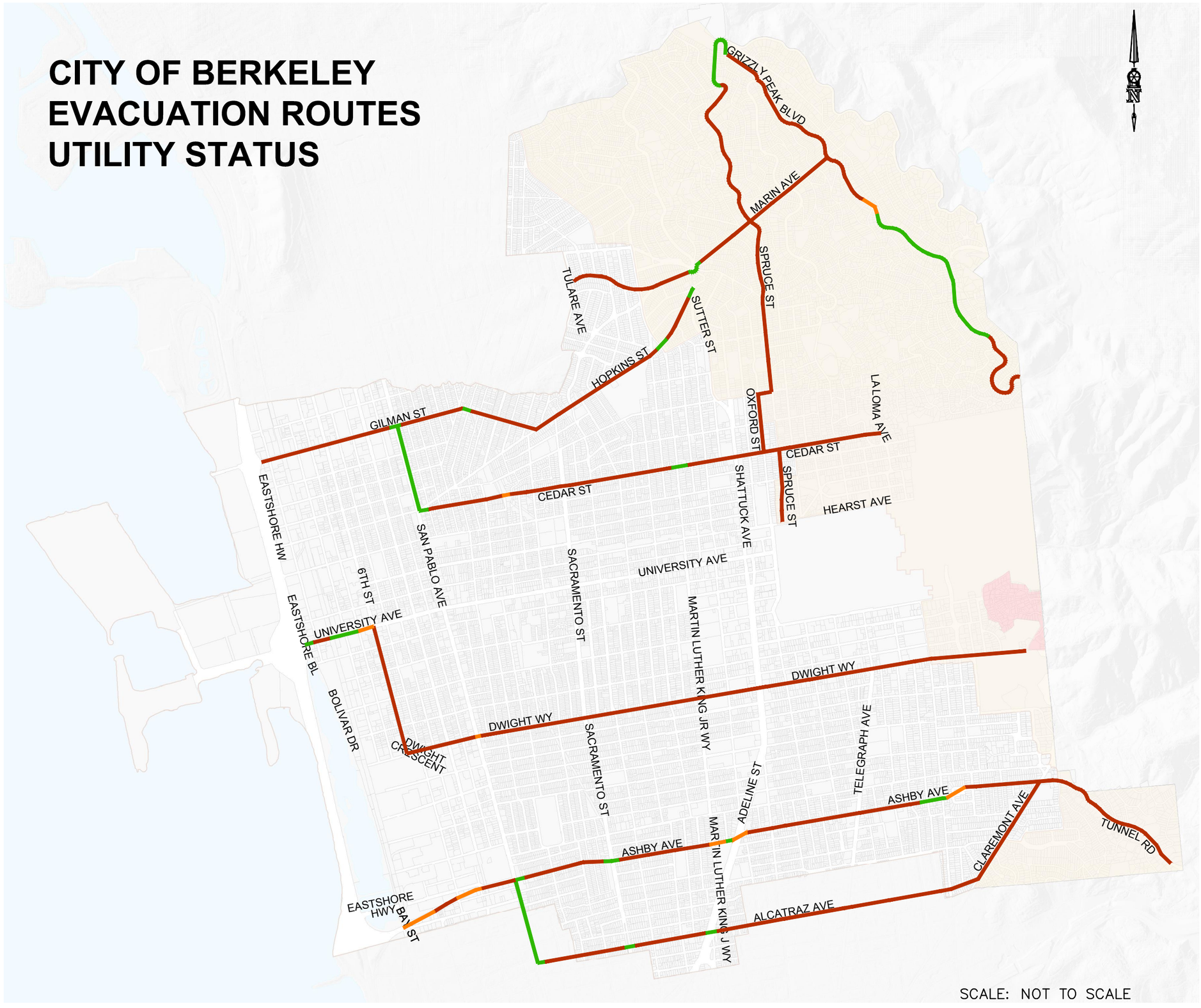
CITY OF BERKELEY
Information Technology Department
2180 Milvia Street, Berkeley CA 94704
(510) 981-6525

Appendix B

Map of Existing Overhead and Underground Facilities

Along City's Major Evacuation Routes

CITY OF BERKELEY
EVACUATION ROUTES
UTILITY STATUS



SCALE: NOT TO SCALE

LEGEND

- UNDERGROUND DRY UTILITIES
- OVERHEAD DRY UTILITIES
- NO DRY UTILITIES

Bellecci & Associates, inc.
Civil Engineering • Land Surveying
7077 Koll Center Pkwy, Suite 210 Pleasanton, CA 94566
Phone (925) 681-4885
www.bellecci.com

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

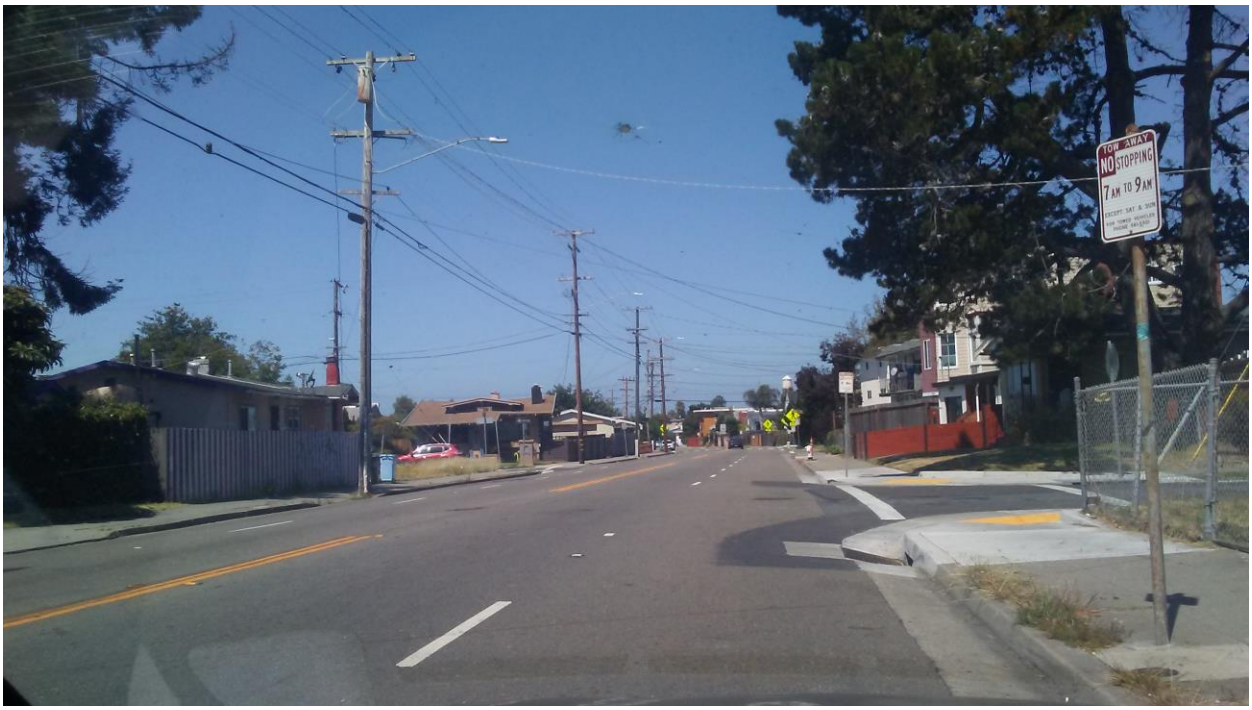
Gilman St – Facing West

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	$ -	$ -
University Ave	3	0.07	MILE	$ 5,440,000	$ 380,800
Ashby Ave	5	2.21	MILE	$ 6,800,000	$ 15,028,000
Tunnel Road	3	0.6	MILE	$ 5,440,000	$ 3,264,000
Gilman St	5	1.16	MILE	$ 6,800,000	$ 7,888,000
Dwight Way	4	2.68	MILE	$ 6,120,000	$ 16,401,600
Hopkins	2	0.81	MILE	$ 4,760,000	$ 3,855,600
Alcatraz Ave	1	1.81	MILE	$ 4,080,000	$ 7,384,800
Claremont Ave	1	0.49	MILE	$ 4,080,000	$ 1,999,200
Rose	2	0.06	MILE	$ 4,760,000	$ 285,600
Marin Ave	4	1.24	MILE	$ 6,120,000	$ 7,588,800
Spruce St	2	1.76	MILE	$ 4,760,000	$ 8,377,600
Grizzly Peak	2	1.35	MILE	$ 4,760,000	$ 6,426,000
Oxford St	2	0.25	MILE	$ 4,760,000	$ 1,190,000
Sixth St	3	0.56	MILE	$ 5,440,000	$ 3,046,400
Cedar St	3	1.87	MILE	$ 5,440,000	$ 10,172,800
Total		**16.92**			**$ 93,300,000**
Total (including 10% contingency)					**$ 102,630,000**
Per Mile Unit Cost (including 10% contingency)					**$ 6,100,000**

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	$ -	$ -
University Ave	3	0.07	MILE	$ 6,364,000	$ 445,480
Ashby Ave	5	2.21	MILE	$ 7,955,000	$ 17,580,550
Tunnel Road	3	0.6	MILE	$ 6,364,000	$ 3,818,400
Gilman St	5	1.16	MILE	$ 7,955,000	$ 9,227,800
Dwight Way	4	2.68	MILE	$ 7,160,000	$ 19,188,800
Hopkins	2	0.81	MILE	$ 5,569,000	$ 4,510,890
Alcatraz Ave	1	1.81	MILE	$ 4,773,000	$ 8,639,130
Claremont Ave	1	0.49	MILE	$ 4,773,000	$ 2,338,770
Rose	2	0.06	MILE	$ 5,569,000	$ 334,140
Marin Ave	4	1.24	MILE	$ 7,160,000	$ 8,878,400
Spruce St	2	1.76	MILE	$ 5,569,000	$ 9,801,440
Grizzly Peak	2	1.35	MILE	$ 5,569,000	$ 7,518,150
Oxford St	2	0.25	MILE	$ 5,569,000	$ 1,392,250
Sixth St	3	0.56	MILE	$ 6,364,000	$ 3,563,840
Cedar St	3	1.87	MILE	$ 6,364,000	$ 11,900,680
Total		**16.92**			**$ 109,100,000**
Total (including 10% contingency)					**$ 120,010,000**
Per Mile Unit Cost (including 10% contingency)					**$ 7,100,000**

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	$ -	$ -
University Ave	3	0.07	MILE	$ 7,394,000	$ 517,580
Ashby Ave	5	2.21	MILE	$ 9,242,000	$ 20,424,820
Tunnel Road	3	0.6	MILE	$ 7,394,000	$ 4,436,400
Gilman St	5	1.16	MILE	$ 9,242,000	$ 10,720,720
Dwight Way	4	2.68	MILE	$ 8,318,000	$ 22,292,240
Hopkins	2	0.81	MILE	$ 6,469,000	$ 5,239,890
Alcatraz Ave	1	1.81	MILE	$ 5,545,000	$ 10,036,450
Claremont Ave	1	0.49	MILE	$ 5,545,000	$ 2,717,050
Rose	2	0.06	MILE	$ 6,469,000	$ 388,140
Marin Ave	4	1.24	MILE	$ 8,318,000	$ 10,314,320
Spruce St	2	1.76	MILE	$ 6,469,000	$ 11,385,440
Grizzly Peak	2	1.35	MILE	$ 6,469,000	$ 8,733,150
Oxford St	2	0.25	MILE	$ 6,469,000	$ 1,617,250
Sixth St	3	0.56	MILE	$ 7,394,000	$ 4,140,640
Cedar St	3	1.87	MILE	$ 7,394,000	$ 13,826,780
Total		**16.92**			**$ 126,800,000**
Total (including 10% contingency)					**$ 139,480,000**
Per Mile Unit Cost (including 10% contingency)					**$ 8,200,000**

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

References

- *AT&T Mapping "External Map Request for Bellecci And Associates",* prepared by AT&T, July 17, 2019.
- *Average Total Daily Traffic Volume*, prepared by City of Berkeley Traffic Engineering, n.d.
- *Baseline Study for the Development of a Utility Undergrounding Program*, prepared by Harris & Associates, July 22, 2016.
- *California Highway System,* Caltrans, Copyright @ 2018, *https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=026e830c914c495797c969a3e5668538*
- *Century Link (Level 3) Mapping "Berkeley"*, provided by Century Link, August 1, 2019.
- *City and County of San Francisco Board of Supervisors, Budget and Legislative Analyst* - Utility Wire Undergrounding Costs, dated March 2, 2015
- *Comcast Mapping "Berkeley"*, provided by Comcast, June 27, 2019.
- *Conceptual Study to Underground Utility Wires in Berkeley*, City of Berkeley Public Works Commission, Disaster and Fire Safety Commission, and Transportation Commission, January 2018.
- *East/West Evacuation Routes*, prepared by City of Berkeley Information Technology Department, received on June 25, 2019.
- *Highway Design Manual 6th Edition*, Caltrans, December 14, 2018.
- *Land Use Zoning Districts*, prepared by City of Berkeley Planning & Development Department, March 20, 2014.
- *Out of Sight, Out of Mind*, prepared by Edison Electric Institute, January 2013.
- *Program Review California Overhead Conversion Program, Rule 20A For Years 2011-2015*, prepared by California Public Utilities Commission, November 23, 2016.
- *Road Function Classifications,* prepared by Federal Highway Administration, November 2000.
- *Verizon Mapping "Berkeley"*, provided by Verizon, September 18, 2019.

December 10 – Regular

15. Referral Response: Telegraph Avenue Loading Zone and Customer Parking Pilot Project Evaluation and Next Steps
From: City Manager
Recommendation: Adopt a Resolution marking the successful completion of the Telegraph Avenue Loading Zone and Customer Parking pilot project, making the pilot parking changes permanent, and authorizing the City Traffic Engineer to establish similar loading zone and/or customer parking regulations in all parking meter districts citywide, based on staff parking demand analysis, at the request of adjacent merchants, and/or in consultation with local business associations.
Financial Implications: See report
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Adopted Resolution No. 69,222–N.S.

18. Contract No. 9893B Amendment: ABM Industries for Expanding Electric Vehicle Charging Station Operations and Extended Maintenance Program
From: City Manager
Recommendation: Adopt a Resolution authorizing the City Manager to execute an amendment to Contract No. 9893B with ABM Industries to extend the term by three years, purchase additional Electric Vehicle (EV) charging stations, and provide network operations and maintenance, including extended warranty services, in the amount of $131,556 for a total Contract not to exceed $557,552 through June 30, 2026.
Financial Implications: Various Funds - $131,556
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Adopted Resolution No. 69,225–N.S.

29. Implement Residential Preferential Parking (RPP) Program on the 1500 Block of Lincoln Street
From: City Manager
Recommendation: Conduct a public hearing and upon its conclusion, adopt a Resolution amending Resolution No. 56,508-N.S. Section 25N by adding a subsection to implement Residential Preferential Parking (RPP) on the 1500 block of Lincoln Street in RPP Area N.
Financial Implications: General Fund - $2,000
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: M/S/C (Arreguin/Wengraf) to hold over Item 29 to January 21, 2020.
Vote: All Ayes.

31. Approval of a Memorandum of Understanding between the City of Berkeley and BART on Implementation of State Law AB 2923 at the Ashby and North Berkeley BART Stations and Establishment of a Community Advisory Group
From: Mayor Arreguin, and Councilmembers Bartlett and Kesarwani
Recommendation:
1. Approve a Memorandum of Understanding (MOU) between the City of Berkeley and the Bay Area Rapid Transit District (BART) to establish a process for cooperatively pursuing the implementation of Assembly Bill 2923 (AB 2923, Stats. 2018, Chp. 1000) at the Ashby and North Berkeley BART Stations. This action is pursuant to unanimous City Council direction on

May 9, 2019, to direct the City Manager to "engage with BART to develop an MOU that outlines the project planning process including feasibility analysis, project goals, and roles and responsibilities; and direct that the MOU return to Council for adoption."
2. Establish a Community Advisory Group (CAG) for the purposes of providing input:
-To the City Planning Commission as it considers zoning standards that will be consistent with the City's obligations under AB 2923 for the Ashby and North Berkeley BART station areas; and -To the City and BART as the parties establish a joint vision and priorities document that will be incorporated in eventual Requests for Proposal/Requests for Qualifications for potential developers of the BART Properties.
Financial Implications: See report
Contact: Jesse Arreguin, Mayor, (510) 981-7100

Action: 73 speakers. M/S/C (Arreguin/Kesarwani) to:
Pass the recommendation in the item, authorizing the Mayor and City Manager to execute a Memorandum of Understanding between the City of Berkeley and the Bay Area Rapid Transit District to establish a process for cooperatively pursuing the implementation of Assembly Bill 2923 at the Ashby and North Berkeley BART Stations;

And correct inadvertent omissions in the drafting of the MOU, including a reference to General Plan policy LU-32 on page 2, and noting that the MOU will need to be updated with final language of the Adeline Corridor Specific Plan once it is adopted by Council, and clarify wherever there is a reference to developer to notate;

And to establish a Community Advisory Group, with members recommended by the Council and appointed by the Mayor and Councilmembers Kesarwani and Bartlett, for the purposes of providing input to the Planning Commission as it considers Council Action Items zoning standards that will be consistent with the City's obligations under Assembly Bill 2923 for the Ashby and North Berkeley BART station areas;

And to refer issues arising from tonight's Council discussion, including requesting a broader access study contingent on funding, seeking additional affordable housing funds, and requiring that the Joint Vision and Priorities Document and the Access Study return to Council for approval, to the City Manager and the Planning Commission process.
Vote: All Ayes.

December 3 – Regular

1. Amend BMC Chapter 14.52 Adding the North Shattuck Metered Parking Area to the goBerkeley Program
From: City Manager
Recommendation: Adopt second reading of Ordinance No. 7,679-N.S. amending Berkeley Municipal Code (BMC) Chapter 14.52 to add the North Shattuck metered parking area to the goBerkeley parking program.
First Reading Vote: Ayes – Kesarwani, Davila, Bartlett, Hahn, Wengraf, Robinson, Droste, Arreguin; Noes – None; Abstain – None; Absent – Harrison (recused).

Financial Implications: See report
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Adopted second reading of Ordinance No. 7,679-N.S.

21. Milvia Bikeway Project Conceptual Design
From: City Manager
Recommendation: Conduct a public hearing and upon conclusion, adopt a Resolution approving the conceptual design of the Milvia Bikeway Project, including installation of a protected bikeway and the removal or modification of traffic lanes and on-street parking, and specified changes from two-way to one-way traffic operations, as necessary, and directing the City Manager to direct staff to proceed with the detailed engineering design of the project.
Financial Implications: None
Contact: Phillip Harrington, Public Works, (510) 981-6300
Public Testimony: The Mayor opened the public hearing. 12 speakers.
M/S/C (Wengraf/Davila) to close the public hearing.
Vote: Ayes – Kesarwani, Davila, Barlett, Harrison, Wengraf, Robinson, Droste, Arreguin; Noes – None; Abstain – None; Absent – Hahn.
Action: M/S/C (Harrison/Robinson) to adopt Resolution No. 69,204–N.S.
Vote: All Ayes.

26. goBerkeley Residential Shared Parking Pilot Project Update
(Continued from November 19, 2019)
From: City Manager
Recommendation: Receive a presentation providing an update on the Residential Shared Parking Pilot project, and offer any comments to staff on the implementation of the project.
Financial Implications: None
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Item 26 held over to January 28, 2019.

November 19 – Regular

6. Priority Development Area Nomination – North Berkeley BART Station
From: City Manager
Recommendation: Adopt a Resolution supporting the nominating of the North Berkeley BART station as a Priority Development Area.
Financial Implications: See report
Contact: Timothy Burroughs, Planning and Development, (510) 981-7400
Action: Adopted Resolution No. 69,184–N.S.
Vote: Ayes – Kesarwani, Bartlett, Harrison, Hahn, Wengraf, Robinson, Droste, Arreguin; Noes – None; Abstain – Davila.

7. Contract: Redgwick Construction Company for Ninth Street Bicycle Boulevard Pathway Extension Phase II
From: City Manager
Recommendation: Adopt a Resolution:

1. Approving plans and specifications for the Ninth Street Bicycle Boulevard Pathway Extension Phase II, ("Ninth Street Pathway – Phase II", or "Project"), Specification No. 19-11331-C; and
2. Rejecting the bid protest of Mark Lee and Yong Kay Inc., doing business as Bay Construction Company, the third-lowest bidder; and
3. Accepting the bid of J. A. Gonsalves & Son Construction, Inc., the second-lowest responsive and responsible bidder; and
4. Accepting the bid of Redgwick Construction Company, the lowest responsive and responsible bidder; and
5. Authorizing the City Manager to execute a contract with Redgwick Construction Company and any amendments, extensions, and/or change orders until completion of the Project in accordance with the approved plans and specifications, in an amount not to exceed $1,481,417, which includes a contingency of ten percent.

Financial Implications: See report
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Adopted Resolution No. 69,185–N.S.

17. goBerkeley Residential Shared Parking Pilot Project Update
From: City Manager
Recommendation: Receive a presentation providing an update on the Residential Shared Parking Pilot project, and offer any comments to staff on the implementation of the project.
Financial Implications: None
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: Item 17 continued to December 3, 2019.

November 12 – Regular

10. Stop Sign Warrant Policy
From: Transportation Commission
Recommendation: Adopt the attached Berkeley Stop Sign Warrant to supplement state law for determining when stop signs may be warranted to protect pedestrians, wheelchair users and/or bicyclists in the City of Berkeley.
Financial Implications: See report.
Contact: Farid Javandel, Commission Secretary, (510) 981-6300
Action: Approved recommendation.

12. Budget Referral: BART Station Environmental Planning
From: Mayor Arreguin
Recommendation: Refer to the budget process $250,000 for BART station planning. This budget allocation will allow the initiation of environmental review required as part of developing and adopting zoning for the Ashby and North Berkeley BART Stations that is in conformance with Assembly Bill 2923.
Financial Implications: $250,000
Contact: Jesse Arreguin, Mayor, (510) 981-7100
Action: Councilmembers Robinson, Kesarwani, and Bartlett added as co-sponsors.

Approved recommendation.

17. Budget Referral: Evaluation and Implementation of Pedestrian and Bicycle Safety Along Oxford Street
From: Councilmember Harrison
Recommendation: Refer $75,000 to the FY20 2019 AAO Process for the purpose of assessing, identifying, and implementing improvements to pedestrian and bicycle safety across Oxford Street, particularly between University Avenue and Bancroft Street.
Financial Implications: Excess Equity - $75,000
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140
Action: Moved to Action Calendar. 0 speakers. M/S/C (Arreguin/Hahn) to refer $75,000 to the FY20 2019 AAO Process for the purpose of assessing, identifying, and implementing improvements to pedestrian and bicycle safety across Oxford Street, particularly between University Avenue and Bancroft Street.
Vote: Ayes – Kesarwani, Harrison, Hahn, Wengraf, Robinson, Droste, Arreguin; Noes – None; Abstain – Davila; Absent – Bartlett.

21. Amend BMC Chapter 14.52 Adding the North Shattuck Metered Parking Area to the goBerkeley Program
(Continued from October 29, 2019)
From: City Manager
Recommendation: Conduct a public hearing, and upon conclusion adopt first reading of an Ordinance amending Berkeley Municipal Code (BMC) Chapter 14.52 to add the North Shattuck metered parking area to the goBerkeley parking program.
Financial Implications: See report
Contact: Phillip Harrington, Public Works, (510) 981-6300
Public Testimony: The Mayor opened the public hearing. 2 speakers.
M/S/C (Wengraf/Hahn) to close the public hearing.
Vote: Ayes – Kesarwani, Davila Bartlett, Hahn, Wengraf, Robinson, Droste, Arreguin; Noes - None; Abstain – None; Absent – Harrison (recused – lives within 500 feet of the proposed area).
Action: M/S/C (Hahn/Wengraf) to adopt first reading of Ordinance No. 7,679-N.S. amending Berkeley Municipal Code (BMC) Chapter 14.52 to add the North Shattuck metered parking area to the goBerkeley parking program, and accept the revised material in the Supplemental 1 Communications Packet. Second reading scheduled for December 3, 2019.
Vote: Ayes – Kesarwani, Davila Bartlett, Hahn, Wengraf, Robinson, Droste, Arreguin; Noes - None; Abstain – None; Absent – Harrison (recused – lives within 500 feet of the proposed area).

29. Referral: Measures to Address Traffic Enforcement and Bicycle Safety
(Continued from October 29, 2019. Item contains revised material.)
From: Councilmember Robinson
Recommendation:
1. Refer to the Transportation Commission to consider a Resolution deprioritizing enforcement against the Idaho Stop convention for persons operating a bicycle, in an empty intersection after the operator has yielded to any other road users with the right of way, by prohibiting the use of

any City funds or resources in assisting in the enforcement or issuance of citations for bicyclist violations of California Vehicle Code Section 22450(a).
2. Refer to the City Manager to establish the opportunity for bicyclists to participate in a ticket diversion program that would provide safety education as an alternative to monetary fines related to other infractions, and to ensure integration of Vision Zero principles in implementation of state Office of Traffic Safety grants. Staff should consider either the creation of a City of Berkeley-operated ticket diversion program or cooperation with ticket diversion programs operated by neighboring jurisdictions.
3. Refer to the City Manager to develop a plan to calm and divert motor vehicle traffic on bicycle boulevards to provide people who bicycle and walk a safe, comfortable and convenient mobility experience by adding or reconfiguring stop signage and other traffic calming measures, per the recommendations of the 2017 Bicycle Plan.
Financial Implications: See report
Contact: Rigel Robinson, Councilmember, District 7, (510) 981-7170
Action: 8 speakers. M/S/C (Hahn/Robinson) to:
1. Refer to the Transportation Commission to consider a Resolution deprioritizing enforcement against the Idaho Stop convention for persons operating a bicycle, in an empty intersection after the operator has yielded to any other road users with the right of way, by limiting the use of any City funds or resources in assisting in the enforcement or issuance of citations for bicyclist violations of California Vehicle Code Section 22450(a), and to develop a process for evaluating the before and after effects on safety.
2. Refer to the City Manager to establish the opportunity for bicyclists to participate in a ticket diversion program that would provide safety education as an alternative to monetary fines related to other infractions, and to ensure integration of Vision Zero principles in implementation of state Office of Traffic Safety grants. Staff should consider either the creation of a City of Berkeley-operated ticket diversion program or cooperation with ticket diversion programs operated by neighboring jurisdictions.
3. Refer to the City Manager to develop a plan to calm and divert motor vehicle traffic on bicycle boulevards to provide people who bicycle and walk a safe, comfortable and convenient mobility experience by adding or reconfiguring stop signage and other traffic calming measures, per the recommendations of the 2017 Bicycle Plan.
Vote: All Ayes.

November 12 – Special

1a. Traffic Circle Policy and Program Recommendations
From: Traffic Circle Policy Task Force
Recommendation: Adopt a Resolution to approve the Traffic Circle Policy as outlined in the report and refer to the traffic engineer for codification. Integrate the Community Common Space Stewardship Program into the "Adopt a Spot Initiative," which the City Council approved on April 23, 2019 (Item #33), and request that the City Council refer it to the Traffic Circle Task Force, rather than the Parks and Public Works Commissions, for the purpose of development, outlining criteria and environmental benefits, program costs and staffing. Refer additional traffic calming measures at Ellsworth for the intersections with Dawn Redwoods to the mid-year budget process and request mitigation funds from East Bay

Municipal Utility District (EBMUD) due to the impact on these streets from their Wildcat Pipeline Project.
Refer to the City Manager:
1. Create the Community Common Space Stewardship Program as described in the report.
2. Refer the additional staff and material costs of this program to the budget process.
Financial Implications: See report
Contact: Tano Trachtenberg, Commission Secretary, (510) 981-7100

1b. Technical Memo on Traffic Circle Planting Policies
From: City Manager
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: 47 speakers. M/S/C (Arreguin/Davila) to:
1. Adopt Resolution No. 69,164–N.S. approving the Traffic Circle Policy as outlined in the report from the Traffic Circle Policy Task Force, and revised as follows:
a. Add a Whereas clause to the resolution emphasizing the importance of pedestrian and bicyclist safety.
b. Remove the following language from the Policy, and refer the removed language to the Facilities, Infrastructure, Transportation, Environment & Sustainability Committee for consideration:
"New trees proposed by traffic circle coordinators or volunteers will be approved by the City Forester, with a preference for natives and a focus on maximizing ecosystem services. The Task Force recommends revisiting trunk size considerations every five years as the implications of climate change and autonomous vehicles become clearer. In the interim, large trunked trees such as redwoods will not be planted."
c. Change references to maximum vegetation height allowances from 30 inches to 24 inches from the top of the traffic circle planter curb throughout. In addition, refer the Traffic Circle Policy as revised to the traffic engineer for codification.
2. Integrate the Community Common Space Stewardship Program into the "Adopt a Spot Initiative," and refer to the Parks and Waterfront Commission and the Public Works Commission to consider the Traffic Circle Policy Task Force's recommendations.
3. Request mitigation funds from East Bay Municipal Utility District (EBMUD) due to the impact on streets from the Wildcat Pipeline Project.
4. Refer to the City Manager to:
a. Create the Community Common Space Stewardship Program based on the report from the Traffic Circle Policy Task Force.
b. Refer the additional staff and material costs of this program to the budget process.
5. Refer to the City Manager to consider options for the maintenance of the Traffic Circles prior to the implementation of an "Adopt a Spot Initiative", including consideration of a landscape maintenance contract or the organization of volunteer work days.
6. Prior to the planting of a Traffic Circle by the community, a proposal of the planting is to be submitted to the City for acceptance.
Vote: All Ayes.

October 29 – Regular Meeting

23. Oversized Vehicle Restrictions on Bicycle Boulevards
From: Councilmembers Harrison, Robinson, and Bartlett
Recommendation:
1. Refer to the Transportation Commission a draft ordinance amending Berkeley Municipal Code Chapter (BMC) 14.56.070 to prohibit commercial trucks exceeding three tons gross vehicle weight from utilizing streets comprising the bicycle boulevards network.
2. Refer to the City Manager to update BMC 14.56.070 as more Berkeley streets become Bicycle Boulevards, as outlined in the 2017 Bicycle Plan.
Financial Implications: See report
Contact: Kate Harrison, Councilmember, District 4, (510) 981-7140
Action: Moved to Action Calendar. Councilmember Hahn added as a co-sponsor. 5 speakers. M/S/C (Droste/Robinson) to approve the recommendation as amended in the revised materials submitted by Councilmember Harrison to request that the commission work with business associations, the size limitations, the streets subject to the restrictions, and the clarifications added by Councilmember Wengraf related to emergency vehicles.
Vote: All Ayes.

27. Amend BMC Chapter 14.52 Adding the North Shattuck Metered Parking Area to the goBerkeley Program
From: City Manager
Recommendation: Conduct a public hearing, and upon conclusion adopt first reading of an Ordinance amending Berkeley Municipal Code (BMC) Chapter 14.52 to add the North Shattuck metered parking area to the goBerkeley parking program.
Financial Implications: See report
Contact: Phillip Harrington, Public Works, (510) 981-6300
Action: The Mayor opened the public hearing. 0 speakers.
M/S/C (Arreguin/Wengraf) to continue the public hearing to November 12, 2019.
Vote: All Ayes.

31. Referral: Develop a Bicycle Lane and Pedestrian Street Improvements Policy
(Continued from October 15, 2019)
From: Councilmembers Robinson, Droste, Harrison, and Mayor Arreguin
Recommendation:
Refer to the City Manager to develop a comprehensive ordinance governing a Bicycle Lane and Pedestrian Street Improvements Policy that would:
1. Require simultaneous implementation of recommendations in the City's Bicycle and Pedestrian Plans when City streets are repaved, if one or more of the following conditions are met: (a) Bicycle Plan recommendations can be implemented using quick-build strategies that accommodate transit operations. (b) Pedestrian Plan recommendations can be implemented using quick-build strategies that accommodate transit operations. (c) The Bicycle Plan recommends studying protected bike lanes as part of a Complete Street Corridor Study in the Tier 1 Priority list. (d) Improvements are necessary to comply with the Americans with Disabilities Act.
2. Prioritize bikeways and Vision Zero high-fatality, high-collision streets under the five-year Paving Plan by requiring that 50 percent of the repaving budget go towards such streets until

they meet a minimum surface standard established with input from the Public Works and Transportation Commissions.
3. Encourage the use of quick builds by expediting quick-build projects under $1 million. (a)"Quick-build" is defined as projects that a) require non-permanent features such as bollards/paint/bus boarding islands, b) make up less than 25 percent of the total repaving cost for that street segment, and c) can be a component of a Complete Street Corridor Study that includes evaluation after installation.
4. Require staff to report progress back to Council every two years. Furthermore, refer to the City Manager to draft a revised version of the City's Complete Streets Policy that would clarify that the presence of an existing or planned bikeway parallel to an arterial does not exempt projects along said arterial from bicycle and micromobility improvements under the Policy.
Financial Implications: Staff time
Contact: Rigel Robinson, Councilmember, District 7, (510) 981-7170
Action: 11 speakers. M/S/C (Robinson/Arreguin) to adopt Recommendation #1 as written below.

Refer to the City Manager to develop a comprehensive ordinance with input from the Public Works & Transportation Commissions governing a Bicycle Lane and Pedestrian Street Improvements Policy that would:

- Require simultaneous implementation of recommendations in the City's Bicycle and Pedestrian Plans when City streets are repaved, if one or more of the following conditions are met:
- Bicycle Plan recommendations can be implemented using quick-build strategies that accommodate transit operations.
- Pedestrian Plan recommendations can be implemented using quick-build strategies that accommodate transit operations.
- The Bicycle Plan recommends studying protected bike lanes as part of a Complete Street Corridor Study in the Tier 1 Priority list.
- Improvements are necessary to comply with the Americans with Disabilities Act.
- Encourage the use of quick builds by expediting quick-build projects under $1 million.
- "Quick-build" is defined as projects that a) require non-permanent features such as bollards/paint/bus boarding islands, b) make up less than 25 percent of the total repaving cost for that street segment, and c) can be a component of a Complete Street Corridor Study that includes evaluation after installation.
- Require staff to report progress back to Council every two years.

Vote: All Ayes.

Action: M/S/C (Robinson/Arreguin) to adopt Recommendation #2 as written below.
Refer to the City Manager to establish a paving pilot program to prioritize bikeways and Vision Zero pedestrian high-injury streets by allocating at least 50 percent of the repaving budget towards such streets, to be implemented from 2022 to 2025 and earlier when feasible. Staff should evaluate the program's success and report back to Council. In developing the program, staff should prioritize improving both safety and the pavement condition index (PCI) city-wide and on bikeways and pedestrian high-injury streets. Moreover, to advance equity, staff should use the project priorities outlined in the Bicycle Plan and forthcoming Pedestrian Plan, together with pavement quality information, to identify the highest-priority bikeways and high-injury

street sections for repaving. Both plans incorporate equity factors to prioritize projects. Staff will present the pilot program to the Council for approval prior to implementation.

- Bikeways are defined as the street network that the Bicycle Plan recommends for bicycle infrastructure. A map of this street network is shown in Attachment 2.
- Vision Zero pedestrian high-injury streets are defined as the streets where a high proportion of severe and fatal pedestrian injuries occur. These streets will be identified in the Pedestrian Master Plan, which staff are currently updating. A draft map of these streets is shown in Attachment 3.

Vote: Ayes – Kesarwani, Davila, Bartlett, Harrison, Robinson, Droste, Arreguin; Noes – Wengraf; Abstain – Hahn.
Action: 11 speakers. M/S/C (Robinson/Arreguin) to adopt Recommendation #3 as written below.
Finally, refer to the City Manager to draft a revised version of the City's Complete Streets Policy that would clarify that the presence of an existing or planned bikeway parallel to an arterial does not exempt projects along said arterial from bicycle and micromobility iprovements under the Policy.
Vote: All Ayes.

35. Referral: Measures to Address Traffic Enforcement and Bicycle Safety
From: Councilmember Robinson
Recommendation:
1. Refer to the Transportation Commission to consider a Resolution deprioritizing enforcement of the Idaho Stop and Dead Red conventions for persons operating a bicycle, after the operator has yielded to any other road users with the right of way, by prohibiting the use of any City funds or resources in assisting in the enforcement or issuance of citations for bicyclist violations of California Vehicle Code Sections 22450(a) and 21453(a).
2. Refer to the City Manager to develop a ticket diversion program to educate bicyclists as an alternative to monetary fines related to other infractions, and to ensure integration of Vision Zero principles in implementation of state Office of Traffic Safety grants.
3. Refer to the City Manager to develop a plan to calm and divert motor vehicle traffic on bicycle boulevards to provide people who bicycle and walk a safe, comfortable and convenient mobility experience by adding or reconfiguring stop signage and other traffic calming measures, per the recommendations of the 2017 Bicycle Plan.
Financial Implications: See report
Contact: Rigel Robinson, Councilmember, District 7, (510) 981-7170
Action: Item held over to November 12, 2019 including revised material in Supplemental Communications Packet #1 from Councilmember Robinson.

October 15 – Regular Meeting

9. Grant Application: The Air District Vehicle Trip Reduction Grant Program – the Berkeley Marina Bicycle Electronic Locker Project
From: City Manager
Recommendation: Adopt a Resolution authorizing the City Manager or her designee to submit a grant application in the amount of $71,510 to the Bay Area Air Quality Management District

("Air District") Vehicle Trip Reduction Grant Program for the Berkeley Marina Bicycle Electronic Locker Project; accept any grants; execute any resulting grant agreements and any amendments; and that Council authorize the implementation of the project and appropriation of funding for related expenses, subject to securing the grant.
Financial Implications: See report
Contact: Scott Ferris, Parks, Recreation and Waterfront, (510) 981-6700
Action: Adopted Resolution No. 69,133–N.S.

41. Referral: Develop a Bicycle Lane and Pedestrian Street Improvements Policy
(Continued from September 24, 2019)
From: Councilmembers Robinson, Droste, Harrison, and Mayor Arreguin
Recommendation: Refer to the City Manager to develop a comprehensive ordinance governing a Bicycle Lane and Pedestrian Street Improvements Policy…

(See item September 24th meeting actions, #34)

Financial Implications: Staff time
Contact: Rigel Robinson, Councilmember, District 7, (510) 981-7170
Action: M/S/C (Arreguin/Robinson) to hold over Item 41 to October 29, 2019
Vote: All Ayes.

Statement of Mission of Transportation Commission:

To be published with each agenda packet per TC action on 2/21/2019

The Berkeley City Council established this Transportation Commission to advise the City Council on matters related to transportation policies, facilities, and services in the City. We are empowered to hold hearings, gather information, and provide recommendations to the City Council in order to help them make informed transportation decisions. The Transportation Commission's work is guided by several transportation-related documents and policies implemented by the City Council, including the Transportation Element of the General Plan, Bike Plan, Pedestrian Plan, Climate Action Plan, West Berkeley Circulation Master Plan, Complete Streets Policy, and BeST Plan.

Related Plans and Policies:

A. Transportation Element (2001) of the General Plan (2003)
   a. Transit-First Policy (General Plan Policy T-4 "Transit-First Policy")
B. Bike Plan (2017)
C. Pedestrian Plan (2010, update in process)
D. Vision Zero
E. Climate Action Plan (2009, 2018 update)
F. West Berkeley Circulation Master Plan (2009)
G. Complete Streets Policy (2012 Council Resolution)
H. BeST Plan(2016)
I. Berkeley Bike Boulevard Design Guidelines (2000)

Work Plan FY19-20

Mission: Advises the Council on transportation policies, facilities, and services.

Goals – Ongoing projects/UPDATES		Resources	Program activities	Outputs	Outcomes
1.	goBerkeley Program	Staff updates	Public meetings	Policy guidance FY 2019	Next Update April
2.	I-80 Gilman Interchange & Pedestrian Overcrossing Project Northwest Berkeley	Staff updates	Public meetings	Policy guidance on technical decisions	Successful project delivery (Ongoing)
3.	Safe Routes to Schools Projects (John Muir redesign)	Staff updates	Public meetings	Pedestrian Subcommittee	Successful project delivery (Ongoing)
4.	Bike Share – Phase 2 Expansion beyond Berkeley/Oakland/Emeryville	MTC project funding	Policy Guidance	Recommendations for Council approval	Expanded Bike Share resource
5.	Adeline Corridor Specific Plan (grant planning) Est. 1 year to complete process	Staff updates	Coordination between Berkeley BEST Plan & Adeline Specific Plan	Guidance on funding opportunities	Ensure successful grant funding $ and encourage equitable stakeholder involvement
6.	Grants – Annual Updates; Comprehensive discussion of all grant applications (includes: Measure BB Grants); RR Safety/Quiet Zone funding in FY 19 for scoping	Staff updates	Commission will review language to improve outcomes	Policy guidance on technical decisions	Ensure successful grant funding $500k for RR Safety
7.	Traffic Calming – Update with annual table of projects	Staff Updates	Policy guidance on technical decisions	Recommendations to Council if needed	Successful delivery of calm streets projects
8.	ACTC annual report showing Measure BB fund distribution (May 2017 and every January)	Staff updates	Policy guidance on technical decisions	Funding transparency	Successful project funding

Goals – TC Work Items		Resources	Program Activities	Outputs	Outcomes
9.	Vision Zero + Complete Streets Policy Development- Transit/Bike/ Pedestrians First, Parking Removal	Subcommittee	Public meetings Review Crash Data (SWITRS report) & annual safety goals; Coordinate w/PWC on Paving Plan & Opportunities for Complete Streets; Prioritize Citywide access to Schools policy via all modes; Simplify parking removal	Make recommendations to Council	Adoption of Vision Zero policy Action Plan; augment Pedestrian Plan & Complete Streets Policy
10.	Two-way Telegraph Avenue & Southside (Complete Streets) 2018: Telegraph Yellow zones Ph. 2: Design Telegraph/Dana Couplet; Ph. 3: Upper Bancroft	Staff Updates Monthly	Policy guidance on language	Make recommendations to Council	Consensus on Telegraph by TBID/AC Transit/COB
11.	Bike Plan Implementation (Using Complete Streets Filter)	Assigned to Bike subcommittee	Review of bike grant funding; Track Projects e.g. monitor Milvia	Consultation with staff	Successful completion of goals; Bike project funding $
12.	Pedestrian Plan Update	Pedestrian subcommittee	Public meetings	Recommendations to Council	Comprehensive Pedestrian Plan
13.	Prepare for new/emerging mobility technologies & services, incl. *Equitable TNCs*	Subcommittee	Research data and policy	Recommendations to Council	*Respond to Council referral*
14.	Council Referral: Stop Sign Criteria (1/18/18)	Subcommittee	Research to data and policy	Recommendation to Council	Successful completion of Council assignment
15.	ACTC/MTC Review Grant Proposals	Subcommittee	Review ACTC/MTC grant-proposals	Provide comments to staff	Ensure successful grant funding
16.	Climate Action Plan and *Fossil Fuel Free Berkeley* ; Collaborate with other relevant commissions e.g. Energy, Housing, PWC)	Subcommittee	Clarify CAP goals and timelines. Conduct transportation emissions and analysis reviews.	Recommendation to Council	*Respond to Council referral; Achieve timely Climate Action Plan goals*
17.	Transit First Policy – Review and report (Transportation Element of General Plan and Transit First Policy)	Subcommittee Staff provided links	Review current policy and language	Recommend updates if needed	Reaffirm Transit 1st Policy priorities to Council

18.	Traffic Calming – Reassessing Traffic Calming Policy	Subcommittee	Policy guidance on technical decisions	Recommendation to Council	Successful delivery of revised calm streets policy
19.	Scooter Share Program - 90-day Council Referral to CM	Council Report 7/10/18; Consider staff input	Develop TC Recommend ordinance/permit process for Scooter Sharing in PROW	Recommendation to Council	*Completed*
20	*On street parking*: *Appropriate regulation of parking in residential areas to restrict # of cars parked on the street*	Subcommittee	Review current policy; provide guidance	Recommendation to Council	*Respond to Council Referral*

Gard, Alisha

From: Anderson, Eric
Sent: Tuesday, January 07, 2020 6:41 PM
To: Gard, Alisha
Cc: Javandel, Farid; Thomas, Beth A.
Subject: Draft Berkeley Vision Zero Action Plan transmittal email text
Attachments: FINAL_DRAFT_Berkeley_VZ_Action_Plan_12172019.pdf; Berkeley Vision Zero Action Plan Response to Comments.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Berkeley Transportation Commissioners:

Thank you for your thoughtful consideration of the draft Berkeley Vision Zero Action Plan at your November 21, 2019 meeting.

Please find attached the draft Action Plan, and a document detailing responses to comments received from the Vision Zero Task Force, Vision Zero Advisory Committee, and the Berkeley Transportation Commission.

Staff has revised the draft Action Plan to reflect the Commission's requested language prioritizing engineering and education strategies before enforcement. Staff plans to present this draft Action Plan to the Berkeley City Council for their consideration and hopeful approval on February 25, 2020.

Please let me know any questions or concerns.

Thank you for your support of Vision Zero!

Eric Anderson (he/him/his)
Senior Transportation Planner
Vision Zero Program
City of Berkeley Dept. of Public Works
1947 Center St. 4th Floor
Berkeley, CA 94704
510-981-7062
Fax: (510) 981-7060
eanderson@ci.berkeley.ca.us

As a cost savings measure, City offices are closed the second Friday of every month. We appreciate your patience with any resulting delays.

D1-B

CITY OF BERKELEY VISION ZERO ACTION PLAN

DRAFT - December 2019

ACKNOWLEDGEMENTS

Thank you to the Task Force and Advisory Committee for helping to shape this plan.

VISION ZERO PROGRAM

Eric Anderson, Vision Zero Program Coordinator
Beth Thomas, Principal Transportation Planner
Farid Javandel, Transportation Manager

TASK FORCE

Dominika Bednarska, Public Works Department
Kerry Birnbach, City Council Office - District 8
Chief Dave Brannigan, Fire Department
Andrew Brozyna, Public Works Department
Steven Buckley, Planning Department
Paul Buddenhagen, City Mayor's Office
Jim Cunradi, AC Transit
Lori Droste, City Council – District 8
Stefan Elgstrand, City Mayor's Office
Joe Enke, Public Works Department
Beth Gerstein, City Council Office – District 1
Timothy Green, UC Berkeley Physical and Environmental Planning
Phillip Harington, Public Works Department
Todd Henry, UC Berkeley Physical and Environmental Planning
Lisa Hernandez, Health, Housing and Community Services Department
Lt. Randy Files, Police Department
Jordan Klein, Economic Development Department
Hamid Mostowfi, Public Works Department
Ryan Murray, Police Department
Nisha Patel, Public Works Department
Alene Pearson, Planning Department
Abe Roman, Fire Department
Lars Skjerping, City Mayor's Office

ADVISORY COMMITTEE

Gwen M. Allamby, Police Review Commission
Stuart Baker, Telegraph Business Improvement District
Dave Campbell, Bike East Bay
Eugenie Candau, Commission on Aging
John Caner, Downtown Berkeley Association
Ben Gerhardstein, Walk Bike Berkeley
Barnali Ghosh, Transportation Commission
Shane Krpata, Public Works Commission
Beatriz Leyva-Cutler, Berkeley Unified School Board
Liza Lutzker, Safe Routes to Schools and Walk Bike Berkeley
Petra Liljestrand, Berkeley resident
Ethel Murphy, Commission on Aging
Helen Walsh, Commission on Disability
Sara Zimmerman, Safe Routes Partnership

CONSULTANT TEAM

Natalie Chyba, Fehr & Peers
Meghan Mitman, Fehr & Peers
Karina Schneider, Fehr & Peers
Dana Weissman, Fehr & Peers
Katie Miller, Left Lane Advisors

TABLE OF CONTENTS

ABOUT VISION ZERO

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all. Vision Zero is, first and foremost, an *engineering* strategy that aims to design and build our streets to eliminate all severe and fatal traffic injuries. These engineering efforts are supported by public awareness education and traffic enforcement. Equity-driven Vision Zero traffic enforcement utilizes the best possible data and is focused on areas of Berkeley where engineering and education efforts have already been implemented.

INTRODUCTION

CAPTURING SITES OF FATAL AND SEVERE COLLISIONS

All photos in this plan were taken at locations in Berkeley where someone lost their life or sustained a severe injury in a traffic collision. The images demonstrate that there is rarely any way for someone passing by to know a tragedy took place, since things often continue as they did before. Vision Zero challenges this status quo and strips away the societal acceptance that fatal and severe traffic collisions are a necessary byproduct of mobility. As part of this plan, rapid-response communications and safety project protocols will be established to help tell victims' stories and deliver quick-build projects where engineering countermeasures may effectively improve safety.

Every year, an average of two people die and 21 people are severely injured in Berkeley due to traffic violence. Vision Zero is about recognizing that these deaths and severe injuries are preventable and unacceptable – no one should lose their life or experience a life-altering injury while traveling on Berkeley streets, no matter who they are or how they travel.

We began our commitment to Vision Zero in 2018 through the adoption of a Vision Zero resolution to end all traffic-related deaths and severe injuries on City streets by 2028. Since then, we have established two working groups: a Task Force, comprised of key City staff, elected officials, and partner agencies; and an Advisory Committee, comprised of representatives from advocacy groups, the public, Berkeley Unified School District, and City of Berkeley Commissions. The Task Force and Advisory Committee have worked together to craft the Vision, Guiding Principles, and Actions presented in this plan. To learn more about the process, see **Appendix A: Vision Zero Action Plan Development**.

While every action item introduced in this plan is fundamental to the success of Vision Zero, the priority actions presented on the next page are the near-term focus of Vision Zero in Berkeley, based on feedback from the Task Force and Advisory Committee on existing resources, and staff and community priority. The full list of actions for the City of Berkeley is introduced later in this plan, in "Taking Action."

Throughout the development of this plan, two key themes were frequently discussed: this plan must be accountable, and this plan must be crafted through an equity lens.

ACCOUNTABILITY

This plan takes strategic and pointed actions to keep Vision Zero front and center in the City of Berkeley – calling for continuous plan updates to remain in line with best practices and trends; an audit conducted by the City Auditor to make sure Vision Zero has the appropriate level of staff and resources to be effective; and building redundancy by integrating Vision Zero actions into other guiding documents, including the Berkeley Strategic Plan and departmental work plans.

EQUITY

This plan is equity-driven, starting with recognizing that we do not understand the full magnitude of inequities today due to gaps in key safety datasets. The plan recommends that we utilize Berkeley Police Department collision report data to better understand who are the victims of traffic collisions; perform a robust assessment of other key gaps in safety datasets as part of the first update to this plan; and elevate community voices to understand the perception of safety and personal security in our most vulnerable communities. This plan also includes actions to create a traffic ticket diversion program for bicyclists and pedestrians, and calls for partnerships with community-based organizations and culturally-relevant and context-specific outreach and educational campaigns. The plan emphasizes engineering and education actions first, supported by equity- and data-driven traffic enforcement conducted consistent with the City of Berkeley's Fair and Impartial Policing Policy.

PRIORITY ACTIONS

- **Establish a standing Vision Zero Coordinating Committee** consisting of City staff, Commissioners, partner institutions, members of the community, advocacy groups, and community-based organizations who have a role in advancing Vision Zero action items with quarterly meetings organized around a predetermined annual agenda. Seek to establish a funding source to compensate members of the community and community-based organizations to enable their participation.
- **Conduct a citywide Vision Zero Action Plan assessment** of existing staffing and funding capacity to complete Vision Zero action items.
  - **Create a staffing matrix** of existing and proposed staff for the delivery of high-priority Vision Zero action items. New or realigned staff needs are anticipated in Public Works safety project team; Public Works Vision Zero Program support staff; Public Information Officers in key Vision Zero departments, including Police and Health, Housing, and Community Services; Berkeley Police Department Vision Zero collision data analysis; Health, Housing, and Community Service Vision Zero data analysis and public awareness programs.
  - **Establish a milestone staffing and funding schedule** to complete high-priority Vision Zero action items, including City and grant funds.
- **Proactively build capital-intensive and quick-build safety projects** on all Vision Zero High-Injury Streets on a schedule to complete such projects by 2028.

PRIORITIZATION APPROACH

This plan prioritizes engineering, education, and public awareness before enforcement to achieve Vision Zero in Berkeley. Each action item is prioritized based on feedback from the Task Force and Advisory Committee on existing resources, and staff and community priority, as well as the potential transformative impact of each item:

- **Existing Resources:** Actions are prioritized that likely already have the needed resources, both staff and funding, to deliver.
- **Staff Priority:** Actions are prioritized that are of interest and priority to the Task Force and Vision Zero Program staff.
- **Community Priority:** Actions are prioritized that are of interest and priority to the Advisory Committee**.**
- **Transformative/High Impact:** Actions are prioritized that would have major positive impacts on safety or City collaboration, based on the Institute of Transportation Engineer's *Core Elements of Vision Zero* and ongoing City efforts.

The actions introduced here are the near-term focus for the City of Berkeley. The full list of actions in priority order can be reviewed in **Appendix B: Prioritized Actions Matrix.**

- **Request a Vision Zero Performance Audit** to be performed during the FY21 audit period to evaluate the implementation of the Action Plan and make any additional needed recommendations, including additional and/or realigned staffing and funding, for effective Vision Zero Action Plan implementation. Provide required six-month updates to City Council.
- **Establish a Vision Zero Rapid Response Safety Communication Protocol.** Employ a communication strategy in response to recent severe and fatal collisions aimed at the human element of traffic safety, including health and prevention messaging to the Berkeley community.
- **Support statewide traffic safety legislation** allowing automated speed enforcement by local agencies, designation of speed limits on local streets based on desired safety outcomes rather than the existing prevailing speed, and the reduction of local residential street speed limits to below 25 MPH, which would allow for 20 MPH speed limit on local residential streets, consistent with "20 Is Plenty" campaigns. Utilize existing legislated automated enforcement strategies, such as red light cameras.
- **Establish a Complete Streets Repaving and Development Project Checklist** to ensure proactive and reactive Vision Zero safety infrastructure for people of all ages and abilities are included with each repaving project and in the conditions of approval for development projects. With the Vision Zero Coordinating Committee, consider establishing an equity-driven approach to prioritizing repaving projects.
- **Develop and proactively deliver a Vision Zero branding, promotional, and educational campaign** to increase awareness about Vision Zero and the top traffic violations for severe and fatal injuries in Berkeley, elevating victims' stories. Regularly update the campaign to ensure it is context-specific, accessible, and culturally relevant. Collaborate with community-based organizations to distribute material and promote messages and public events that normalize active transportation and transit as healthy and responsible transportation choices.
- **Develop a publicly accessible matrix and map to prioritize and track projects.** Prioritize both new/existing requests/referrals and delivery of established infrastructure project lists (e.g., Five Year Repaving Program, BeST Plan, etc.) according to the Vision Zero High-Injury Streets map and equity-driven prioritization from City Council adopted plans such as the Bicycle Plan and forthcoming Pedestrian Plan.
- **Utilize the Berkeley Police Department's collision report data on parties involved**, such as housing status or whether parties involved are disabled, to help address equity gaps in Statewide Integrated Traffic Records System (SWITRS) collision data. Confirm that Berkeley Police Department report training emphasizes consistent use of these collision report data fields and, if needed, provides training resources for avoiding transportation mode bias in collision reporting. When necessary, update the collision report form to be consistent with emerging mobility modes.
- **Focus traffic enforcement efforts proportionately on the most significant traffic violations for severe and fatal collisions by party at fault.** Focus enforcement efforts on areas of Berkeley where engineering and education efforts have already been implemented. Conduct traffic enforcement consistent with the City of Berkeley's Fair and Impartial Policing Policy.

GLOSSARY

Equity
Race, ethnicity, gender, age, socioeconomic status, or physical or mental ability can no longer be used to predict access to safe transportation, and safety and access for all groups are improved.

This definition is adapted from the Government Alliance on Race & Equity's *Racial Equity Toolkit.* The City of Berkeley is a core member of the Government Alliance on Race & Equity (GARE).

Severe Injury
A severe injury is based on the reporting police officer's visual assessment of a victim at the scene of the collision. The California Highway Patrol's *Collision Investigation Manual* defines a severe injury as an injury other than a fatal injury which results in broken bones, dislocated or distorted limbs, severe lacerations, or unconsciousness at or when taken from the collision scene. It does not include minor lacerations. Some severe injuries may not be classified as such by the reporting officer if they are not visible or otherwise apparent.

Vulnerable Users
Users of the roadway that are more vulnerable to traffic-related death or injury due to their demographic, socioeconomic status, physical or mental ability, or mode of travel. This may include people of color, people with no or low income, people with no or limited English proficiency, people experiencing homelessness, youth, seniors, people with disabilities, and people who walk and bike.

WHY WE NEED VISION ZERO

BERKELEY NEEDS VISION ZERO

Every year, on average two people die and 21 people sustain severe injuries on Berkeley streets due to traffic violence. This is unacceptable and preventable – no one should lose their life or suffer a life-altering injury when traveling in our city. All statistics presented on this page are based on data between 2013 and 2017 - the most recent five years of collision data available through the Statewide Integrated Traffic Records System (SWITRS).

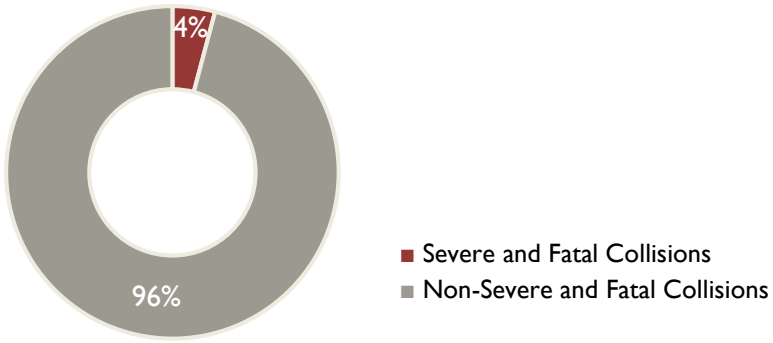
DISPROPORTIONATE BURDEN

We know that people of color, people with no or low income, people with no or limited English proficiency, people experiencing homelessness, youth, seniors, and people with disabilities are over-represented in fatal and severe injury collisions, but we currently have limited data within SWITRS collision reports to understand the magnitude of the disproportionate burden. This plan addresses those data gaps head-on and establishes strategies to start collecting and utilizing more meaningful data to understand inequities on our streets. We also are not waiting for more data to take an equity-driven approach to Vision Zero. Read more about our proposed strategies in "Taking Action."

VISION ZERO IS ABOUT THE 4%

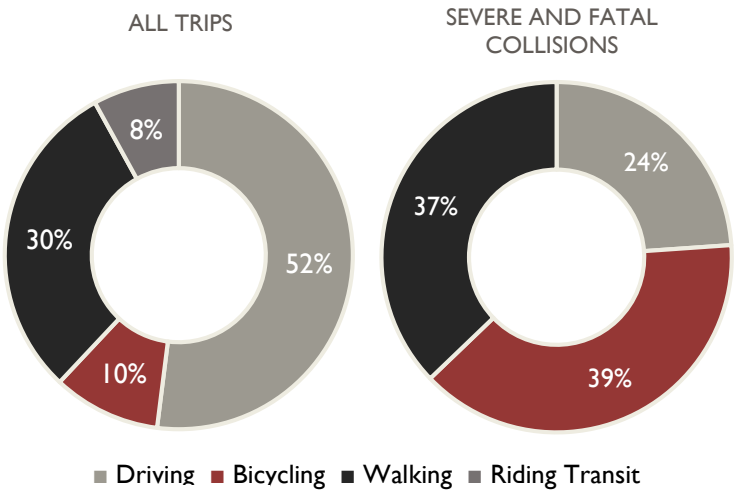
On average, 4% of collisions on Berkeley streets result in a fatality or severe injury.

That is 4% too many.



VISION ZERO IS ABOUT MODE

Collisions disproportionately impact people riding bicycles and people walking. The numbers are stark – collisions involving someone riding a bicycle or walking make up almost **80%** of collisions that result in death or severe injury, despite making up just **40%** of trips in Berkeley.



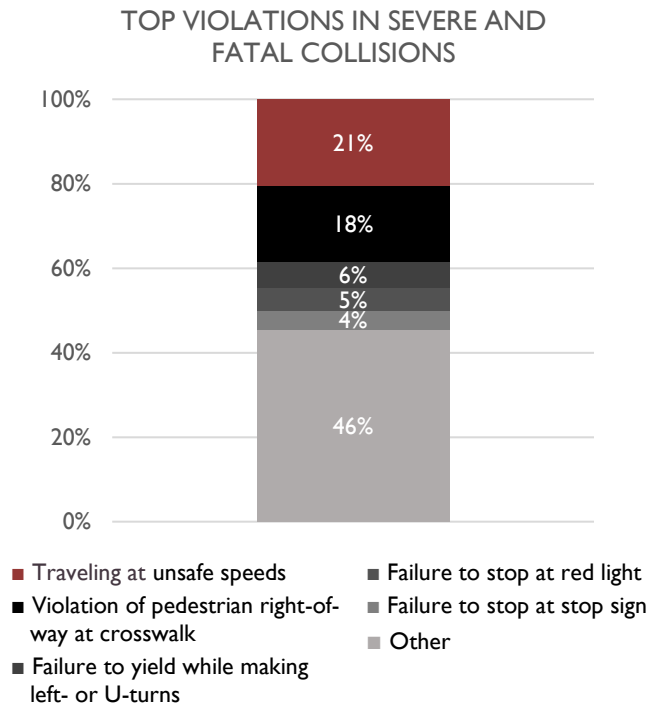
Collision Data: SWITRS five-year injury collision data, 2013-2017
Mode Data: California Household Travel Survey for the City of Berkeley, 2012

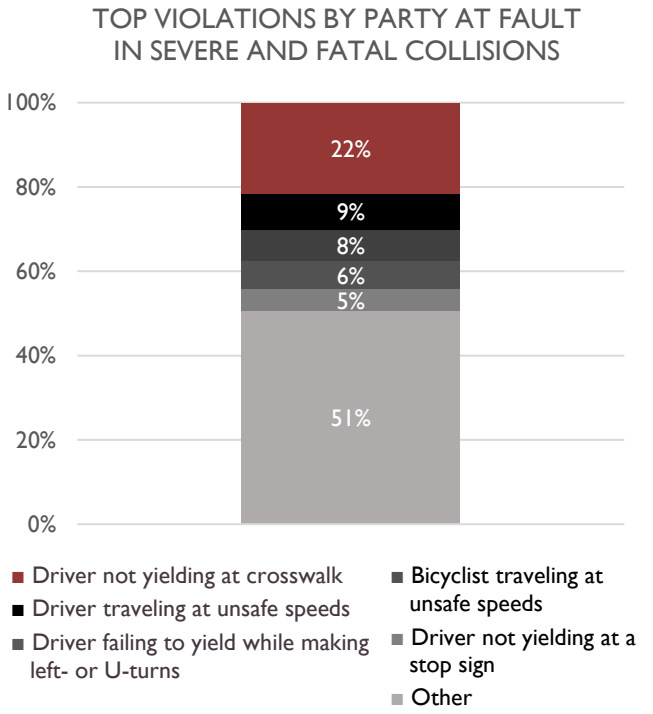
VISION ZERO IS ABOUT TRAFFIC VIOLATIONS

Every collision involves multiple factors. The top traffic violations reported during the years 2013 to 2017 for collisions in Berkeley that resulted in death or severe injury were **traveling at unsafe speeds, violation of pedestrian right-of-way at a crosswalk, failure to yield while making left or U-turns, failure to stop at a red light, and failure to stop at a stop sign.** Vision Zero focuses on the most significant factors associated with severe and fatal traffic collisions in order to make the greatest impact.

Safety is also about how we share public space and how we interact on our streets. When we consider the primary party at fault, the top traffic violations for severe and fatal vehicle-involved collisions in Berkeley were **drivers not yielding at crosswalks; drivers traveling at unsafe speeds; drivers failing to yield to oncoming traffic when making a left- or U-turn; bicyclists traveling at unsafe speeds; and drivers not yielding at stop signs.** While party at fault data is subjective and may not include the victim's perspective, it can add to our understanding of the unsafe behaviors that result in severe and fatal collisions.

Violation data tables are provided in **Appendix C: SWITRS Violation Code Data Tables**.





Collision Data: SWITRS five-year injury collision data, 2013-2017

Source: US Department of Transportation, Literature Review on Vehicle Travel Speeds and Pedestrian Injuries March 2000

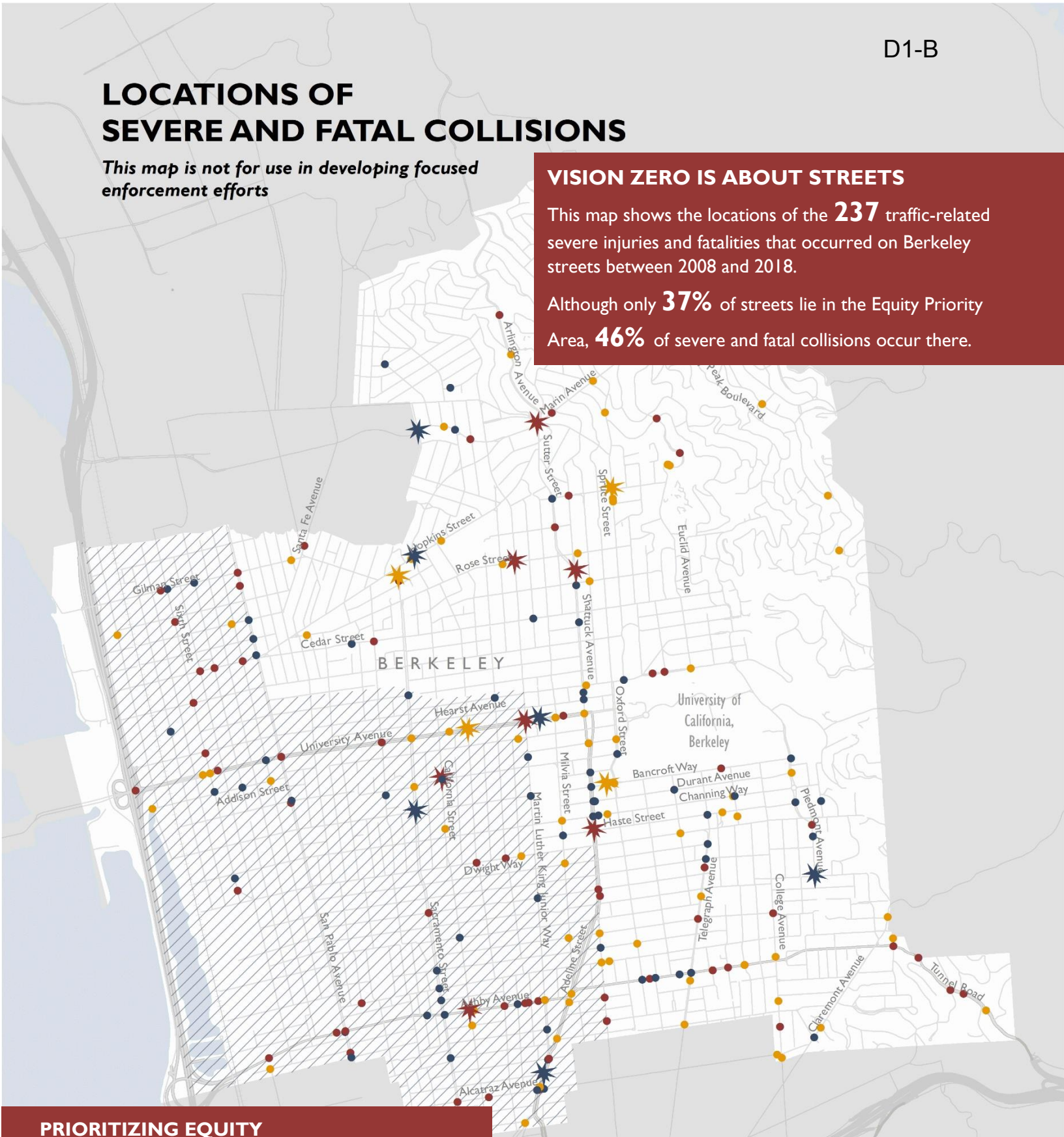
LOCATIONS OF SEVERE AND FATAL COLLISIONS

This map is not for use in developing focused enforcement efforts

VISION ZERO IS ABOUT STREETS

This map shows the locations of the **237** traffic-related severe injuries and fatalities that occurred on Berkeley streets between 2008 and 2018.

Although only **37%** of streets lie in the Equity Priority Area, **46%** of severe and fatal collisions occur there.



PRIORITIZING EQUITY

Lower income residents and people of color are disproportionately impacted by the risk of traffic injuries and fatalities. The Equity Priority Area considers historic Home Owners' Loan Corporation "redlining," racial/ethnic composition, property value, and cultural centers to guide the City of Berkeley in prioritizing infrastructure projects that remedy systemic inequity. A full description of the Equity Priority Area methodology can be found in the City of Berkeley Pedestrian Plan.

Equity Priority Area

Collision Type

- Bicycle - Fatal
- Bicycle - Severe Injury
- Pedestrian - Fatal
- Pedestrian - Severe Injury
- Driver - Fatal
- Driver - Severe Injury

Collision Data: SWITRS ten-year injury collision data, 2008-2018

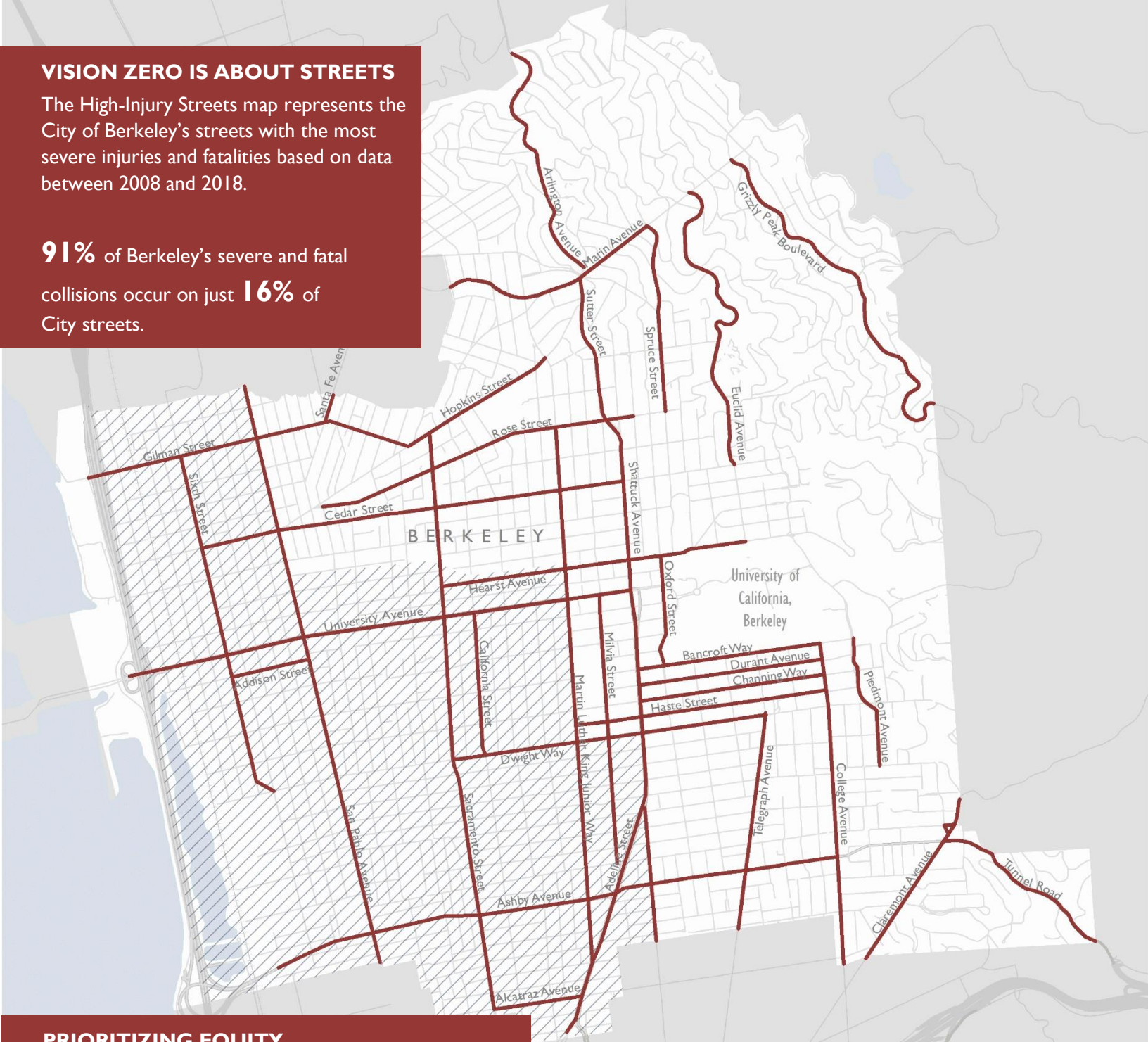
HIGH-INJURY STREETS

This map is not for use in developing focused enforcement efforts

VISION ZERO IS ABOUT STREETS

The High-Injury Streets map represents the City of Berkeley's streets with the most severe injuries and fatalities based on data between 2008 and 2018.

91% of Berkeley's severe and fatal collisions occur on just **16%** of City streets.



PRIORITIZING EQUITY

Lower income residents and people of color are disproportionately impacted by the risk of traffic injuries and fatalities. The Equity Priority Area considers historic Home Owners' Loan Corporation "redlining," racial/ethnic composition, property value, and cultural centers to guide the City of Berkeley in prioritizing infrastructure projects that remedy systemic inequity. A full description of the Equity Priority Area methodology can be found in the City of Berkeley Pedestrian Plan.

High-Injury Streets

Equity Priority Area

Collision Data: SWITRS ten-year injury collision data, 2008-2018

VISION AND GUIDING PRINCIPLES

The City of Berkeley is committed to an equity-focused, data-driven effort to eliminate traffic deaths and severe injuries on our city streets by 2028.

1. **Safety is our highest priority.** Human life is more important than speed, convenience, or property. We will evaluate trade-offs and make both proactive and reactive engineering decisions about street design based on this value.

2. **Traffic deaths and severe injuries are preventable and unacceptable.** Using a holistic, data-driven, systems-level approach to street design, we will treat fatal and severe collisions as preventable and unacceptable incidents that can and must be addressed.

3. **People make mistakes.** We will design our streets so that mistakes do not result in death or severe injury.

4. **Slower streets are safer streets.** We will design, construct, and operate our streets for slower speeds with the goal of eliminating all fatal and severe collisions, and protecting our most vulnerable street users.

5. **We will create safer transportation options for people who walk, bike, and take transit.** Creating safer and more comfortable transportation options for people to walk, bike, and take transit can make these modes more attractive and reduce the number of car trips in Berkeley. Fewer car trips can mean fewer severe and fatal collisions.

6. **Street safety must be achieved equitably.** We will respond to the disproportionate burden of traffic deaths and severe injuries on people of color, people with no or low income, people with no or limited English proficiency, people experiencing homelessness, youth, seniors, people with disabilities, and people who walk and bike. Enforcement strategies recommended as part of this plan will be designed to minimize racial profiling. Further, this plan emphasizes engineering and education actions first, supported by equity- and data-driven enforcement in an effort to conduct equitable traffic enforcement consistent with the City of Berkeley's Fair and Impartial Policing Policy.

7. **Vision Zero will be accountable, transparent, and data-driven.** Actions will be data-driven to respond to the causal factors of deaths and severe injuries on Berkeley streets. This response will utilize both proven methods and innovative strategies. We will perform annual monitoring, reporting, and evaluation through an equity lens. We will communicate clearly what resources are necessary to achieve Vision Zero, why street design modifications are proposed, and the basis for prioritizing competing improvements.

TAKING ACTION

The City of Berkeley's Vision Zero action items described on the following pages demonstrate a **comprehensive, integrated approach** to get the City to zero. They rest on three pillars: 1) The Vision Zero Program, 2) Safer Streets for Everyone, and 3) Safer Streets by Everyone. This plan prioritizes engineering, education, and public awareness before enforcement strategies to achieve Vision Zero in Berkeley.

THE VISION ZERO PROGRAM

1.1 Collaboration

Collaborate with City departments, regional and community partners, and mobility providers to achieve Vision Zero goals. Continue commitment from Berkeley elected officials.

1.2 Capacity

Build sustainable funding and staffing to complete Vision Zero action items, including program management, data analysis, infrastructure projects, and education, engagement, and enforcement.

1.3 Transparency and Equity

Establish a milestone reporting schedule. Incorporate equity into data collection, analytics, evaluation, engagement, and reporting.

SAFER STREETS FOR EVERYONE

2.1 Project Planning and Development

Prioritize high-injury streets and the most vulnerable street users.

ACTION ITEM DEVELOPMENT

These actions represent months of collaboration and coordination between the Task Force and Advisory Committee and build on opportunity areas established through a comprehensive review of best practices and Berkeley's current safety efforts.

2.2 Project Design

Design for vulnerable users of the transportation network, including people of all ages and abilities.

2.3 Project Delivery

Deliver Vision Zero traffic safety infrastructure improvements both reactively and proactively.

SAFER STREETS BY EVERYONE

3.1 Public Awareness

Create a culture of traffic safety by promoting awareness through public information programs and campaigns.

3.2 Enforcement

Transition from a request-based to an equitable and data-driven enforcement strategy focused on the most significant safety violations resulting in fatalities and severe injuries.

1.1 THE VISION ZERO PROGRAM: COLLABORATION

Priority	Action	Lead Department	Timeline
☆	***Establish a standing Vision Zero Coordinating Committee*** consisting of City staff, Commissioners, partner institutions, members of the community, advocacy groups, and community-based organizations who have a role in advancing Vision Zero action items with quarterly meetings organized around a predetermined annual agenda. Seek to establish a funding source to compensate members of the community and community-based organizations to enable their participation.	City Manager's Office	
	Incorporate Vision Zero goals and actions into plan and policy updates of all departments and partner institutions, including the upcoming City of Berkeley Zoning Ordinance update and General Plan Update, UC Berkeley's Long-Range Development Plan, Berkeley Unified School District's Sustainability Plan, the City's Strategic Plan, Departmental Priority Projects Lists, and departmental and individual staff work plans.	City Manager's Office	
	With the Metropolitan Transportation Commission, Alameda County Transportation Commission, and Alameda County Department of Public Health, establish a peer-to-peer Bay Area Vision Zero Network for information-sharing and collaboration on countywide and regional initiatives such as a public health analysis of collision victim hospital data.	Mayor's Office	
	Develop a focused, strategic Vision Zero staff training plan to send key staff responsible for implementing the Vision Zero Action Plan, such as Public Works, Police, Health, Housing, and Community Services, and City Manager's Office and elected officials, to Vision Zero-related conferences and trainings.	City Manager's Office	

1.2 THE VISION ZERO PROGRAM: CAPACITY

Priority	Action	Lead Department	Timeline

☆	***Conduct a citywide Vision Zero Action Plan assessment*** of existing staffing and funding capacity to complete Vision Zero action items.
	• ***Create a staffing matrix*** of existing and proposed staff for the delivery of high-priority Vision Zero action items. New or realigned staff needs are anticipated in the areas listed below:
	  ○ Public Works safety project team
	  ○ Public Works Vision Zero Program support staff
	  ○ Public Information Officers in key Vision Zero departments including Police and Health, Housing, and Community Services
	  ○ Berkeley Police Department Vision Zero collision data analysis
	  ○ Health, Housing, and Community Services Vision Zero data analysis and public awareness programs
	• ***Establish a milestone staffing and funding schedule*** to complete high-priority Vision Zero action items, including City and grant funds.
		City Manager's Office; Public Works	

☆	***Request a Vision Zero Performance Audit*** to be conducted during the FY21 audit period to evaluate the implementation of the Action Plan and make any needed recommendations, including additional and/or realigned staffing and funding, for effective Vision Zero Action Plan implementation. Provide required six-month updates to City Council.	Public Works	

1.3 THE VISION ZERO PROGRAM: TRANSPARENCY AND EQUITY

Priority	Action	Lead Department	Timeline
☆	***Utilize the Berkeley Police Department's collision report data on parties involved***, such as housing status or whether parties involved are disabled, to help address equity gaps in Statewide Integrated Traffic Records System (SWITRS) collision data. Confirm that Berkeley Police Department report training emphasizes consistent use of these collision report data fields and, if needed, provides training resources for avoiding transportation mode bias in collision reporting. When necessary, update the police collision report form to be consistent with emerging mobility modes.	Public Works; Police	
	Provide an annual Vision Zero Progress Report, reviewed by the City Auditor, to City Council, City Department Directors, Vision Zero Coordinating Committee, and Transportation Commission, on progress reducing fatal and severe collisions, including in historically underserved neighborhoods, equity in traffic enforcement, and on meeting the funding, staffing, and Vision Zero program delivery schedules. Include an updated Vision Zero High-Injury Streets map. Utilize Berkeley Police Department collision data to supplement the Statewide Integrated Traffic Records System dataset to avoid lag in data availability.	Public Works	
	Complete a full update of the Vision Zero Action Plan every three years to ensure continued relevancy of the Action Plan by integrating advancements in best practices and technologies. The first update will include an equity evaluation to identify gaps in safety and collision datasets and develop milestones to address inequities, as well as identify strategies to include hospital data provided by Alameda County Department of Public Health, linked to emergency medical services data and police reports, in Vision Zero analyses and maps.	Public Works	
	Maintain an understanding of the Berkeley community's perception of safety and personal security. Focus direct public engagement to residents of Berkeley's historically underserved neighborhoods and other vulnerable users.	Health, Housing, and Community Services	

2.1 SAFER STREETS FOR EVERYONE: PROJECT PLANNING AND DEVELOPMENT

Priority	Action	Lead Department	Timeline
☆	***Develop a publicly accessible matrix and map to prioritize and track projects.*** Prioritize both new/existing requests/referrals and delivery of established infrastructure project lists (e.g., Five Year Repaving Program, BeST Plan, etc.) according to the Vision Zero High-Injury Streets map and equity-driven prioritization from City Council adopted plans such as the Bicycle Plan and forthcoming Pedestrian Plan.	City Manager's Office	
☆	***Establish a Complete Streets Repaving and Development Project Checklist*** to ensure proactive and reactive Vision Zero safety infrastructure for people of all ages and abilities are included with each repaving project and in the conditions of approval for development projects. With the Vision Zero Coordinating Committee, consider establishing an equity-driven approach to prioritizing repaving projects.	Public Works	
	Establish a Vision Zero Rapid Response Safety Project Protocol that utilizes data from the renamed Fatal Accident Investigation Team (FAIT), to identify quick-build projects if engineering countermeasures may effectively improve safety. The protocol should outline a path forward for Public Works staff to be a part of the immediate on-the-ground response to an investigation of severe and fatal collisions.	Public Works; Police	
	Conduct before and after studies of a sample of Vision Zero quick-build projects to evaluate countermeasure effectiveness where existing understanding is insufficient.	Public Works	
	Undertake a Standards of Coverage/Response Time Study to provide a data-driven understanding of how safety improvements impact emergency response times.	Fire	
	Establish a pre-approved toolbox of traffic safety infrastructure design treatment improvements with the Vision Zero Coordinating Committee to streamline the implementation of projects.	Public Works	

2.2 SAFER STREETS FOR EVERYONE: PROJECT DESIGN

Priority	Action	Lead Department	Timeline
	Establish Vision Zero Design Guidelines that consolidate policies and design guidelines from Council-adopted plans such as the Pedestrian Plan, Bicycle Plan, and Complete Streets Policy to guide Berkeley's street design, traffic, and parking procedures in order to prioritize safety and reduce the incidence of severe and fatal collisions. Ensure revisions and updates are reviewed by the Vision Zero Coordinating Committee to maintain accessibility for people of all ages and abilities.	Public Works	
	Develop Curbside Management Guidelines and incorporate them into the Vision Zero Guidelines to ensure Berkeley addresses safety concerns at the curb due to existing and emerging mobility options.	Public Works	
	Update the Berkeley Municipal Code to be consistent with the Vision Zero Design Guidelines.	Public Works	
	Refine the existing traffic calming toolbox to include design guidelines for all street types, utilizing Council-adopted plans where applicable. Ensure the traffic calming toolbox is reviewed by the Vision Zero Coordinating Committee to streamline the implementation of projects.	Public Works	

2.3 SAFER STREETS FOR EVERYONE: PROJECT DELIVERY

Priority	Action	Lead Department	Timeline
☆	***Proactively build capital-intensive and quick-build safety projects*** on all Vision Zero High-Injury Streets on a schedule to complete such projects by 2028.	Public Works	
	Reactively build newly identified quick-build projects at locations with recent severe and fatal collisions if engineering countermeasures may effectively improve safety, based on Rapid Response Safety Project Protocol.	Public Works	
	Continue to deliver traffic calming projects. Utilize the traffic calming toolbox and evaluate requests based on an equity- and data-driven approach to implementation for both residential and Vision Zero High-Injury Streets. Increase public awareness of the traffic calming program.	Public Works	

3.1 SAFER STREETS BY EVERYONE: PUBLIC AWARENESS

Priority	Action	Lead Department	Timeline
☆	***Develop and proactively deliver a Vision Zero branding, promotional, and educational campaign*** to increase awareness about Vision Zero and the top traffic violations for severe and fatal injuries in Berkeley, elevating victims' stories. Regularly update the campaign to ensure it is context-specific, accessible, and culturally relevant. Collaborate with community-based organizations to distribute material and promote messages and public events that normalize active transportation and transit as healthy and responsible transportation choices.	Health, Housing, and Community Services	
☆	***Establish a Vision Zero Rapid Response Safety Communication Protocol.*** Employ a communication strategy in response to recent severe and fatal collisions aimed at the human element of traffic safety, including health and prevention messaging to the Berkeley community.	Public Works	
	Partner with UC Berkeley, Berkeley City College, and Berkeley Unified School District to distribute targeted Vision Zero messaging for students.	Public Works	
	Integrate Vision Zero traffic safety awareness and education into training for City employees who drive City vehicles or drive while on City business, including Police, Fire, Public Works, and all City departments and divisions.	City Manager's Office	

3.2 SAFER STREETS BY EVERYONE: ENFORCEMENT

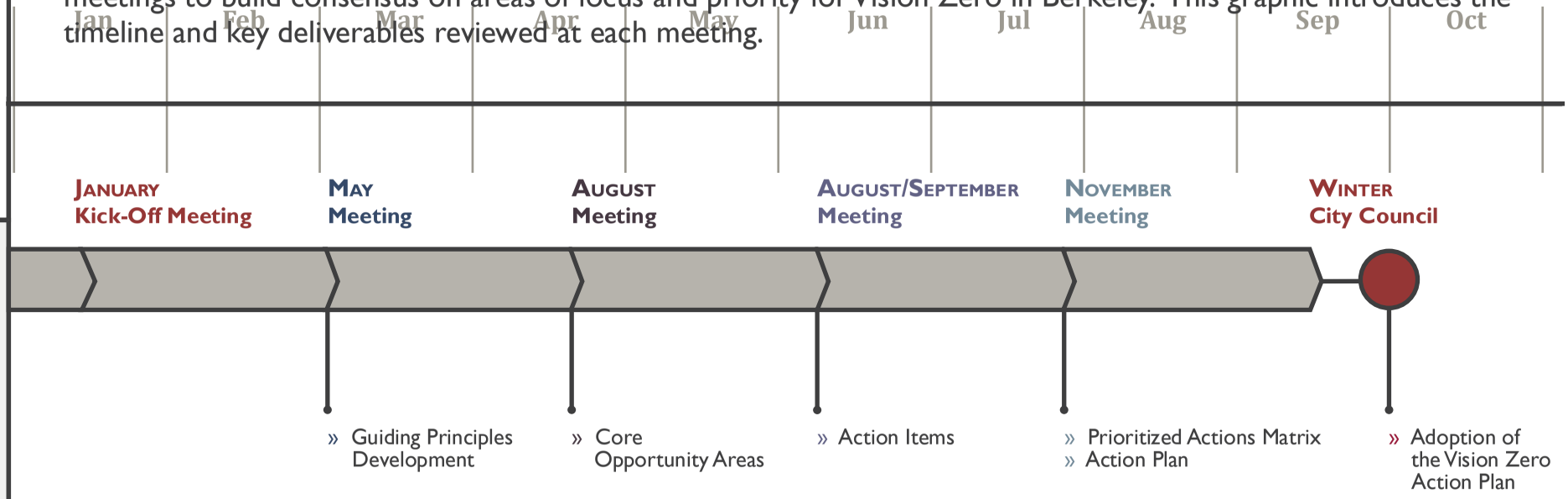
Priority	Action	Lead Department	Timeline
☆	***Focus traffic enforcement efforts proportionately on the most significant traffic violations for severe and fatal collisions by party at fault.*** Focus enforcement efforts on areas of Berkeley where engineering and education efforts have already been implemented. Conduct traffic enforcement consistent with the City of Berkeley's Fair and Impartial Policing Policy.	Police	
☆	***Support state-wide traffic safety legislation*** allowing automated speed enforcement by local agencies, designation of speed limits on local streets based on desired safety outcomes rather than the existing prevailing speed, and the reduction of local residential street speed limits to below 25 MPH, which would allow for 20 MPH speed limit on local residential streets, consistent with "20 Is Plenty" campaigns. Utilize existing legislated automated enforcement strategies, such as red light cameras.	City Manager's Office	
	Rename the Fatal Accident Investigation Team to replace the word "accident" with "collision" and include reference to near-fatal and major collisions, to acknowledge that most collisions are preventable, and to be in line with Vision Zero philosophies.	Police	
	Continue and regularly update a collision data-driven enforcement strategy focusing on collision reports from the renamed Fatal Accident Investigation Team (FAIT) to supplement collision data from SWITRS. Focus on areas of Berkeley where engineering and education efforts have already been implemented. Conduct traffic enforcement consistent with the City of Berkeley's Fair and Impartial Policing policy.	Police	
	Seek opportunities to educate before issuing citations during traffic enforcement.	Police	
	Develop a traffic ticket diversion program for bicycle and pedestrian traffic tickets to promote access to bicycle and pedestrian safety courses and programs.	Police	

APPENDICES

APPENDIX A:
VISION ZERO ACTION PLAN TIMELINE & PROCESS DIAGRAM

MEETING SCHEDULE

The Vision Zero Action Plan development was facilitated by a series of five Task Force and Advisory Committee meetings to build consensus on areas of focus and priority for Vision Zero in Berkeley. This graphic introduces the timeline and key deliverables reviewed at each meeting.



DETAILS & DELIVERABLES

GUIDING PRINCIPLES DEVELOPMENT

An introduction to key Vision Zero concepts that resonate in the City of Berkeley. Meetings included a group exercise to develop Guiding Principles for the Vision Zero Action Plan.

CORE OPPORTUNITY AREAS

A best practices review and benchmarking assessment summarized as core opportunity areas for Berkeley Vision Zero. The best practices review focused on systemic safety strategies from other U.S. cities, while the benchmarking assessment provided an understanding of baseline safety conditions and practices in the City of Berkeley.

ACTION ITEMS

A list of actions to address the identified safety needs, as documented in the Core Opportunity Areas memo.

PRIORITIZED ACTIONS MATRIX

A matrix of prioritized Vision Zero actions for the City of Berkeley, based on input provided throughout the Task Force and Advisory Committee meeting series.

ACTION PLAN

The final summarizing document, documenting the significance of Vision Zero in Berkeley and introducing the City's Vision Zero action items.

APPENDIX B: PRIORITIZED VISION ZERO ACTIONS MATRIX

This matrix documents the action item prioritization for Berkeley's Vision Zero Action Plan. The intention of this prioritization is to help the City determine the list of near-term, immediate actions the City should embark on to achieve Vision Zero. The matrix is not intended to be static – it can be used for each Vision Zero Action Plan update to re-evaluate the near-term focus of Vision Zero for the City. The criteria the prioritization utilizes are:

- **Transformative/High Impact:** Actions are prioritized that would have major positive impacts on safety or City collaboration, based on the Institute of Transportation Engineer's Core Elements of Vision Zero and ongoing City efforts.

- **Existing Resources:** Actions are prioritized that likely already have the needed resources, both staff and funding, to deliver.

- **Staff Priority:** Actions are prioritized that are of interest and priority to the Task Force.

- **Community Priority:** Actions are prioritized that are of interest and priority to the Advisory Committee.

These criteria are based on the existing priorities of the City of Berkeley. The criteria are meant to be fluid and re-evaluated with each new Vision Zero Action Plan update. Each action item will receive a point for each criterion it fulfills. The top performing actions should be the near-term focus of Vision Zero efforts.

PRIORITIZATION RUBRIC

All actions that have a score of 3.5 or greater are considered near-term priorities for the City of Berkeley.

Metric	1	0.5	0
Transformative/ High Impact	Action directly correlates to an ITE Vision Zero Core Element *and* is an item the City is not currently doing	A Core Element, but lesser transformative impact because the City is already undertaking this effort	Not a Core Element
Existing Resources	High existing staff availability (based on Task Force and Vision Zero Program staff feedback)	Medium existing staff availability	Low existing staff availability
Staff Priority	High priority item (based on Task Force and Vision Zero Program staff feedback)	Medium priority item	Low priority item
Community Priority	High priority item (based on Advisory Committee feedback)	Medium priority item	Low priority item

Pillar	Opportunity Area	Action	Transformative/ High Impact	Existing Resources	Staff Priority	Community Priority	Score
VZ Program	Collaboration	*Establish a standing Vision Zero Coordinating Committee*	1	1	1	1	4
VZ Program	Capacity	*Conduct a citywide Vision Zero Action Plan assessment*	1	1	1	1	4
Safe Streets for Everyone	Project Delivery	*Proactively build capital-intensive and quick-build safety projects*	1	0.5	1	1	3.5
VZ Program	Capacity	*Request a Vision Zero Performance Audit*	1	1	0.5	1	3.5
Safe Streets by Everyone	Public Awareness	*Establish a Vision Zero Rapid Response Safety Communication Protocol*	1	0.5	1	1	3.5
Safe Streets by Everyone	Enforcement	*Support state-wide traffic safety legislation*	1	0.5	1	1	3.5
Safe Streets for Everyone	Project Planning & Development	*Establish a Complete Streets Repaving and Development Project Checklist*	1	0.5	1	1	3.5
Safe Streets by Everyone	Public Awareness	*Develop and proactively deliver a Vision Zero branding, promotional, and educational campaign*	1	0.5	1	1	3.5
Safe Streets for Everyone	Project Planning & Development	*Develop a publicly accessible matrix and map to prioritize and track projects*	1	0.5	1	1	3.5
VZ Program	Transparency & Equity	*Utilize the Berkeley Police Department's collision report data on parties involved*	1	0.5	1	1	3.5
Safe Streets by Everyone	Enforcement	*Focus traffic enforcement efforts proportionately on the most significant traffic violations for severe and fatal collisions by party at fault.*	1	1	1	0.5	3.5
VZ Program	Collaboration	*Incorporate Vision Zero goals and actions into near-term plan and policy updates*	1	1	0	1	3
Safe Streets for Everyone	Project Delivery	*Reactively build newly identified quick-build projects*	1	0.5	0.5	1	3
Safe Streets for Everyone	Project Planning & Development	*Establish a Vision Zero Rapid Response Safety Project Protocol*	1	0.5	0.5	1	3
Safe Streets for Everyone	Project Design	*Establish Vision Zero Design Guidelines that consolidate policies and design guidelines from Council-adopted plans*	0.5	0.5	1	1	3
VZ Program	Transparency & Equity	*Provide an annual Vision Zero Progress Report*	0.5	1	0.5	1	3
VZ Program	Transparency & Equity	*Complete a full update of the Vision Zero Action Plan every three years*	0.5	1	0.5	1	3
VZ Program	Collaboration	*Develop a focused, strategic Vision Zero staff training plan*	0.5	0.5	1	1	3
Safe Streets by Everyone	Enforcement	*Continue and regularly update a collision data-driven enforcement strategy*	0.5	0.5	1	1	3
Safe Streets for Everyone	Project Planning & Development	*Conduct before and after studies*	1	0.5	1	0.5	3
Safe Streets by Everyone	Enforcement	*Seek opportunities to educate before issuing citations*	0.5	0.5	0.5	1	2.5

Pillar	Opportunity Area	Action	Transformative/ High Impact	Existing Resources	Staff Priority	Community Priority	Score
Safe Streets by Everyone	Enforcement	*Rename the Fatal Accident Investigation Team*	0.5	1	0.5	0.5	2.5
VZ Program	Transparency & Equity	*Maintain an understanding of the Berkeley community's perception of safety and personal security*	1	0	0.5	1	2.5
Safe Streets by Everyone	Public Awareness	*Partner with UC Berkeley, Berkeley City College, and Berkeley Unified School District*	0.5	0.5	0.5	1	2.5
Safe Streets for Everyone	Project Delivery	*Continue to deliver traffic calming projects*	1	0.5	0.5	0.5	2.5
Safe Streets by Everyone	Public Awareness	*Integrate Vision Zero traffic safety awareness and education into training for City employees*	0.5	0.5	0.5	1	2.5
Safe Streets for Everyone	Project Design	*Update the Berkeley Municipal Code*	0.5	0.5	0.5	0.5	2
Safe Streets for Everyone	Project Planning & Development	*Undertake a Standards of Coverage/Response Time Study*	0	0.5	0.5	0.5	1.5
Safe Streets by Everyone	Enforcement	*Develop a traffic ticket diversion program*	0	0	0.5	1	1.5
VZ Program	Collaboration	*With the Metropolitan Transportation Commission, Alameda County Transportation Commission, and Alameda County Department of Public Health, establish a peer-to-peer Bay Area Vision Zero Network*	0	1	0	0.5	1.5
Safe Streets for Everyone	Project Design	*Refine the existing traffic calming toolbox*	0.5	0	0.5	0.5	1.5
Safe Streets for Everyone	Project Planning & Development	*Establish a pre-approved toolbox of traffic safety infrastructure design treatments*	0	0.5	0	0.5	1
Safe Streets for Everyone	Project Design	*Develop Curbside Management Guidelines*	0	0	0.5	0.5	1

APPENDIX C: SWITRS VIOLATION CODE DATA TABLES

Table 1: Cited California Vehicle Code Violation by Party at Fault[1]

	Party Cited as at Fault						
Cited California Vehicle Code Violation	Driver	Ped	Parked Vehicle	Bicyclist	Other	None Cited	Total
Traveling at unsafe speeds	11			12			23
Failure to yield at crosswalk	20						20
Failure to yield to oncoming traffic when making a left turn or U-turn	7						7
Failure to stop at a red light	3			3			6
Failure to yield at a stop sign	5						5
Opening door in unsafe conditions	3		1		1		5
Failure to signal	2			2			4
Crossing outside crosswalk or legal crossing	1	3					4
Pedestrian suddenly leaving curb		4					4
Failure to yield to oncoming traffic when entering or crossing road from property or alley	2			1			3
Pedestrian had flashing DON'T WALK		3					3
Passing unsafely	2						2
Driving with 0.04% or more alcohol in blood with a passenger for hire in the vehicle	2						2
Failure to proceed straight or yield properly	1						1
Driving on the wrong side of the road	1						1
Driver passes bicyclist unsafely	1						1
Disobeying traffic control device	1						1
Reckless driving causing bodily injury	1						1
Driving under the influence	1						1
Driving under the influence and driving unlawfully, leading to bodily injury to any person other than the driver	1						1
Driving a vehicle in an unsafe condition or not safely loaded	1						1
Bicyclist has same rights and subject to same rules as motor vehicles				1			1
Driver not yielding to pedestrians during right turn on red		1					1
Pedestrian crossing between signalized intersections		1					1
Failure to stop at stop bar				1			1
No violation cited	1	1		4		6	12
Total	*67*	*13*	*1*	*24*	*1*	*6*	*112*

Notes:
1. SWITRS five-year severe and fatal injury collision data, 2013-2017

Table 2: Cited CA Vehicle Code Violations by Parties Involved in Severe and Fatal Collisions[1]

Violation by Party at Fault for Severe or Fatal Collisions		# of Severe or Fatal Collisions[3]	Other Parties Involved[2]					
Cited Party at Fault	California Vehicle Code Summary		Driver	Pedestrian	Parked Vehicle	Bicyclist	Other	Solo Collisions
Driver	Failure to yield at crosswalk	20	1	21	0	0	0	0
Driver	Traveling at unsafe speeds	8	3	3	3	1	0	3
Driver	Failure to yield to oncoming traffic when making a left turn or U-turn	7	5	0	0	2	0	0
Bicyclist	Traveling at unsafe speeds	6	5	0	0	1	0	6
Driver	Failure to yield at a stop sign	5	3	0	0	2	0	0
Pedestrian	Pedestrian suddenly leaving curb	4	4	0	0	0	0	0
Driver	Opening door in unsafe conditions	3	0	0	0	3	0	0
Pedestrian	Crossing outside crosswalk or legal crossing	3	3	0	0	0	0	0
Pedestrian	Pedestrian had flashing DON'T WALK	3	3	0	0	0	0	0
Bicyclist	Failure to stop at a red light	3	2	0	0	0	1	0
Driver	Failure to stop at a red light	3	1	1	0	1	0	0
Driver	Driving with 0.04% or more alcohol in blood with a passenger for hire in the vehicle	2	0	1	0	1	0	0
Driver	Failure to signal	2	1	0	0	1	0	0
Driver	Failure to yield to oncoming traffic when entering or crossing road from property or alley	2	1	0	0	1	0	0
Bicyclist	Failure to signal	1	0	0	1	0	0	1
Driver	Passing unsafely	1	1	0	0	0	0	1
Driver	Driving under the influence and driving unlawfully, leading to bodily injury to any person other than the driver	1	0	1	0	0	0	0
Driver	Reckless driving causing bodily injury	1	1	1	0	0	0	0
Other	Opening door in unsafe conditions	1	0	0	0	1	0	0
Parked Vehicle	Opening door in unsafe conditions	1	0	0	0	1	0	0
Bicyclist	Failure to stop at stop bar	1	1	0	0	0	0	0
Driver	Disobeying traffic control device	1	1	0	0	0	0	0
Pedestrian	Pedestrian crossing between signalized intersections	1	1	0	0	0	0	0
Driver	Crossing outside crosswalk or legal crossing	1	0	1	0	0	0	0

Violation by Party at Fault for Severe or Fatal Collisions		# of Severe or Fatal Collisions[3]	Other Parties Involved[2]					
Cited Party at Fault	California Vehicle Code Summary		Driver	Pedestrian	Parked Vehicle	Bicyclist	Other	Solo Collisions
Bicyclist	Failure to yield to oncoming traffic when entering or crossing road from property or alley	1	1	0	0	0	0	0
Driver	Driver passes bicyclist unsafely	1	0	0	0	1	0	0
Pedestrian	Driver not yielding to pedestrians during right turn on red	1	0	0	0	1	0	0
Driver	Failure to proceed straight or yield properly	1	1	0	0	0	0	0
Bicyclist	Bicyclist has same rights and subject to same rules as motor vehicles	1	1	0	0	0	0	0
Driver	Driving a vehicle in an unsafe condition or not safely loaded	0	0	0	0	0	0	1
Driver	Driving under the influence	0	0	0	0	0	0	1
Driver	Driving on the wrong side of the road	0	0	0	0	0	0	1
	No Violation Cited	7	7	1	0	4	0	5
	Total	*93*	*47*	*30*	*4*	*21*	*1*	*19*

Notes:
1. SWITRS five-year severe and fatal injury collision data, 2013-2017
2. Parties involved will not sum to total number of collisions
3. This number excludes solo collisions. To understand the total number of severe of fatal collisions, sum this column with the number of solo collisions.

BERKELEY VISION ZERO ACTION PLAN

This matrix documents the response to comments received from the Task Force, Advisory Committee, and Transportation Commission on the Draft Berkeley Vision Zero Action Plan.

		Response	
Received by	**Comment**	**Action Plan Revision Page #**	**Noted for Implementation**
Task Force	Establish a standing Vision Zero Coordinating Committee: Change "implementing" to "advancing" to clarify this action is not limited to project delivery	4; 22	
Task Force	Apply for a Vision Zero Performance Audit: Change "Apply for" to "Request"	5; 23	
Task Force	Incorporate Vision Zero goals and actions into plan and policy updates: Add City of Berkeley General Plan update	22	
Task Force	Amend the Berkeley Police Department's collision report: Change to acknowledge that BPD already collects information on housing and disability status of parties involved.	5; 24	
Task Force	Continue to deliver traffic calming projects: Update to maintain request-based program	27	
Task Force	Conduct before and after studies: Clarify by adding "…to evaluate countermeasure effectiveness."	25	
Task Force	Establish a pre-approved list of safety infrastructure improvements: Update to a toolbox of traffic safety infrastructure design treatment improvements to clarify the intention of the action	25	
Task Force	Focus traffic enforcement efforts proportionately on the top violations as opposed to primary collision factors	5; 29	
Task Force	The messaging must be that all actions are important and that the prioritized actions simply represent the near-term focus	3	
Task Force	Conduct before and after studies: Increase existing resources and staff priority scores	Appendix B	
Task Force	Continue and regularly update a collision data-driven enforcement strategy: Increase staff priority score	Appendix B	
Task Force	Vision Zero branding, promotion, and education: Increase overall score	Appendix B	

Received by	Comment	Response	
		Action Plan Revision Page #	Noted for Implementation
Advisory Committee	Establish a standing Vision Zero Coordinating Committee: Update language to clearly state that members of the community, advocacy groups, and community-based organizations will be compensated for their participation	4; 22	
Advisory Committee	Incorporate Vision Zero goals and actions into plan and policy updates: Include Berkeley Unified School District's Sustainability Plan	22	
Advisory Committee	Utilize Berkeley Police Department's collision report data on parties involved: Ensure that adequate training is provided and that adequate data is collected on emerging mobility options.	5; 24	
Advisory Committee	Proactively build already-identified capital projects and quick-build safety projects: Update language to clearly state the intention of this action item – build projects on every high-injury street by 2028.	3; 27	
Advisory Committee	Conduct before and after studies: Update language to ensure that quick-build projects are evaluated when existing understanding of effectiveness is insufficient	25	
Advisory Committee	Continue to deliver traffic calming projects: Add language to increase public awareness of the traffic calming program	27	
Advisory Committee	Make Vision Zero a household term: Consolidate this action with "Develop and proactively deliver a Vision Zero educational campaign"	5; 28	
Advisory Committee	Continue and regularly update a collision data-driven enforcement strategy: Add language to ensure traffic enforcement does not result in racial profiling.	29	
Advisory Committee	Incorporated Vision Zero goals and actions into plan and policy updates: Decrease community priority score	Appendix B	
Advisory Committee	Utilize the Berkeley Police Departments' collision report data on parties involved: Increase the transformative/high impact and staff priority score	Appendix B	
Advisory Committee	Develop a publicly accessible matrix and map to prioritize and track projects: Increase the existing resources score	Appendix B	
Advisory Committee	Focus traffic enforcement efforts proportionally on the top traffic violations for severe and fatal collisions: Decrease community priority score	Appendix B	

Berkeley Vision Zero Action Plan
December 2019

Received by	Comment	Response	
		Action Plan Revision Page #	Noted for Implementation
Advisory Committee	Develop and proactively deliver a Vision Zero promotional and education campaign: Increase existing resources score	Appendix B	
Transportation Commission	Focus on engineering and education strategies above enforcement in implementing Vision Zero	3; 4; 18; 21	
Transportation Commission	Clearly state the desired transition from the existing request-based to an equity- and data-driven Vision Zero enforcement strategy	3; 21	
Transportation Commission	Ensure that any enforcement is conducted in line with the Fair & Impartial Policing Policy	3; 5; 18; 29	
Transportation Commission	Ensure that there are black voices in the Vision Zero Coordinating Committee		✓
Transportation Commission	Remove the High Injury Streets map as an input to the data-driven enforcement strategy. Vision Zero should not result in heightened policing in the equity priority area.	29	
Transportation Commission	Ensure the City Manager's office has a large role in implementing Vision Zero	*Lead department on several action items* 21-29	
Transportation Commission	Ensure communication and education are prioritized	5	
Transportation Commission	Incorporate language on red light cameras	5; 29	