To: Honorable Mayor and Members of the City Council

From: Disaster and Fire Safety Commission

Submitted by: Paul Degenkolb, Chairperson, Disaster and Fire Safety Commission

Subject: Wildland Urban Interface Fire Safety and Fire Safety Education

RECOMMENDATION

Approve specific measures described to support the recommendations to:

1. Strengthen existing fire safety measures utilized by the City of Berkeley for the safety and wellbeing of its residents.

2. Strengthen existing fire education outreach efforts to make contact with more citizens by using both digital and paper media platforms.

PROPOSED MEASURES

1. Programmable alert sirens — We recommend using Measure GG funds to purchase, install and maintain programmable sirens for the Public Safety Building and every fire station throughout the city. There would be an ongoing public education campaign on how to interpret and respond to the different sounds signaling specific warnings to the public. The rationale for these sirens is that as technology has expanded the multitude of ways we communicate emergency notices, which currently are being delivered by email, text messaging and landline robocalling, is inadequate. The time of night and the speed and veracity of the October 2017 Fire Siege showed us that relying on these newer technologies alone is insufficient to reach all of our population in a timely manner.

2. Form a subcommittee or workgroup comprised of members of both the Disaster Fire Safety and Parks and Waterfront Commissions to review the efficacy of the Fire Fuel Chipper and Debris Program as it is currently implemented — Review would include benefits and costs of the program including how well it is utilized to achieve its intended purpose. Recommendations for improvement could include: a) changing dates for vegetation pick-up times to more closely align with spring clean-up efforts and fall pruning in preparation for the typical October arrival of Diablo winds, b) how the chipper program mailer can also serve as an educational tool for fire smart vegetation management and c) consideration of what could be done to increase participation in the program. Printing and mailing costs are included in the surcharge paid by the estimated 6,200 property owners in the designated areas served by this program. The rationale for reviewing the program is that fire science demonstrates the efficacy of aggressive vegetation management in fire prone areas of California. However, Berkeley’s density and topographical challenges make the 100 foot and 30
foot vegetation clearance guidelines impractical if not impossible to follow. The public needs more relevant guidance on fuel management.

3. Take advantage of federal, state, local, non-profit or PG&E grant opportunities for fire mitigation and education — Our fire department is short staffed, especially fire inspectors. In 2004 the City of Berkeley applied for a FEMA grant in the sum of $995,000 to be used for education, inspections and other efforts to reduce the WUI fire hazard in the neighborhoods located in the hills of Berkeley. Much has changed in terms of what we know about the dangers of WUI fires since that time. An outreach program for greater use of Nixle and AC Alerts and greater familiarity of pathways to be used in an evacuation can be of great value to the public along with education, city adoption of incentives and penalties to support fire wise safe vegetation practices. The rationale is that the public needs to more fully understand the nature of the risk of WUI fires. Safety education and community outreach is a ongoing enterprise, especially in our city with its dynamic student population.

4. Clarify when to initiate the Red Flag Nixle warning — In 2016, Berkeley Fire and Berkeley Police Departments agreed to use Nixle messaging to alert residents when the city is under a Red Flag warning. The necessary weather conditions did not materialize until the later part of 2017 and when these conditions did arise it created some confusion as whether the Berkeley hills are covered by the East Bay Hills Red Flag Alert or the NOAA alert that applies to a section of coastal Northern California encompassing Berkeley. Some residents were alerting their neighbors via NextDoor when the city was not alerting residents. After confirming with a representative of Cal Fire that the East Bay Hills designation would apply to the Berkeley hills, we favor the more liberal interpretation of Red Flag Alerts for hill residents. The rationale is that the alerts serve to both remind residents of the fire danger and to educate the public on steps they can take to protect themselves, such as keeping roadways clear and having a Go-Bag ready.

5. Temporarily suspend the addition of Auxiliary Dwelling Units (ADUs) in the Very High Hazard Fire Zone to review public safety issues especially relevant to the risk of WUI fires. Amend Section 23D.10 to incorporate greater public safety considerations to be met before issuing an Auxiliary Unit Permit (AUP) — Currently there is a provision limiting issuance of an AUP for legal ADUs on streets less than 26 feet wide until an inspection for adequate water supply and water pressure has been conducted. Presumably the water requirements exist as a consideration for public safety, which current state code allows. We think additional considerations related to fire safety measures are necessary to more adequately address the fire danger to the city of Berkeley. Considerations might include a) best fire practices for safe distance from other structures, combustable fencing and known highly flammable vegetation; b) construction requirements to include metal roofs and other fire resistive materials; and c) mandatory off street parking. The rationale is that density exacerbates the very serious risk of a disastrous fire wiping out our city. In the 1991 fire, a home caught on fire every 11 seconds and the North Bay fires traveled from Calistoga to Santa Rosa.
in about five hours. We can assume fire would move more quickly here given the density of flammable dwellings throughout the city.

6. Enforce California Vehicle Code 22514 for stopping or parking near a fire hydrant — In the fall of 2017, the workgroup completed a survey of the condition of hydrants in the hills fire zone. The report is attached for your review. In brief, we found parked cars blocking hydrants that were inadequately marked or not marked as no parking zones. Without proper signage or red paint, drivers fail to park a proper distance from hydrants and traffic control does not know to ticket. The survey also revealed few blue reflectors marking the location of fire hydrants, especially critical for mutual aid responders who do not share the same digital software as our firefighters. We share the good news that Public Works has blue reflectors and will be installing them. We recommend proper signage and red paint for fire hydrants. We further recommend that the Beat Police officer ticket hydrant infractions in the Berkeley Hills Fire Zone when making rounds and that traffic control personnel randomly canvass on a weekly or bi-monthly basis to ensure traffic safety compliance. The rationale is that the failure to designate the location of and protect access to fire hydrants can unnecessarily and dangerously delay the critical work of first responders.

7. Adopt parking restrictions on narrow streets in the Berkeley hills fire zone — Access and egress in the Berkeley hills fire zone is difficult. This problem delays life-saving medical response and delays fire engines from reaching fires. In May, 2017 the workgroup, along with council members Wengraf, Droste and Hahn and a tech volunteer, conducted an online survey specifically for residents, commuters and other regular travelers in the hills. The results of the survey are attached to this report. In brief, out of the 682 respondents 62.5% expressed concern about emergency vehicle access to their homes and 84.6% said they would support some form of restricted parking on narrow streets. The rationale is that as density in the hills increases so do the number of cars parked on narrow curvy streets. This adversely impacts visibility of oncoming vehicles and leads to illegal or bad parking behavior at hydrants, intersections and on curves. There has been reported instances where medical calls were unduly delayed because a street was too narrow for the responding ambulance or fire engine to safely pass parked cars. Congested street parking will have a significant and potentially life threatening impact on the ability to exit the hills in a disaster event and slow fire responders access to locations where fire breaks or other emergency measures need to be established.

8. The aforementioned subcommittee or workgroup (#2 above) will interface with Berkeley Path Wanderers Association to further encourage path restoration and maintenance with the goal of evacuation in mind. Pathways would be more useful to a greater number of evacuees if the paths throughout the hills have handrails and are clearly marked with large reflective signage pointing to the next leg of the journey. The rationale is that the pathways are a valuable asset to the community when an evacuation is called for. It is reasonable to expect walkers will be unfamiliar with the route they are taking, especially at night when lighting is limited or nonexistent. Looking at a map or a cell phone to figure out where to go next could be the
proximate cause of injury. The more people who can use the pathways the sooner the hills can be emptied thus saving lives and freeing up first responders to refocus their efforts to stopping the fires from spreading further into the city.

**SUMMARY**

Since 2015, a Disaster Fire Safety Commission workgroup has been working with city council members and city staff to both enact improved access and egress for residents, visitors and first responders in the Berkeley Hills Fire Zone and to raise public awareness of the very real threat of a wildland fire to the entire community. A resilient community depends on a mindful community committed to preparing for and mitigating against the effects of a disastrous firestorm.

At the December 6, 2017 regular meeting of the Disaster and Fire Safety Commission, the Commission moved to recommend that the City Council approve eight (8) measure recommendations that would; 1) Strengthen existing fire safety measure utilized by the City of Berkeley for the safety and wellbeing of its residents, and 2) Strengthen existing fire education outreach efforts to make contact with more citizens by using both digital and paper media platforms. M/S: Stein/Flasher; Vote: (6 Ayes: Grimes, Flasher, Legg, Stein, Degenkolb, Golomb; 0 Noe; 1 Absent: Griffin; 2 Abstain: Bailey, Couzin)

**FISCAL IMPACTS OF RECOMMENDATION**

Fiscal impacts to be determined. Staff time to be determined.

Of the eight proposed measures we recommend the first would use Measure GG tax funds to purchase, install and maintain a warning siren alert system as an improvement to community disaster preparedness. The second measure would entail additional printing and postal costs pertaining to the Fire Fuel Chipper and Debris Bin Program which is funded by a surcharge paid by property owners in the designated areas covered by the program.

**CURRENT SITUATION AND ITS EFFECTS**

Every disaster highlights how our best planning will invariably be incomplete and that something important was missed in our disaster planning efforts. As painful as these disasters are they are also learning experiences for what we can do to better protect ourselves, our families and our community. The October 2017 Fire Siege in the North Bay vividly demonstrated how vulnerable our community is to the ravages of a wildland urban interface fire (WUI).

The commission believes that our recommendations meet the General Plan’s Disaster Preparedness and Safety Element’s goal that disaster related efforts are directed toward integrating safety into all City decisions for the purpose of sustaining the community. And, that community awareness and community engagement to mitigate the dangers we face is key to meeting this goal.
BACKGROUND
Two of the twenty most destructive fires in California’s history burned parts of Berkeley in 1923 and again in 1991. The 1991 Tunnel Fire followed a similar path as a previous fire in 1970. WUI fires are particularly threatening because of the danger to human life and because dwellings are extremely vulnerable to wind-driven fire. Given anticipated population growth which will further increase density and predicted climate change cycles of prolonged drought followed by ample rain will intensify our city’s vulnerability to wildland urban interface (WUI) fire.

Fire following earthquake during our dry season is of particular concern to the overall safety of our entire community but especially so in the Berkeley Hills east of the fault line where residents are more likely to be cut off from city services.

ENVIRONMENTAL SUSTAINABILITY
Working with the Regional Parks District, UC Berkeley and Berkeley property owners on aggressive vegetation management to reduce the number of highly flammable, diseased and aging trees, and removal or trimming shrubs and brush that lead to fire laddering into treetops will make our community and the parks district more fire resistant and sustainable. These fire safety measures will save lives and protect our urban environment.

RATIONALE FOR RECOMMENDATION
Community fire mitigation and WUI fire education will prevent deaths, lessen the number of and severity of injuries, property damage, and reduce both the tangible and intangible long term costs of fire recovery — all of which are important to maintaining the viability and resiliency of Berkeley after a devastating fire. The City and its citizens will benefit by working together to improve our chances of surviving the next fire.

ALTERNATIVE ACTIONS CONSIDERED
Another study could be conducted to determine options for improving fire safety in the Berkeley Hills Fire Zone. These studies, though useful, take a considerable amount of resources to complete and may do little to improve public safety. Although recommendations from previous studies has led to valuable improvements, the issues of access and egress and sound vegetation management in light of increasing density in the hills fire zone requires more aggressive intervention.

CITY MANAGER
See Companion Report.

CONTACT PERSON
Keith May, Assistant Fire Chief, Berkeley Fire Department, 510-981-5580

Attachments:
1: 2017 Hydrant Survey Results
2: 2017 Parking Survey Results
HILLS HAZARDOUS FIRE AREA HYDRANT ACCESSIBILITY AND VISIBILITY SURVEY

Background:
There are somewhere near 500 fire hydrants in the hills hazardous fire zone. We have visited 194 of them in Districts 5, 6, and 8 to get a representative sample of their visibility and accessibility. We chose a variety of streets throughout the zones that were straight or winding, wide or narrow, heading east/west or north/south.

Issues:
- It is difficult to find many hydrants under normal conditions, much less when the hills are on fire and the air is filled with smoke. Our engines have GPS systems that inform them when they are at a hydrant but do our police cars and mutual aid fire departments?
- When mutual aid is called for, time is of the essence. How can our own or other responding fire departments find hydrants without standardized marking of red zones and blue mid-street reflectors?
- Hydrants are spaced so unevenly throughout the hills (between 1 to 4 blocks apart) that finding them is a game of hide and seek. The more distant the hydrants are from each other, the longer it takes to complete hose lays to connect to them.

Findings:
- Over 98% of hydrants had no signs prohibiting parking with 15’ on each side, unless the entire side of the street was a no parking zone.
- 60% had no red curb indicating the 15 foot each side no parking zone
- About a dozen hydrant red zones were, for some reason, only 3-8 feet long.
- 97% had no blue reflectors mid-street to make them more easily visible at nighttime
- 14% had no curb, or paintable concrete gutter and would need red parking lot bumpers installed if we had the desire to protect access to all hydrants with visible red zones
- 12% had blocked access by overgrown plants or illegally parked cars.
- Most hydrant red curbs were faded or missing red paint. A reflector stripe around hydrants for visibility at night wouldn’t hurt either, since their distance from the road varies widely.
- Close to a half dozen intersections had no road signs, or signs missing the names of one of the streets
- Most of the narrow streets had multiple cars parked on both sides or half way on the sidewalk, creating room for cars or first responders moving one direction at a time, but blocking potential pedestrian evacuation or forcing residents out into the street.
- A significant percentage of hydrants are three - four blocks apart, which can lead to devastating time delays at fires while hundreds of feet of hose are being laid and connected.
- Conditions in Council Districts varied considerably
Parking restrictions transformed when entering Kensington. All the narrow streets had restricted parking on one side, and were therefore much easier to navigate and hydrants easier to find.

Recommendations:

• Ensure that all hydrants have red zones 15’ on each side except when they are adjacent to driveways that ensure that there is adequate access by fire engines.
• Install blue reflectors mid-street at all fire hydrants, so they are visible at night and mutual aid responders don’t experience costly and potentially life-threatening delays.
• Survey all street signs and replace the missing ones so mutual aid, our own fire department, and police directing evacuations can find their way to and from emergencies.
• Install parking lot tire bumpers and paint them red at all hydrants that don’t have a curb to paint.
• Encourage EBMUD to install new hydrants between those that are more than 800’ apart, or whatever is considered the desirable spacing.
• Do all of this before the next large urban/wildland interface fire to save lives and the inevitable resulting lawsuits.
• Convince more residents and Berkeley employees to sign up for AC Alert and/or Nixle, so when evacuation is necessary, it can be done in a timely manner. Our streets are way too narrow to accommodate adequate numbers in an emergency evacuation.
• Re-think whether groups with caches should stay and fight fire, except for small, local incidents in normal weather conditions. It is more important to evacuate in a timely manner, and laying hose will just delay exit and potentially lead to otherwise avoidable loss of life.

See attached photos of cars parked illegally in front of hydrants and one hydrant completely hidden by bamboo.

Report by Bob Flasher and Victoria Legg, DFSC September, 2017
Emergency Access

Survey Responses for City of Berkeley
June 8, 2017
Summary:

This survey aimed to gather resident’s experiences and feelings around Emergency Access in the Berkeley Hills.

There were four questions and an opportunity for general comments & to leave an email address for further contact.

This survey was sent out to Berkeley residents during the month of May 2017. As of June 5, there were 682 responses.
Are you concerned about emergency vehicle access to your house?

682 responses

- Yes: 62.5%
- No: 37.5%
Locations where emergency access is a concern for respondents.

View on Google Maps
Have you ever personally experienced difficulty driving your car through the Berkeley Hills?

682 responses

- **Yes**: 72.7%
- **No**: 27.3%
Locations where driving & passing through is challenging for respondents.

View on Google Maps
Do you have access to a garage and/or driveway at your residence?

682 responses

- **52.1%**: Yes, I always park my car in the garage.
- **14.8%**: Yes, I usually park my car in the garage.
- **12.2%**: Yes, I sometimes park my car in the garage.
- **9.1%**: Yes, I never park my car in the garage.
- **5.3%**: No, I do not have access to garage.
- **6.5%**: Other
People with garages, who do not park in them cited that:

- garage doesn't support the car they have (too steep, to small, or often blocked)
- they have more cars than the garage holds
- garage is used for storage
4. Emergency Calls

Have you ever called 911 for emergency assistance?

682 responses

- Yes: 60.7%
- No: 39.3%
Would you support some form of restricted parking on narrow streets to ease first responder access?

682 responses

84.6% Yes
15.4% No
360 comments were received, most focused on access & egress

- Better marking of existing services
  *red paint, no parking signs for hydrants, blind curves, corners*

- Re-mark & enforce existing restricted parking areas

- Remove vegetation at intersections & curves to improve visibility

- One sided street parking
  *many narrow streets can become passable if cars only park on one side*

- Allow side walk or permitted parking

- Incentivize parking spot creation
  *relax zoning restrictions & permit costs for parking pads and/or turn-outs*
Thank You