PROCLAMATION
CALLING A SPECIAL MEETING OF THE BERKELEY CITY COUNCIL

In accordance with the authority in me vested, I do hereby call the Berkeley City Council in special session as follows:

Tuesday, November 12, 2019

4:00 P.M.

SCHOOL DISTRICT BOARD ROOM - 1231 ADDISON STREET, BERKELEY, CA 94702

JESSE ARREGUIN, MAYOR

Councilmembers:

DISTRICT 1 – RASHI KESARWANI
DISTRICT 2 – CHERYL DAVILA
DISTRICT 3 – BEN BARTLETT
DISTRICT 4 – KATE HARRISON
DISTRICT 5 – SOPHIE HAHN
DISTRICT 6 – SUSAN WENGRAF
DISTRICT 7 – RIGEL ROBINSON
DISTRICT 8 – LORI DROSTE

Preliminary Matters

Roll Call:

Public Comment - Limited to items on this agenda only

Action Calendar

The public may comment on each item listed on the agenda for action as the item is taken up. For items moved to the Action Calendar from the Consent Calendar or Information Calendar, persons who spoke on the item during the Consent Calendar public comment period may speak again at the time the matter is taken up during the Action Calendar.

The Presiding Officer will request that persons wishing to speak line up at the podium to determine the number of persons interested in speaking at that time. Up to ten (10) speakers may speak for two minutes. If there are more than ten persons interested in speaking, the Presiding Officer may limit the public comment for all speakers to one minute per speaker. Speakers are permitted to yield their time to one other speaker, however no one speaker shall have more than four minutes. The Presiding Officer may, with the consent of persons representing both sides of an issue, allocate a block of time to each side to present their issue.

Action items may be reordered at the discretion of the Chair with the consent of Council.

Action Calendar – New Business

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

Adjournment

I hereby request that the City Clerk of the City of Berkeley cause personal notice to be given to each member of the Berkeley City Council on the time and place of said meeting, forthwith.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the official seal of the City of Berkeley to be affixed on this 7th day of November, 2019.

Jesse Arreguin

Jesse Arreguin, Mayor

Public Notice – this Proclamation serves as the official agenda for this meeting.

ATTEST:

Mark Numainville

Date: November 7, 2019
Mark Numainville, City Clerk

NOTICE CONCERNING YOUR LEGAL RIGHTS*: If you object to a decision by the City Council to approve or deny an appeal, the following requirements and restrictions apply: 1) Pursuant to Code of Civil Procedure Section 1094.6 and Government Code Section 65009(c)(1)(E), no lawsuit challenging a City decision to deny or approve a Zoning Adjustments Board decision may be filed and served on the City more than 90 days after the date the Notice of Decision of the action of the City Council is mailed. Any lawsuit not filed*

within that 90-day period will be barred. 2) In any lawsuit that may be filed against a City Council decision to approve or deny a Zoning Adjustments Board decision, the issues and evidence will be limited to those raised by you or someone else, orally or in writing, at a public hearing or prior to the close of the last public hearing on the project.

Live captioned broadcasts of Council Meetings are available on Cable B-TV (Channel 33), via Internet accessible video stream at http://www.cityofberkeley.info/CalendarEventWebcastMain.aspx and KPFB Radio 89.3.
Archived indexed video streams are available at http://www.CityofBerkeley.info/CityCouncil.
Channel 33 rebroadcasts the following Wednesday at 9:00 a.m. and Sunday at 9:00 a.m.

Communications to the Berkeley City Council 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 the City Council, 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 City Clerk. 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 City Clerk at 981-6908 or clerk@cityofberkeley.info for further information.

Agendas and agenda reports may be accessed via the Internet at
http://www.CityofBerkeley.info/CityCouncil
and may be read at reference desks at the following locations:

City Clerk Department
2180 Milvia Street
Tel: 510-981-6900
TDD: 510-981-6903
Fax: 510-981-6901
Email: clerk@CityofBerkeley.info

Libraries:
Main - 2090 Kittredge Street
Claremont Branch – 2940 Benvenue
West Branch – 1125 University
North Branch – 1170 The Alameda
South Branch – 1901 Russell

COMMUNICATION ACCESS INFORMATION:
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 981-6346(V) or 981-7075 (TDD) at least three business days before the meeting date.
Please refrain from wearing scented products to this meeting.

Captioning services are provided at the meeting, on B-TV, and on the Internet. In addition, assisted listening devices for the hearing impaired are available from the City Clerk prior to the meeting, and are to be returned before the end of the meeting.

Communications

Council rules limit action on Communications to referral to the City Manager and/or Boards and Commissions for investigation and/or recommendations. All communications submitted to Council are public record. Copies of individual communications are available for viewing at the City Clerk Department and through Records Online.

Item #1a: Traffic Circle Policy and Program Recommendations

1. Save Our Traffic Circle Trees – 24 pages of signatures
2. Rob Wren
3. Sage Linda Spatz
4. Rose Ann Cochran
5. Linda Burden
6. Pam Speich

7. Larry Hendel
8. Rachel Terp
9. Zizi Searles
10. Melanie Popper
11. Paul Deuter
12. Julian Redwood
13. Kathleen Davis
14. Ann Einstein

Traffic Circle Policy Task Force

ACTION CALENDAR
November 12, 2019

To: Honorable Mayor and Members of the City Council

From: Traffic Circle Policy Task Force

Submitted By: Diane Ross-Leech, Chairperson, Traffic Circle Policy

Subject: Traffic Circle Policy and Program Recommendations

RECOMMENDATIONS

Adopt a resolution to approve the Traffic Circle Policy as outlined below 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 EBMUD due to the impact on these streets from their Wildcat Pipeline Project.

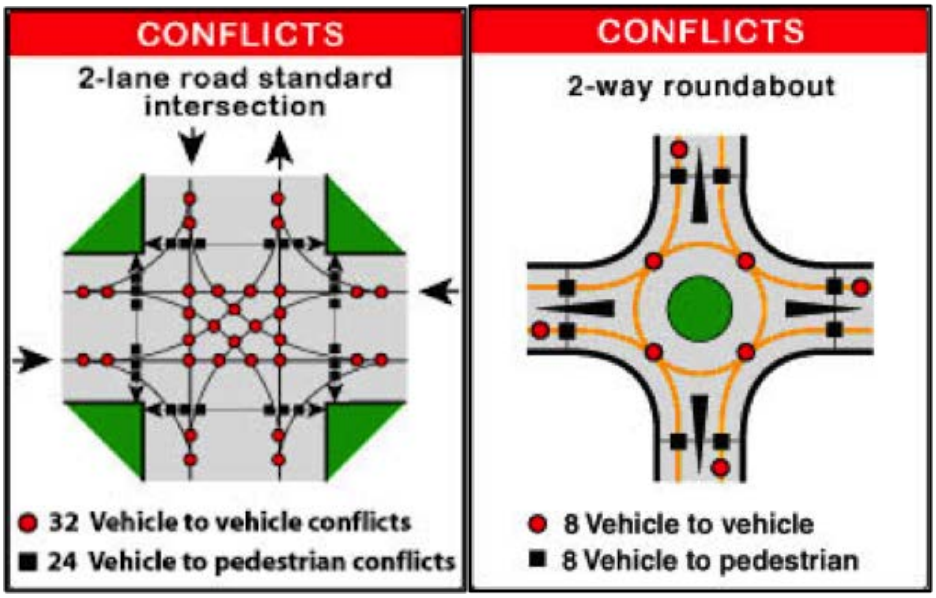
Refer to the City Manager:

1. Create the Community Common Space Stewardship Program as described below
2. Refer the additional staff and material costs of this program to the budget process.

CURRENT SITUATION AND ITS EFFECTS

Berkeley's traffic circle policy is being revised with the assistance of the Traffic Circle Policy Task Force, which was established by the Mayor of Berkeley on February 26, 2019 (Attachment 2). The Task Force is composed of interested community members from geographically diverse parts of the city, including Berkeley Partners for Parks, who maintain neighborhood traffic circles. The Task Force was charged with evaluating the current traffic circle vegetation policy, recommending appropriate characteristics for allowed plantings, recommending a policy that ensures sight lines for visibility, and working with the community to update the policy to ensure pedestrian, bicycle and vehicle safety, as well as beautification of traffic circles.

Neighborhood traffic circles are islands in the middle of intersections whose primary purpose is to calm and slow traffic. In contrast, larger circles such as the Marin circle, are designed to facilitate traffic flow and efficiency. Neighborhood traffic circles have been shown to reduce the speed of travel as well as reduce the number of collisions and injuries involving vehicles, pedestrians, and bicycles at these intersections. For example, "the Institute of Traffic Engineers (ITE) states that neighborhood traffic circles have been found to reduce…intersection collisions by up to 70%[1] Seattle WA, which has more than 1,200 circles and adds 5 each year, reports a roughly 90% reduction in collisions.[2] Similarly, Madison WI reports an average decrease of 70%[3]. A major benefit of traffic circles is that they reduce the number of conflict points, or locations where traffic crosses paths, as illustrated in the figures below. For example, vehicles do not need to cut directly in front of oncoming traffic to make a left turn. This tends to eliminate broadside hits, which are often the deadliest intersection crashes.



Comparing conflict points of a Traditional Intersection (left) with those of a Neighborhood Traffic Calming Circle (right).[4]

---

[1] Lupfer, Patrick. "Neighborhood Traffic Circles - Intersection of South Street and Intervale Road in Brookline, MA" (Calm Streets Boston, April 24, 2012)

[2] Marek, John. "Neighborhood Mini Traffic Circles: Seattle Washington" a case study of Countermeasures on the webpages BIKESAFE (pedbikesafe.org)

[3] Neighborhood Traffic Management Plan (City of Madison WI, November 2004)

[4] Lupfer, Patrick. "Neighborhood Traffic Circles - Intersection of South Street and Intervale Road in Brookline, MA" (Calm Streets Boston, April 24, 2012)

Berkeley has 62 neighborhood traffic circles; they represent a significant component of our streetscapes, shaping the safety and character of many neighborhoods, and improving public health while removing a half acre of asphalt. From a national perspective, low plantings and central trees are usual and customary practice for neighborhood traffic circles in cities throughout the country. These cities' policies recommend, encourage and support the inclusion of traffic circles with well-maintained trees and vegetation for their benefits to traffic calming, making traffic circles more visible and contributing to beautification, neighborhood character, and other benefits urban greening provides. Berkeley has numerous policies and plans that support traffic circles for traffic calming and other environmental and community benefits. Traffic circle trees and low vegetation are also recommended in national guidance by the Federal Highway Association and the National Association of City Transportation Officials.

Traffic circles provide many important benefits, including traffic calming and street safety. They also make important contributions to the City's climate, quality of life and social equity goals. Districts 2 and 3 which have the highest number of traffic circles[5] are also the City's most densely populated neighborhoods[6] and have the lowest ratio of parks and open space. Traffic circles ameliorate some of these inequities in urban greening by 1) reducing stormwater runoff and the Urban Heat Island Effect; 2) ameliorating current and projected increases in Extreme Heat Events[7]; and 3) increasing the tree canopy[8] and vegetation diversity in south-side areas. In light of the City's Declaration of a Climate Emergency[9] the Task Force wishes to emphasize that traffic circles contribute to the planted green space of our densely populated City neighborhoods.

---

[5] For a map of Berkeley traffic circles, see Appendix B in the Vegetation Subcommittee Report, Attachment 3.

[6] Population Density in Berkeley (Zip Atlas)

[7] *"Extreme heat events are a newly-introduced hazard of concern for the 2019 LHMP… By the end of the century, Bay Area residents may average six heat waves annually, which will average a length of ten days… Berkeley's urban forest…helps to mitigate the impacts of extreme heat events by shading buildings and paved and dark-colored surfaces, such as roads and parking lots that absorb and store heat…"* From the first complete draft of the *2019 Local Hazard Mitigation Plan* (p. ES-10, B-139, B-149; City of Berkeley)

[8] See Map 34 illustrating the inequitable distribution of tree canopy in Berkeley. *"The areas shaded in darker green, predominately in the hills in east Berkeley, have the greatest percentage of tree canopy, while west and south Berkeley have the least, meaning that these buildings and communities will likely not benefit from reduced temperatures provided by urban tree cover."* From the first complete draft of the *2019 Local Hazard Mitigation Plan* (p. B-154, B-155; City of Berkeley). Or page 6 of the attached Vegetation Subcommittee Report, Attachment 3.

[9] *Endorsing the Declaration of a Climate Emergency*, Resolution No. 68-486-N.S. (June 12, 2018; City of Berkeley

In the last five years there have been at least two serious collisions involving cars and pedestrians in the vicinity of traffic circle intersection.[10] In a lawsuit against the City of Berkeley in one case, the plaintiff's attorney alleged that the traffic circle vegetation obstructed the view of an approaching driver and contributed to the collision with a pedestrian. These accidents are the major reason the Task Force was established to develop an updated and well-founded set of policies to guide the establishment and maintenance of traffic circle vegetation.

At the meeting of October 2, 2019, the Traffic Circle Policy Task Force took the following action:

> Action: M/S/C (Steere/Grossinger) to approve changes to policy as discussed by members.
>
> Vote: Ayes: Wendy Alfsen, Steven Finacom, Robin Grossinger, Andrew Liu, Linda Franklin Diane Ross-Leech, John Steere, Diana Wood, Sally Hughes. Noes: None. Abstain: None. Absent: Erin Diehm, Yolanda Huang, Fred Krieger.

BACKGROUND AND RATIONALE FOR RECOMMENDATIONS

A. Traffic Circle Task Force Process

The Mayor's office hosted two community meetings on May 15 and May 29, 2019 where all interested community members were invited to participate and learn about the proposed Traffic Circle Policy Task Force, responsibilities, goals, deadlines and how to apply to the Task Force.

The Traffic Circle Policy Task Force held meetings on June 19, July 10, July 31, August 21, September 11 and October 2, 2019 where members of the public, in addition to the Traffic Circle Commissioners, had the opportunity to make public comments and participate in the general discussion. Agendas and minutes from these meetings can be found on the Traffic Circle Policy Task Force page on the city's website.

At its first official meeting, the Traffic Circle Policy Task Force invited the city's Traffic Engineer, Hamid Mostowfi, to address questions from the Task Force Commissioners.

---

[10] The Task Force notes that it received no data showing that Berkeley intersections that include traffic circles are associated with higher collision rates. In fact, based on data from other cities we would expect the collision rate to be significantly lower than traditional intersections. At writing no data has been provided to the Task Force comparing Berkeley's rate of collisions in traditional intersections (no circle) with those that have a circle (with and without a tree; before and after installation). We recommend the city conduct such an analysis to allow future iterations of the policy to be based on a better understanding of actual accident patterns.

The Traffic Engineer's primary concern with traffic circles is maintaining sight lines for visibility. With this background and the charge set out by the City Council and the Mayor, the Task Force set up three subcommittees to review Berkeley's own policies and plans as they relate to traffic circles and to gather additional information and research about traffic circles in other cities around the country. The Task Force also met twice with Farid Javandel, Traffic Division Manager.

The Vegetation Subcommittee examined the policies and characteristics of traffic circles in cities around the U. S. and Canada, reviewing standards for traffic circle vegetation in national guidance documents and in published policies of other cities and through interviews with traffic safety experts. In addition, the Vegetation Subcommittee interviewed traffic engineers, landscape architects, and traffic circle administrators from a number of other cities to understand perspectives on traffic circle landscaping. The Subcommittee found that landscaped plantings with trees are standard practice for neighborhood traffic circles in numerous cities across the country and are also recommended in the major national guidelines for traffic safety and urban design. For example, the U. S. Department of Transportation/Federal Highway Administration recommends including vegetation and trees to maximize the traffic calming effect:

> *"A traffic circle can simply be a painted area, but it is most effective when it is defined by a raised curb and landscaped to further reduce the open feel of a street.* ***A traffic circle can be landscaped with ground cover flowers, and street trees****."*[11] (emphasis added)

Traffic circles planted with trees are considered to contribute to traffic calming by reducing the open feel of the street and increasing the visibility of the circle, particularly at night, resulting in slower traffic speeds. Specifications for the height and clearance of vegetation are generally recommended for low landscaping and trees that provide clear sight lines.

The vegetation subcommittee revealed that specifications for vegetation height ranged from 2 to 5 feet (with our neighbor San Francisco allowing 3 feet[12]) and with tree limbs above 7-8 feet (14 feet if the limbs extend beyond the traffic circle planter curb into the travel lane). Keeping in mind the importance of public safety, the Vegetation Subcommittee used this information to inform the policy described below. (See Attachment 3 for additional details, including photos of traffic circles across 9 cities in the U.S. and Canada)

---

[11] *Traffic Calming ePrimer – Module 3* (U.S. Department of Transportation/Federal Highway Administration)
[12] *SFBetter Streets: A guide to making street improvements in San Francisco* (City and County of San Francisco 2015)

The Operation and Maintenance Subcommittee focused its research on successful community volunteer programs in other cities that Berkeley could replicate, such as Oakland's "Adopt a Spot" initiative. The subcommittee relied on previous research prepared by Berkeley Partners for Parks titled "Expanded Berkeley Partners for Parks Proposal to City of Berkeley Regarding Strengthening Volunteer Engagement by Establishing Citywide *Adopt a Spot* Program," (see Attachment 6). The Subcommittee further reviewed websites from various cities, including Oakland, to view program documents. All of the community volunteer programs have a more formal structure for their programs and volunteers than Berkeley. Typical elements include: a volunteer job description used for recruiting purposes; volunteer application or agreement with a minimum term; maintenance rules and guidelines; planting guidelines; and safety rules and guidelines all on the city's websites with easy to use on-line applications and approvals (see Attachment 4 for additional details).

The Policy Alignment Issues Subcommittee reviewed all of the City of Berkeley's applicable plans, policies and programs found on the city's website, as well as some state and regional plans and policies, to determine how the proposed traffic circle policy and actions would intersect. This subcommittee found overwhelming support and alignment among these documents. In particular, the Berkeley Bicycle Plan recommends additional traffic calming improvements along the Bicycle Boulevard network by adding 42 new traffic circles by 2035 (see Attachment 5 for additional details).

The subcommittee's comprehensive reports are Attachments 3, 4, and 5.

Other San Francisco Bay Area (e.g., San Francisco, Palo Alto) and North American cities and expert analysts beyond Berkeley have identified trees as a welcome and useful component of traffic circles, particularly because they help slow traffic and identify for drivers the presence of a circle from a distance. For example, the City of San Francisco recommends that:

> *"Traffic Calming Circles should be landscaped with trees or plantings.* ***Shrubs and grasses should be planted up to 3 feet tall and trees should be appropriately pruned****."*[13] (emphasis added)

These guidelines also allow for more than one tree, specifying the recommended number of trees in relation to circle size:

> *"In traffic calming circles with a diameter of less than 15 feet,* ***one tree should be planted in the center****. On a traffic calming circle with a diameter greater than 15*

[13] *SFBetter Streets: A guide to making street improvements in San Francisco* (City and County of San Francisco 2015)

> *feet,* ***more than 1 tree should be planted*** *and should be equally spaced around the circles."* (emphasis added)[14]

The Urban Street Design Guide, a manual developed by the National Association of City Transportation Officials (NACTO, an association of over 71 major North American Cities and 10 transit agencies) notes the value of trees and other vegetation not only for beautification, but also for their contribution to traffic calming. From the NACTO website:

> *"Mini roundabouts and neighborhood traffic circles lower speeds at minor intersection crossings…* ***Shrubs or trees in the roundabout further the traffic calming effect*** *and beautify the street, but need to be properly maintained so they do not hinder visibility."*[15] (emphasis added)

Whether community volunteers are experts or novices, everyone needs common sense guidelines for safely maintaining the traffic circles. Most of the cities that support volunteer programs have all of the documents on the city's website. These guidelines and best practices are important to help ensure that vegetation in traffic circles continues to contribute to traffic calming even as the seasons pass, climate change becomes a greater global issue, and volunteers come and go.

The traffic circle policy emphasizes a strict standard for the height of shrubby and herbaceous vegetation across the traffic circle. Such vegetation has the potential to create a visual barrier to drivers and pedestrians, particularly at the margins of circles where parties are closer to each other. We found that trees in the center area of circles are not considered to be a safety concern in the many other cities examined. Tree trunks create relatively small and momentary visual barriers, and only when parties are on the opposite sides of a circle. However, out of an abundance of caution, we also established guidelines for the width of tree trunks and other narrow vertical vegetation.

With limited time, the Task Force prioritized the development of a vegetation policy and a maintenance program. The following categories represent a good starting point for some of the guidelines that will be needed to support the Traffic Circle Policy and Community Common Space Stewardship Program (traffic circles are only one component of the Program).

Guidelines and Best Practices for Traffic Circles:

- General conduct, safety, tools, watering
- Managing sightlines and vegetation
- General layout/design for traffic circles

[14] Ibid.
[15] *Urban Street Design Guide* (National Association of City Transportation Officials 2013)

- Plant maintenance, pruning, weeding, new planting and tree replacement and/or removal
- Integrated Vegetation Management and Pest Control
- Garbage and Debris Removal
- Decorations, boulders, bird feeders, miscellaneous
- Coordinating with Public Works,
- Self-Certification of Compliance with Best Practices
- On-line Arc-GIS/Google Maps traffic circles GIS database

If authorized by Mayor and Council, The Traffic Circle Task Force will continue to work to develop recommended guidelines for many of these categories, relying on best practices and community knowledge and collaboration, and hopes to be able to do so as part of the integrated Community Common Space Stewardship Program / “Adopt a Spot Initiative”.

B. Review of Existing Plans, Policies and Programs

The City of Berkeley General Plan directly addresses landscaped traffic circles and encourages their construction for traffic calming.

The 2009 City of Berkeley Climate Action Plan identifies traffic circles as essential to slow or reduce automobile traffic and make walking and bicycling safer. Traffic circles are recognized traffic calming measures on a local street with a complementary benefit of sequestering carbon in trees and plantings.

The Berkeley Pedestrian Master Plan strongly supports the traffic calming benefits and safety improvements provided by traffic circles.

The Berkeley Bicycle Plan supports traffic calming through various measures, including additional traffic circles along major Bicycle Boulevards to slow traffic and improve safety. The Design Specifications of the Plan includes a broad canopy tree in the center of the circle. (See Attachment 3 for the associated illustration.)

The “Vision Zero” Policy initiative is intended to create a transportation system with no fatalities or serious injuries involving road traffic. The Task Force strongly recommends that traffic circles be a part of the pending plan.

There are additional City of Berkeley plans and policies that support traffic circles, and more detail can be found in Attachment 5.

C. Traffic Circle Policy

PURPOSE

The purpose of this new policy is to identify the appropriate design, vegetation and operation characteristics of traffic circles that provide traffic calming, beautification, climate change mitigation and other benefits while maintaining pedestrian safety.

As proposed and documented in numerous City of Berkeley plans, programs and policies, the primary purpose of neighborhood traffic circles is for calming traffic and not facilitating its flow, as excess speed causes one in three traffic deaths[16], comparable to drunk driving. This purpose is important to highlight so that traffic circle elements, as well as additional, complementary safety measures are designed to support traffic calming and pedestrian safety goals. Many cities around the country and in California incorporate vegetation and trees in traffic circles as part of traffic calming measures. The goal of this policy is to develop guidelines ensuring that traffic circle vegetation and trees are maintained to conform to safety standards, thereby enhancing, rather than reducing, neighborhood safety.

GRANDFATHERING EXISTING TREES

Berkeley has a variety of existing trees in its traffic circles, such as Coast Live Oaks, California Buckeyes, Dawn Redwoods, Olives, and other trees. All existing trees that are structurally safe are permitted by this policy[17]. For trees with trunks that exceed 20" in diameter see the section "TREE TRUNKS WIDER THAN 20 INCHES" below, which outlines how additional traffic calming measures will be incorporated into the traffic circle intersection to ensure safety.

VEGETATION AND NEW TREES

Beautiful, healthy, and well-maintained vegetation and trees in traffic circles supports Berkeley's neighborhood quality of life and contributes to traffic calming. Circle plantings should be durable, diverse, attractive and planted and maintained by community volunteers. Volunteer participation adds to the unique character of our neighborhood and creates strong resident commitment to our urban communities. Planted circles improve storm water retention and are strongly encouraged to use native or other plant species that do not require pesticides or herbicides to maintain them. Traffic circles should be planted with consideration of vegetation and tree's mature shape and size and sightline requirements. There are several suggested palettes for those who find suggestions helpful (see Attachment 3).

---

[16] *Motor Vehicle Crash Deaths: How is the US doing?* (Centers for Disease Control and Prevention)
[17] Designated historic resources are regulated by the Landmarks Preservation Ordinance, and may have features that do not conform to these policies. In case of conflict, the city shall follow established procedures for alterations to a designated landmark. Landmarks Ordinance prevails.

New trees proposed by traffic circle coordinators or volunteers will be approved by the Forestry Supervisor, with a preference for natives and a focus on maximizing ecosystem services.

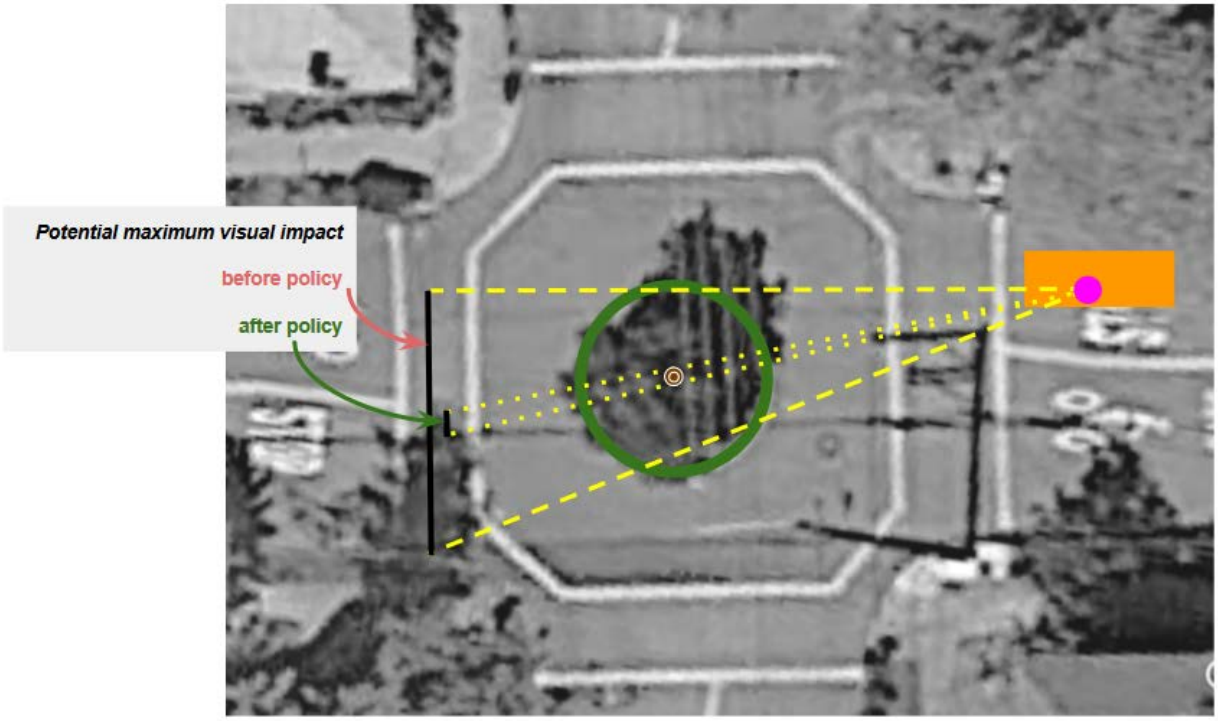
The Task Force recommends revisiting trunk size considerations every five years as the implications of climate change and autonomous vehicles become clearer. In the interim, large trunked trees such as redwoods will not be planted.

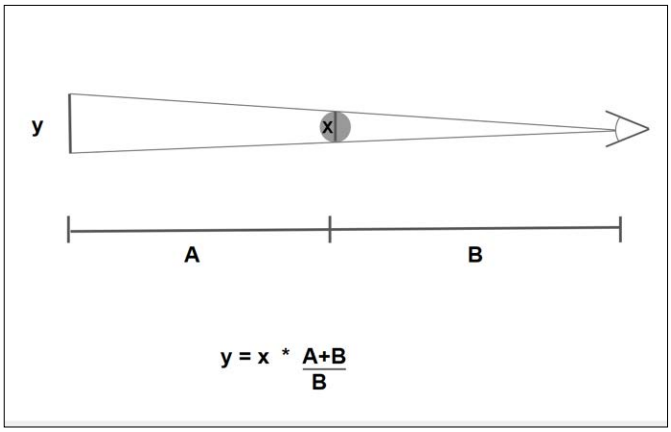
SIGHTLINES

Visual sight lines – the unobstructed view of the driver[18] stopped before entering the near crosswalk to the corners of the opposite crosswalk [see Figure X below] – should guide all vegetation selection and maintenance criteria. Based on the City of Berkeley's Traffic Engineer's opinion and researched best practice, low vegetation should be maintained at a maximum height of 2.5 feet from the top of the traffic circle planter curb and a mature tree canopy should be pruned and trimmed up to and maintained at 7-8 feet height above the top of the traffic circle planter curb. Limbs that extend beyond the curb should be trimmed to 14 feet above the adjacent road surface within the road right-of-way. Single tree trunks that are less than 20" in width, as measured 4 feet above the ground, do not require any additional traffic calming devices. Low branches on young trees and/or flower stalks extending above the 2.5 feet maximum height shall be permitted as long as the total visual obstruction above 2.5 feet is no more than 20" across the circle.[19,20]

[18] By national standards it is assumed that drivers' eyes are at three and a half feet and ability to see an object one foot tall on the ground.[cite?]
[19] A tree in the center of a traffic circle can only create a visual impact when objects are on directly opposite sides of the circle. These specifications to trunk size and vegetation height provide a conservative safety margin for visual impacts.
[20] Sight lines are defined as that horizontal plane (called the sight triangle), from the view of the driver stopped before entering the crosswalk to the corners of the opposite intersection, from 2.5ft above the top of the traffic circle planter curb line to the height of 7-8 feet.

Figure x: Traffic Circle Sightlines and Geometry





TREE TRUNKS WIDER THAN 20 INCHES

Tree trunks wider than 20 inches will be permitted with additional traffic calming measures, such as speed tables or cushions, diagonal diverters or flashing beacons to

ensure slow speeds[21], additional stop signs or traffic mirrors to increase visibility,[22,23] established around the intersection. City staff and neighborhood traffic circle volunteers will work together to determine what measures are needed and which ones are best suited for installation. Where funding restrictions are a significant restriction, traffic circle coordinators or volunteers will be given a reasonable amount of time for community fundraising to offset the cost of additional traffic calming measures.

SUMMARY OF POLICY RECOMMENDATIONS

Neighborhood communities and traffic circle volunteers care a great deal for their circle plantings and should be provided an opportunity to bring their trees and vegetation into conformance with the sight line maintenance guidelines within 30 days following notice of adoption or, in the future, of non-compliance. The Forestry Supervisor may provide guidance on how best to prune vegetation and trees to accomplish the sight lines or to suggest alternative plantings whose growth patterns would naturally conform. The Urban Forestry Unit of the Parks Division, will maintain the tree branches above the travelled way to ensure they are at least 14 feet from the road surface.

The City supports community volunteer contributions and recognizes and acknowledges that community volunteers give a considerable amount of free time to maintain the City's open spaces, including traffic circles. Community volunteers are encouraged to contribute in a safe and reasonable manner and to follow guidelines developed by the Community Common Space Stewardship Program.

Summary of Policy Recommendations for Traffic Circle Vegetation:

- The primary purpose of neighborhood traffic circles is for traffic calming.
- Sightlines should be maintained at a maximum height of 2.5 feet from the top of the traffic circle planter curb and a mature tree canopy should be pruned up to 7-8 feet above the traffic circle planter curb.
- Trees and other vegetation that conform to sightline and pruning maintenance are allowed. Total vegetation and signage extending above the 2.5 foot height maximum should not exceed a 20 inch wide solid sight obstruction.

---

[21] The Federal Highway Administration website provides data summarizing studies on engineering countermeasures used to manage speeds and lists the speed reductions for different kinds of traffic calming measures. Per the extensive table, Speed Cushions and Tables reduce the 85th %tile Speed by 5 to 9 mph. (US Department of Transportation/Federal Highway Administration. Engineering Speed Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed, July 2014)

[22] https://www.nationalsafetymirror.com/driveway-mirror-traffic-mirrors/

[23] The trees in the traffic island at Woolsey & Wheeler should be exempted from these rules due to the unique shape of the traffic island, its location outside of the actual intersection, and the presence of traffic dividers.

- Trees with trunks wider than 20 inches will be permitted with additional traffic calming measures established around the intersection to ensure low speeds and safe intersections. City staff and neighborhood traffic circle volunteers will work together to determine what measures are needed and which ones are the most appropriate for installation.
- Traffic circle volunteers will be provided an opportunity to bring trees and vegetation into conformance with the sightline maintenance guidelines within 30 days following notice[24] of non-compliance, before the City undertakes maintenance to bring the circle vegetation or trees into sightline compliance.
- The City should develop and implement consistent traffic circle signing and speed limit standards for the Program which will be implemented as soon as feasible.

D. Community Common Space Stewardship Program

Berkeley has many engaged community members who volunteer their time and resources. Community volunteers and neighborhoods have been the mainstay of the traffic circles – generously buying plants and giving their time to water and maintain the traffic circles and other common space (i.e. Berkeley Path Wanderers) over the last two decades.

There is no formal mechanism for the City to engage these volunteers or to recruit new ones. There are many existing community-based partnership programs in the San Francisco Bay Area as well as around the country. The City of Oakland's "Adopt a Spot" is a long-standing and successful model that has also served as a template for similar programs in Livermore and Richmond, and is fortunately being considered as a template for the City of Berkeley's Program. A Berkeley Stewardship Program will encourage civic engagement and community improvement

The City can establish and operate a successful partnership program with community volunteers to provide coordination and guidance on safety and technical issues, hosting work days, developing discount programs, and supporting community improvement and agreed upon goals.

Berkeley City leaders expressed their willingness to work with the community and to develop a real partnership with the community by creating and supporting the establishment of the Traffic Circle Policy Task Force. A formal partnership needs a shared commitment and written guidelines, structure, budget and resources to deliver the benefits to both the City and the community.

[24] Notice of non-compliance is a standard vegetation maintenance enforcement procedure. It is recommended that the notice be sent via the Stewardship Program.

The Traffic Circle Policy Task Force recommends that the Public Works Department, in no less than three months, formalize the existing traffic circle community volunteer program and establish it as a component of the Community Common Space Stewardship Program (Stewardship Program. It is recommended that the Stewardship Program be integrated into the "Adopt a Spot Initiative," which the City Council approved on April 23, 2019 (Item #33), and that the City Council refer the Adopt a Spot Initiative to the Traffic Circle Task Force for the purpose of developing a coherent and consistent set of guidelines for City/volunteer partnership on volunteer efforts for not just traffic circles but also other City common space, such as medians, bulb-outs, mid-block curb extensions and pocket parks. This Stewardship Program will define responsibilities between City and community volunteers and provide guidance for volunteer responsibilities including selection of plants and trees, maintenance best practices and safety guidelines. The Stewardship Program will also investigate and develop a much needed program analysis including criteria, environmental benefits, program costs and staffing needs.

The goals of the Traffic Circle component of the Community Common Space Stewardship Program include:

- Ensure community engagement and partnership in complying with the Traffic Circle Policy
- Maximizing traffic calming benefits of traffic circles
- Maintain sightline visibility to protect pedestrians and bicyclists
- Expand the network of neighborhood traffic circles to underserved areas

And in addition, the Community Common Space Stewardship Program will:

- Help beautify Berkeley - *Greenery in and along streets makes Berkeley a more beautiful city and is critical to Berkeley's livability and success as a place*
- Encourage joint activities by neighbors and friends for the betterment of Berkeley
- Provide spaces that capture and infiltrate rainfall and storm water
- Reduce noise pollution through the use of vegetation and trees
- Provide habitat for birds, butterflies, bees, and other native creatures
- Increase carbon sequestration
- Help cool the urban environment

In order to establish and operate a successful partnership program, staff resources are required. Staffing could be provided through the City or through an existing non-profit entity that would be contracted for staff resources (at this point it's not clear if this would be a full-time position or could be part time after the program is set up).

A Traffic Circle Community Engagement Coordinator would report to Public Works and be responsible for coordinating with all existing traffic circle volunteers, recruiting new volunteers, act as a liaison between community volunteers and City staff, coordinate between Public Works, Parks and Recreation and Planning Departments as well as third-party utilities, and develop and maintain an on-line tool for tracking traffic circle compliance and administration. The Coordinator would also be responsible for developing an annual budget, hosting annual work days, provide assistance with technical issues, and develop a plant discount program, free mulch delivery, tool and safety equipment lending library, seeking additional outside funding and a green infrastructure mini-grants program with matching funds and/or in-kind support.

The Coordinator and City leaders should explore consolidating all resources and responsibilities for traffic calming measures (traffic circles, bulb-outs, mid-block curb extensions, traffic diverter replacement/conversions, parklets and other speed calming treatments) as well as supporting the Berkeley Bicycle Plan under the Community Common Space Stewardship Program. The core goal of this position should be nurturing and supporting a Citywide and expanding program of traffic circles that are both beautiful and safe and that make use of community volunteer resources, while also coordinating City staff resources and interests as they apply.

It should be noted that this position could also be defined to coordinate City staff and volunteer stewardship resources (through friends of parks and creeks groups) and efforts associated with maintaining and enhancing city parks, creeks, and open spaces. In this case, additional staff capacity would likely be required.

All of the community volunteer programs that the Traffic Circle Policy Task Force reviewed have a more formal structure for their programs and volunteers. Typical elements include: a volunteer job description used for recruiting purposes, volunteer application or agreement with a minimum term, maintenance rules and guidelines, planting guidelines, and safety rules and guidelines. Public Works should borrow from the best programs, specifically Oakland's "Adopt a Spot," to develop the documents needed to support the program. All Program documents should be maintained on the City's website with easy to use on-line applications and approvals.

This proposed Program and its recommendations are designed in part to reduce City liability and risk from traffic circles. By the same token, the City should be willing to extend protection from liability to neighborhood volunteers who maintain traffic circles

and are in compliance with the Program. The advice of the City Attorney and specialized legal experts on municipal volunteer programs should be sought in formalizing this two-way arrangement.

Communication Plan

The Traffic Circle Policy Task Force's report and recommendations and the City's approval and adoption is only the first step to implementation. Any changes to the status quo will be new and possibly startling to the community. A thoughtful and robust communication plan should be developed and implemented within a set time period in concert with rolling out the new policy and program. Particular attention should be paid to the initial effort to bring existing circles into compliance. Based on a recent photo survey, there are a few traffic circles that have vegetation that will not easily be brought into compliance. For example, some circles have large cacti that cannot be "pruned" to achieve the sightline requirements. The city should consider organizing a large work day to support the removal of non-compliant existing plants and provide support to community members in planting new, better suited vegetation.

The Task Force Commissioners should be given a prominent role to assist the City with explaining the Program through open houses, newsletters, press, social media and neighborhood meetings. This process may also be used to ensure current traffic circle volunteers are identified and new ones recruited.

Incentives for Recruiting Volunteers

Public Works should strive to be seen as an ally and support for the community volunteers with expertise and resources to support them and the Program. Public Works and the Community Engagement Coordinator should investigate incentives to help recruit additional community volunteers, especially in under-represented neighborhoods of the City. These incentives could include: a plant discount program, free mulch delivery, tool and safety equipment lending library, green infrastructure mini-grants program with matching funds and/or in-kind support.

On-line GIS Tool

Public Works and the Community Engagement Coordinator should develop and implement an on-line GIS tool to map all traffic circles and monitor overall compliance with the sight line maintenance guidelines, operation and maintenance guidelines and plant palette guidance.

Advisory Board

The Task Force recommends that Public Works establish an advisory board comprised of leaders within Public Works, Parks, Recreation and Waterfront, and Planning Departments and a representative group of relevant Commission representatives and community volunteers to meet periodically to review the Programs progress. Note, we are not suggesting a new commission.

Annual Compliance Report

Public Works and the Community Engagement Coordinator should produce an annual report to the Berkeley City Manager, City Council, and the public on overall progress and compliance.

Additional Traffic Circle Safety Improvements

The City should inventory all existing traffic circle intersections and develop and implement consistent traffic circle signing and speed limit standards. Effective and safe traffic circles don't end at the curb line. The City should work towards other holistic street improvements and modifications to continue to improve safety at traffic circle intersections. Pedestrians, bicyclists and motor vehicle drivers should be able to expect consistency in City traffic circles operations. It could often be this uncertainty – the driver, bicyclist or pedestrian who doesn't realize they've come to a two-way, not four-way stop sign circle intersection – that increases hazards, not the existence or character of the traffic circle itself or its vegetation.

ENVIRONMENTAL SUSTAINABILITY

The Task Force found overwhelming support and alignment for the recommended action and the city's existing environmental sustainability plans, programs and policies.

Promoting additional tree planting and native drought tolerant vegetation in existing neighborhood traffic circles directly supports the Berkeley Climate Action Plan to restore natural processes, provide habitat for birds and insects, reduce ambient temperatures by shading, intercepting and storing rainwater, improving community quality of life through beautification and by reducing noise pollution and encouraging pedestrian traffic. Increasing the number of neighborhood traffic circles and planting them with trees will help fulfill the stated goals to maximize tree plantings, sequester carbon and protect biodiversity.

Half an acre of forest land can absorb three tons of carbon dioxide annually and produce two tons of oxygen. Berkeley's 62 existing traffic circles cover about half an acre of land, all of it converted from asphalt. The City's Hazard Mitigation Plan and Climate Action Plan recommend more tree plantings in Berkeley to help fight climate

change and reduce the “heat island effect” in lower elevation neighborhoods. Tree plantings are also an economic and social equity issue. City mapping shows that tree cover is much higher in the Berkeley Hills than it is in the Flatlands.

The recommended action is consistent with Berkeley’s history of neighborhood partnership for creating and caretaking traffic circles, as is common in many other cities, and with the goal of increasing green space and tree canopy in neighborhoods with less access to parks and open space.

The recommended action enables neighborhood traffic circles to contribute to the support of native biodiversity within the City, through the habitat contributed by native plants and trees. The Task Force provides several plant palettes of native plant assemblages designed to maximize biodiversity as well as other valuable services such as pollinator support, water conservation, runoff reduction, and carbon sequestration.

ALTERNATIVE ACTIONS CONSIDERED

No Action Alternative isn’t viable because it doesn’t address traffic safety concerns or provide clarity to the volunteers currently maintaining the existing traffic circles. There’s confusion by the volunteer community about what the rules are for traffic circles, who is responsible for what and if trees in circles are allowed.

No Trees Alternative is not recommended because it is contrary to standard practice by many California and national cities, as well as Berkeley plans and policies. There are 37 existing traffic circles that have trees that are maintained by volunteers. The community has already expressed significant concern when the City proposed in the summer of 2018 to remove all trees and other large vegetation in existing traffic circles.

No Volunteers Alternative is not recommended because it goes against the spirit of how the City governs. The City has partnered with its citizens on their stewardship of the traffic circles for almost two decades. It is in the City’s interest to formalize and support community involvement to maintain the traffic circles.

Administrative Department Move Alternative – to move traffic circle administration from Public Works to Parks, Recreation and Waterfront Department - is not recommended because the Public Works Department is responsible for construction and maintenance of all streets and the right-of-way. The Public Works Department has oversight and approval responsibility for traffic circles including construction, maintenance (in coordination with local community groups), and vegetation.

FISCAL IMPACTS OF RECOMMENDATION

The recommended action to develop a formal Stewardship Program with one full time staff in the Public Works Department represents a new cost to the City. The cost will be

the salary and overhead for a full time Community Engagement Coordinator position and the costs to administer the program, including setting up an on-line GIS web-based tool, developing the community volunteer program, finalizing operation and maintenance guidelines, finalizing planting palette guidance, developing a self-certification process, and setting up discount and mini-grant programs. It should be recognized that in the long term, the Stewardship Program/Adopt a Spot will, in fact, be a net cost savings for the City for the maintenance and planting "services" rendered by volunteers that would otherwise have to be performed by City staff or contractors. Having this program would also be advantageous for the City whenever it pursues project grants, as a source of in-kind/match funding.

In the long term, through efficiencies and "normalizing" the work of the program, these start-up costs are anticipated to decrease.

The overall total costs to the City should substantially decrease due to the program reducing injuries and lawsuits, minimizing the safety risks and uncertainty associated with the existing traffic circles. The benefits to establishing a formal, staffed program should greatly outweigh these costs.

CONTACT PERSON
Tano Trachtenberg, Legislative Aide, Office of Mayor Arreguín, 510-981-7100

Attachments:

1. Resolution to Adopt Traffic Circle Policy and Exhibit A
2. February 26, 2019 Berkeley City Council Item
3. September 29, 2019 Vegetation Subcommittee Report
4. July 19, 2019 Operation and Maintenance Subcommittee Report
5. July 19, 2018 Policy Alignment Issues Subcommittee Report
6. Expanded Berkeley Partners for Parks Proposal
7. Draft "Best Practices" Guidelines - Operation and Maintenance Subcommittee

RESOLUTION NO. ##,###-N.S.

Traffic Circle Policy

WHEREAS, Berkeley has 62 neighborhood traffic circles, that constitute a half-acre of permeable green space that would otherwise be filled with asphalt; and

WHEREAS, Traffic circles have been shown to reduce the speed of travel as well as reduce the number of collisions involving vehicles, pedestrians, and bicycles at these intersections; and

WHEREAS, Across the country, traffic circles with well-maintained low plantings and central trees are widely encouraged due to their benefits to traffic calming, making circles more visible and their contribution to beautification, neighborhood character, urban greening; and

WHEREAS, The Urban Street Design Guide, a manual developed by the National Association of City Transportation Officials (an association of over 71 major North American Cities and 10 transit agencies) notes the value of trees and other vegetation not only for beautification, but for their contribution to traffic calming and

WHEREAS, Other San Francisco Bay Area and North American cities and expert analysts beyond Berkeley have identified trees as a welcome and useful component of traffic circles, particularly because they help slow traffic and identify for drivers the presence of a circle from a distance; and

WHEREAS, The climate and biodiversity crises, including recent recognition of bird and insect declines, necessitate the support of trees, native plants, and other high value habitat in city spaces.

WHEREAS, Berkeley has numerous policies and plans that support traffic circles for traffic calming and other environmental and community benefits such as the Climate Action Plan, General Plan, Pedestrian Plan and Bicycle Plan; and

WHEREAS, The City Council established the Traffic Circle Task Force on February 26, 2019 with the charge of evaluating the current traffic circle vegetation policy, recommending appropriate characteristics for allowed plantings, and a policy that ensures sight lines for visibility, pedestrian, bicycle and vehicle safety, as well as beautification of the circles.

NOW THEREFORE, BE IT RESOLVED that the Berkeley City Council adopts the Traffic Circle Policy in Exhibit A.

Exhibits:
A: Traffic Circle Policy

Exhibit A

Traffic Circle Policy

PURPOSE

The purpose of this new policy is to identify the appropriate design, vegetation and operation characteristics of traffic circles that provide both traffic calming, beautification and other benefits while maintaining pedestrian safety.

As proposed and documented in numerous City of Berkeley plans, programs and policies, the primary purpose of neighborhood traffic circles is for traffic calming. This purpose is important to highlight so that traffic circle elements, as well as additional, complementary safety measures are designed to support traffic calming and pedestrian safety goals. Many cities around the country and in California incorporate vegetation and trees in traffic circles as part of traffic calming measures. Excess speed causes one in three traffic deaths[25], comparable to drunk driving. The goal of this policy is to develop guidelines ensuring that traffic circle vegetation and trees are maintained to conform to safety standards, thereby enhancing, rather than reducing, neighborhood safety.

GRANDFATHERING EXISTING TREES

Berkeley has a variety of existing trees in its traffic circles, such as Coast Live Oaks, California Buckeyes, Dawn Redwoods, Olives, and other trees. All existing trees that are structurally safe are permitted by this policy[26]. For trees with trunks that exceed 20" in diameter see the section "TREE TRUNKS WIDER THAN 20 INCHES" below, which outlines how additional traffic calming measures will be incorporated into the traffic circle intersection to ensure safety.

VEGETATION AND NEW TREES

Beautiful, healthy, and well-maintained vegetation and trees in traffic circles supports Berkeley's neighborhood quality of life and contributes to traffic calming. Circle plantings should be durable, diverse, attractive and planted and maintained by community

[25] *Motor Vehicle Crash Deaths: How is the US doing?* (Centers for Disease Control and Prevention)
[26] Designated historic resources are regulated by the Landmarks Preservation Ordinance, and may have features that do not conform to these policies. In case of conflict, the city shall follow established procedures for alterations to a designated landmark. Landmarks Ordinance prevails.

volunteers. Volunteer participation adds to the unique character of our neighborhood and creates strong resident commitment to our urban communities. Planted circles improve storm water retention and are strongly encouraged to use native or other plant species that do not require pesticides or herbicides to maintain them. Traffic circles should be planted with consideration of vegetation and tree's mature shape and size and sightline requirements. There are several suggested palettes for those who find suggestions helpful (see Attachment 3).

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.

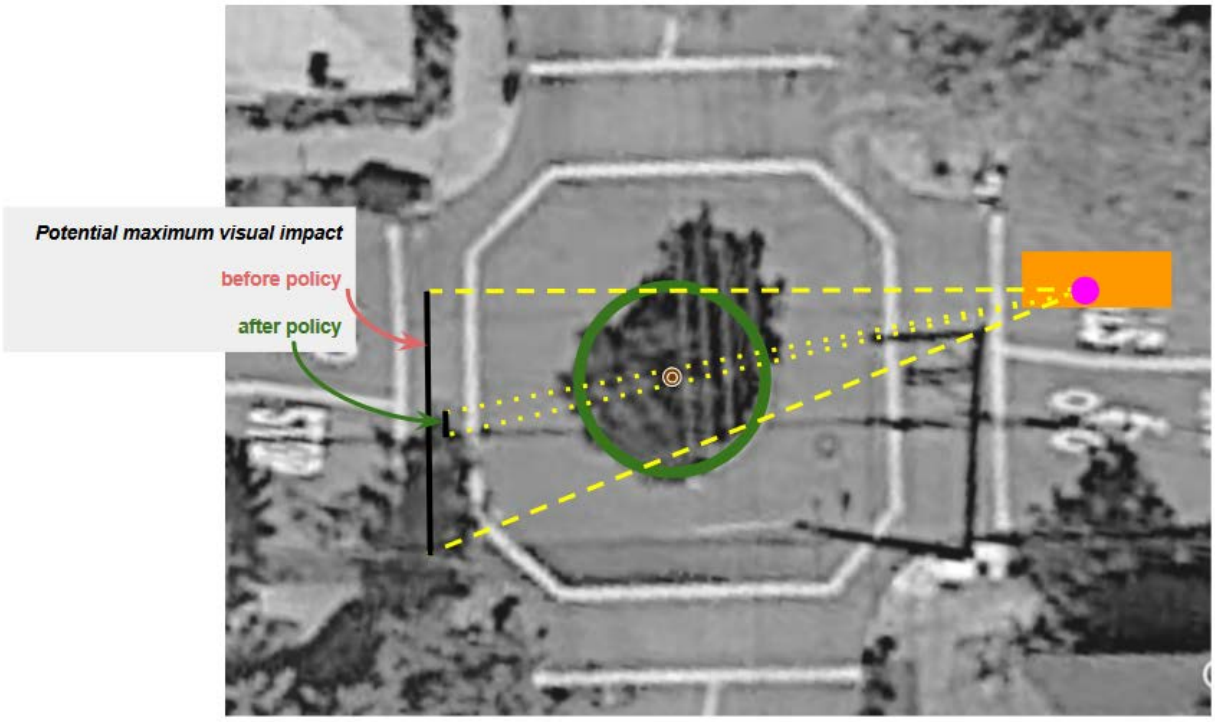
The Task Force recommends revisiting trunk size considerations every five years as the implications of climate change and autonomous vehicles become clearer. In the interim, large trunked trees such as redwoods will not be planted.

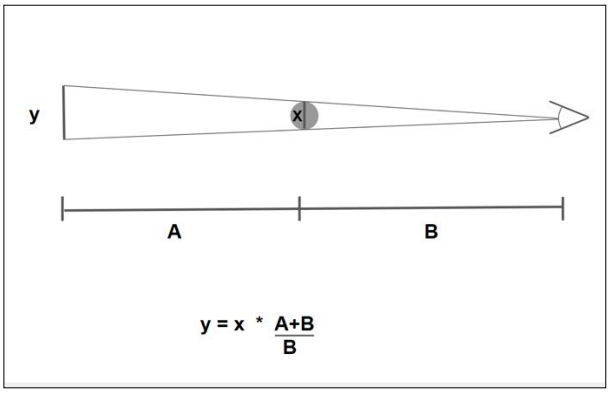
SIGHTLINES

Visual sight lines – the unobstructed view of the driver[27] stopped before entering the near crosswalk to the corners of the opposite crosswalk [see illustration below] – should guide all vegetation selection and maintenance criteria. Based on the City of Berkeley's Traffic Engineer's opinion and researched best practice, low vegetation should be maintained at a maximum height of 2.5 feet from the top of the traffic circle planter curb and a mature tree canopy should be pruned and trimmed up to and maintained at 7-8 feet height above the top of the traffic circle planter curb. Limbs that extend beyond the curb should be trimmed to 14 feet above the adjacent road surface within the road right-of-way. Single tree trunks that are less than 20" in width, as measured 4 feet above the ground, do not require any additional traffic calming devices. Low branches on young trees and/or flower stalks extending above the 2.5 feet maximum height shall be permitted as long as the total visual obstruction above 2.5 feet is no more than 20" across the circle.[28][29]

Figure X. Traffic Circle Sightlines and Geometry

[27] By national standards it is assumed that drivers' eyes are at three and a half feet and ability to see an object one foot tall on the ground.
[28] A tree in the center of a traffic circle can only create a visual impact when objects are on directly opposite sides of the circle. These specifications to trunk size and vegetation height provide a conservative safety margin for visual impacts.
[29] Sight lines are defined as that horizontal plane (called the sight triangle), from the view of the driver stopped before entering the crosswalk to the corners of the opposite intersection, from 2.5ft above the top of the traffic circle planter curb line to the height of 7-8 feet.





TREE TRUNKS WIDER THAN 20 INCHES

Tree trunks wider than 20 inches will be permitted with additional traffic calming measures, such as speed tables or cushions[30], diagonal diverters or flashing beacons to

[30] The Federal Highway Administration website provides data summarizing studies on engineering countermeasures used to manage speeds and lists the speed reductions for different kinds of traffic calming measures. Per the extensive table, Speed Cushions and Tables reduce the 85th %tile Speed by 5 to 9 mph. (US Department of Transportation/Federal Highway Administration. Engineering Speed

ensure slow speeds, additional stop signs or traffic mirrors to increase visibility,[31,32] established around the intersection. City staff and neighborhood traffic circle volunteers will work together to determine what measures are needed and which ones are best suited for installation. Where funding restrictions are a significant restriction, traffic circle coordinators or volunteers will be given a reasonable amount of time for community fundraising to offset the cost of additional traffic calming measures.

SUMMARY OF POLICY RECOMMENDATIONS

Neighborhood communities and traffic circle volunteers care a great deal for their circle plantings and should be provided an opportunity to bring their trees and vegetation into conformance with the sight line maintenance guidelines within 30 days following notice of adoption or, in the future, of non-compliance. The Forestry Supervisor may provide guidance on how best to prune vegetation and trees to accomplish the sight lines or to suggest alternative plantings whose growth patterns would naturally conform. The Urban Forestry Unit of the Parks Division, will maintain the tree branches above the travelled way to ensure they are at least 14 feet from the road surface.

The City supports community volunteer contributions and recognizes and acknowledges that community volunteers give a considerable amount of free time to maintain the City's open spaces, including traffic circles. Community volunteers are encouraged to contribute in a safe and reasonable manner and to follow guidelines developed by the Community Common Space Stewardship Program.

Summary of Policy Recommendations for Traffic Circle Vegetation:

- The primary purpose of neighborhood traffic circles is for traffic calming.
- Sightlines should be maintained at a maximum height of 2.5 feet from the top of the traffic circle planter curb and a mature tree canopy should be pruned up to 7-8 feet above the traffic circle planter curb.
- Trees and other vegetation that conform with sightline and pruning maintenance are allowed. Total vegetation and signage extending above the 2.5 foot height maximum should not exceed a 20 inch wide solid sight obstruction.
- Trees with trunks wider than 20 inches will be permitted with additional traffic calming measures established around the intersection to ensure low speeds and safe intersections. City staff and neighborhood traffic circle volunteers will work together to determine what measures are needed and which ones are the most appropriate for installation.

Management Countermeasures: A Desktop Reference of Potential Effectiveness in Reducing Speed, July 2014)

[31] https://www.nationalsafetymirror.com/driveway-mirror-traffic-mirrors/

[32] The trees in the traffic island at Woolsey & Wheeler should be exempted from these rules due to the unique shape of the traffic island, its location outside of the actual intersection, and the presence of traffic dividers.

- Traffic circle volunteers will be provided an opportunity to bring trees and vegetation into conformance with the sightline maintenance guidelines within 30 days following notice[33] of non-compliance, before the City undertakes maintenance to bring the circle vegetation or trees into sightline compliance.
- The City should develop and implement consistent traffic circle signing and speed limit standards for the Program which will be implemented as soon as feasible.

[33] Notice of non-compliance is a standard vegetation maintenance enforcement procedure. It is recommended that the notice be sent via the Stewardship Program.

Office of the Mayor

CONSENT CALENDAR
February 26, 2019

To: Members of the City Council

From: Mayor Jesse Arreguin, and Councilmembers Ben Bartlett, Lori Droste and Sophie Hahn

Subject: Establishment of Traffic Circle Policy Task Force

RECOMMENDATION
Establish a Traffic Circle Policy Task Force comprised of representatives from neighborhoods currently maintaining traffic circles. Members will be appointed by the Mayor and chosen from geographically diverse parts of the city, including one representative from Berkeley Partners for Parks. Staff participating will be appointed by the City Manager.

The charge of this Task Force is to:

1. Evaluate the City's current traffic circle vegetation policy for consideration by the City Council and Traffic Engineer;
2. Find a solution, through active participation and engagement with the community, that respects:
    - Environmental Policy
    - Habitat
    - Safety and Performance Standards
    - Existing and future liability issues that address sight lines; and
3. Deliver a policy to City Council for adoption prior to August 9, 2019.
4. Conduct a community-led process to update that policy to ensure pedestrian/bicycle/ vehicle safety and community efforts to beautify traffic circles.

Task Force activities may include, but are not limited to:

- Recommend appropriate characteristics and parameters for allowed plantings based on input from the community and city staff;
- Recommend a policy that ensures lines of sight and other important safety considerations;
- Work with City staff to conduct a survey of current traffic circles and their vegetation;
- Conduct a survey of neighborhood associations, neighborhood captains, community and community groups such as Berkeley Partners for Parks to determine which traffic circles are being maintained by community members;
- Examine the City of Oakland's 'Adopt a Spot' initiative to encourage community involvement in the maintenance of public spaces by loaning tools, supplies, and technical assistance to committed members of the community;
- Host a presentation from City staff to better understand concerns with the current traffic circle policy and any safety concerns that should be taken into consideration;
- Recommend a clear set of guidelines/criteria to allow for community maintenance of traffic circles, with input from city staff;

- Outline the appropriate community outreach strategy and process to share the updated policy for managing vegetation in traffic circles;
- Recommend a replanting strategy, with emphasis on drought-resistant plants.

BACKGROUND
In the summer of 2018 in response to a legal settlement agreement, the Public Works Department provided notice to all neighbors responsible for the maintenance of traffic circle vegetation, informing them that the City would be removing trees and other large vegetation that obscures line of sight and poses a safety risk.

This communication elicited significant concern from the community. Residents responded by asking for more outreach and engagement of neighborhood traffic circle volunteers, particularly regarding decisions on the removal of vegetation or updates to policy. The current Traffic Circle Planting and Maintenance policy, last updated in 2012, prohibits vegetation over two feet in height and/or six inches in diameter, yet there are many trees that exceed these limit in traffic circles. There is a need to update this policy to reflect current conditions and to ensure ongoing maintenance that improves safety at these intersections.

On August 8, 2018, the Mayor, Councilmembers and City staff held a public meeting where many of the traffic circle volunteers attended along with Berkeley Partners for Parks. A major takeaway was a strong desire by many for a more formal process to engage neighborhood volunteers and other stakeholders in updating the current Traffic Circle policy.

On September 25, 2018, the City Council unanimously referred to the Parks and Transportation Commissions to create a city/community task force on Traffic Circle vegetation maintenance. Since the Council's referral, the Parks Commission was informed that they do not have the authority to establish a Task Force, and that Council action is required.

A stakeholder task force would be the most strategic, effective, and appropriate approach to respond to the community's substantial interest in, and continuing care for, the circles. The City has partnered with its citizens on their stewardship for almost two decades. Now is the ideal time to revisit, enhance and formalize that partnership, support community involvement and work together to address important safety concerns. To help meet the spirit and desired follow up of the August 8th community meeting, it is important for community members to have representatives actively participating in and contributing to discussions about the traffic circles.

FINANCIAL IMPLICATIONS
Costs associated with staffing the Traffic Circle Task Force, hosting community meetings and developing a new Traffic Circle Planting Policy.

ENVIRONMENTAL SUSTAINABILITY
Supports the City's Climate Emergency Declaration, the City's Climate Action Plan and commitment to Vision Zero.

CONTACT PERSON
Mayor Jesse Arreguin (510) 981-7100

Attachment 3

Traffic Circle Task Force Vegetation Subcommittee Report

July 22, 2019 **Last updated Sept 30, 2019**

Members: Robin Grossinger (chair) Yolanda Huang, Erin Diehm, Sally Hughes, Andy Liu, and Diana Wood

Summary

Low plantings and central trees are usual and customary practice for neighborhood traffic circles in cities throughout the US. Cities recommend, encourage, and support the inclusion in circles of well-maintained trees and vegetation for their benefits to traffic calming, making circles more visible at night, and contribution to beautification, neighborhood character, and all the other benefits urban greening provides, from carbon sequestration and urban cooling to access to nature and biodiversity. Traffic circle trees and low vegetation are also recommended in national guidance documents by the Federal Highway Association and the National Association of City Transportation Officials.

Establishing a practical, well-founded policy for trees and low vegetation in Berkeley's traffic circles, as proposed here, is consistent with other City policies and helps support some of their stated goals. For example, from the:

- **2019 Local Hazard Mitigation Plan (First Draft)**. Trees in traffic circles contribute to a dense tree canopy that helps mitigate projected extreme heat events, reduce the heat island effect, and address inequity.[1] *[See Map of Tree Coverage, below~~Add image of Tree Canopy Map~~]*

[1] Extreme heat events are a "newly-introduced hazard of concern for the 2019 LHMP." (ES-10) The report notes that by "2100, most of the Bay Area will average six heat waves per year, each an average of ten days". (ES-7) Projections indicate that "the number of extreme heat days… will increase exponentially: by 2099 the City of Berkeley is expected to average 18 days per year with temperatures over 88.3 degrees F." (ES-8). In the face of these threats the Plan recognizes the positive impact of trees, stating "a dense tree canopy can result in fewer heat related emergencies" (B-154) It also acknowledges a stark inequity in our tree cover: the densest tree canopy is in the hills of east Berkeley while "west and south Berkeley have the least [tree canopy]". (see Map below) Interestingly, west and south Berkeley contain the most traffic circles, and many of them include trees. Retaining and expanding tree cover in traffic circles can provide a valuable way to address both this inequity and future extreme heat events. ***Source**: City of Berkeley 2019 Local Hazard Mitigation Plan (First Draft)*

- **2009 City of Berkeley Climate Action Plan.** Increasing the number of traffic calming circles and planting them with trees will help fulfill the stated goals to maximize tree plantings, sequester carbon, and protect biodiversity.[2]
- **2017 Berkeley Bicycle Plan (Appendix F).** The design guide for a typical Traffic Calming Circle includes a tree in the center, which can help contribute to the stated goals of calming and safety. *[See Design Specifications illustration, below~~Add image of Design Guide~~]*[3]

Given the limited size of available curb cut-outs along most streets, the larger unpaved spaces available in neighborhood traffic circles represent valuable locations for the healthy, larger trees that provide greater climate adaptation and mitigation functions.

The proposed traffic circle vegetation policy is also consistent with Berkeley's history of neighborhood partnership for creating and caretaking circles, as is common in many other cities, and with the goal of increasing green space and tree canopy in neighborhoods with less access to parks and open space.

The proposed policy enables neighborhood traffic circles to contribute to the support of native biodiversity within the city, through the habitat contributed by native plants and trees. This policy provides several plant palettes of native plant assemblages designed to maximize biodiversity (Re-Oaking Palette, Native Wildflower Palette), as well as other valuable services such as pollinator support, water conservation, runoff reduction, and carbon sequestration.

Existing policies for maintenance of traffic circle vegetation, ascertained by this subcommittee, are generally consistent across municipalities throughout the United States and are the basis for recommended policy below.

This report comprises several sections. In addition to the proposed policy (Chapter 1), we review the history of traffic circles, traffic calming, and tree policy in Berkeley (Chapter 2), and we summarize policy precedents and provide examples from other cities (3). We also provide Suggested Planting Palettes for traffic circles, which offer a set of appropriate plants and trees on the themes of native oak communities,

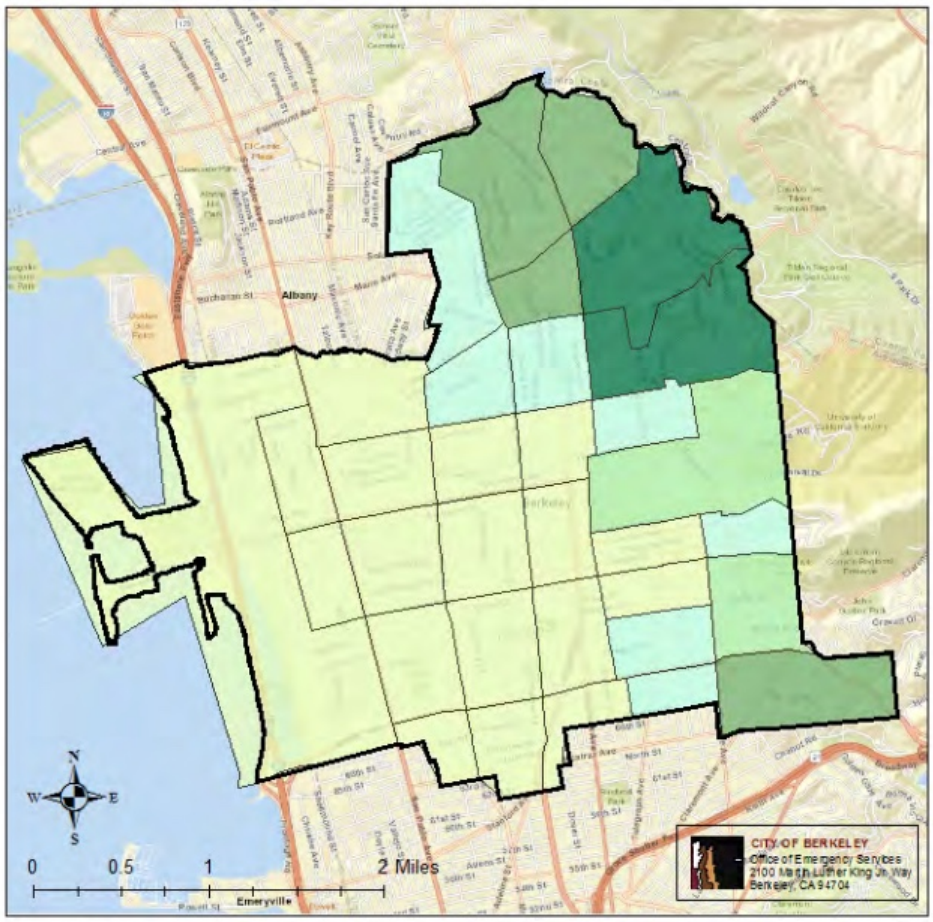
---

[2] "A single mature tree can absorb as much as 48 lbs of carbon dioxide per year. Estimates are that between 660 and 990 million tons of carbon is stored in urban forests nationally." (p. 31) Trees also improve quality of life through beautification.

[3] As long as they are maintained to preserve sightlines, circles are a valuable tool in traffic calming on Bicycle Boulevards. They are especially effective when placed on concurrent intersection locations, helping to lessen the open feel of the road which reduces vehicle speeds. The Design Specifications drawing of a sample traffic circles includes a "Broad canopy tree", the placement of which depends on location of underground utilities. ***Source**: 2017 City of Berkeley Bicycle Facility Design Toolbox (Appendix F)*

bees/pollinators, and native wildflowers, to enable residents to develop drought-tolerant circle landscaping that supports local biodiversity and resilience.¡

Map 34. ***Percentage of tree coverage in City of Berkeley***



Source: Cal Adapt https://cal-adapt.org/
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

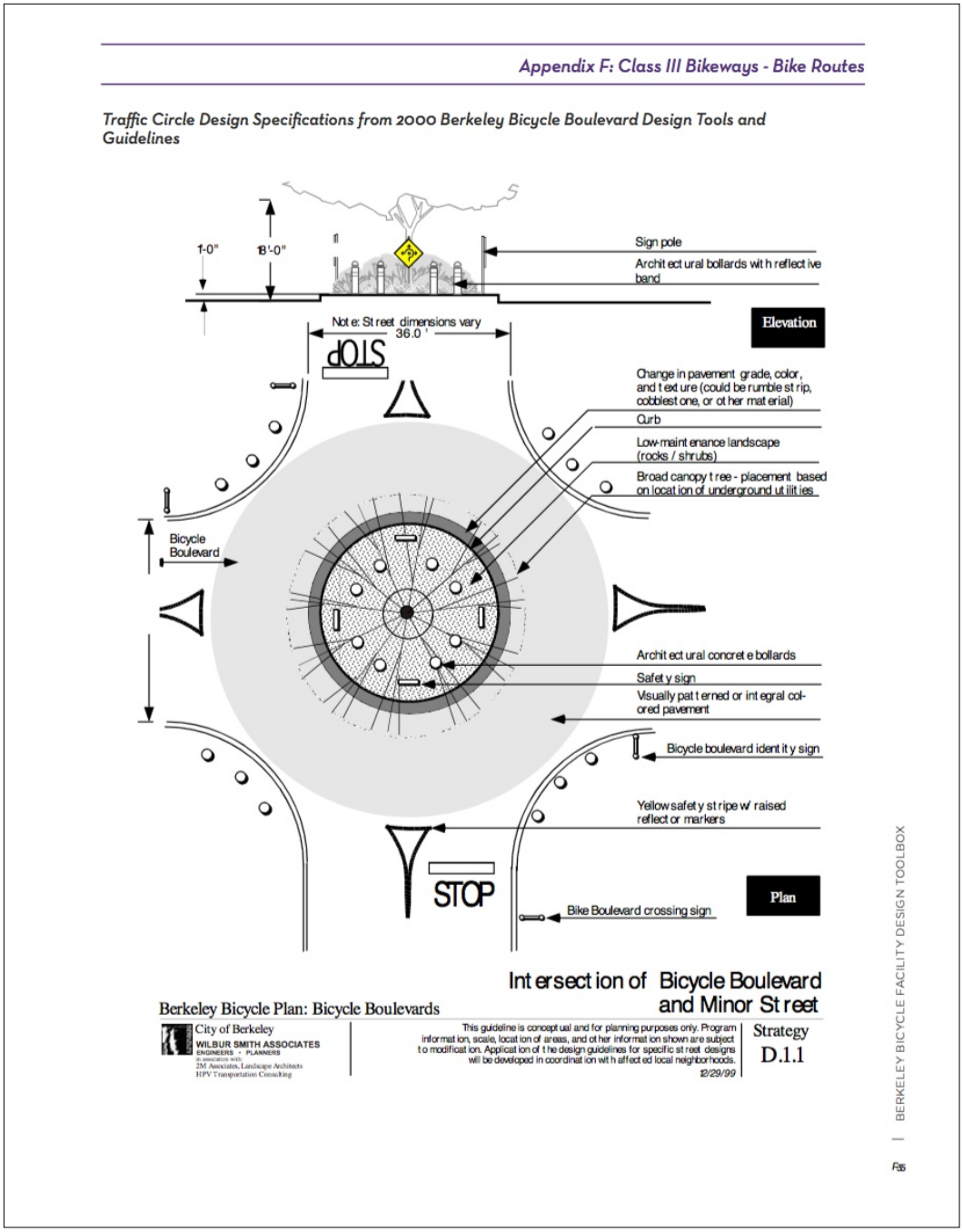
City of Berkeley

Tree Coverage

- 41% to 50%
- 31% to 40%
- 21% to 30%
- 11% to 20%
- Less than 10%

Map illustrating the distribution of tree coverage in Berkeley. The densest tree coverage is located in the hills in east Berkeley while the fewest trees are in the west and south, where a majority of the traffic circles are located. The LHMP recommends expanding tree coverage in Berkeley to help mitigate the UHIE (Urban Heat Island Effect) and the anticipated increase in extreme heat days, as well as to safeguard public health. Expanding tree coverage can also address historical inequities.

***Source**: City of Berkeley 2019 Local Hazard Mitigation Plan (First Draft, p. B-155)*



Berkeley's Design Specifications for Traffic Circles include a broad canopy tree in the center of the circle. The recommendation to include a tree is illustrated in 2 places: at the top, via the elevation drawing and in the middle, via the aerial view.

***Source**: 2017 City of Berkeley Bicycle Facility Design Toolbox (Appendix F)*

Policy

NOTE: The policy outlined below represents the perspective and thinking of the Vegetation Subcommittee. However, it is not fully aligned with the final policy in the Summary Report because it predates that document. Please see the final Summary Report for the policy approved by the full task force and recommended to City Council.

Definition

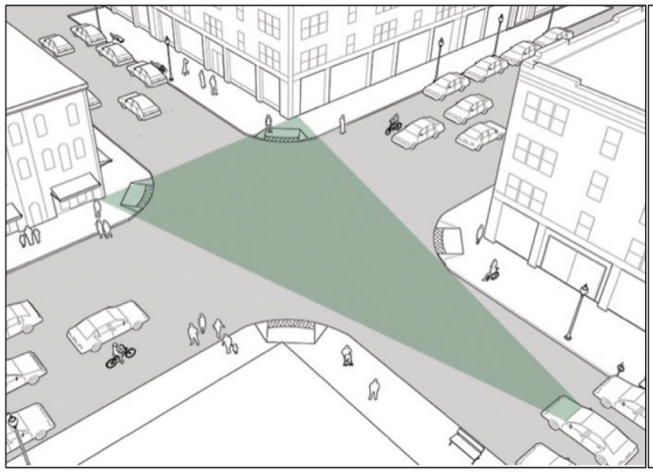
Traffic Calming Circles are those circles in residential neighborhoods, where the objective for installing the circle was to reduce, discourage and slow traffic. In Berkeley, these circles are generally 20 feet in diameter or smaller.

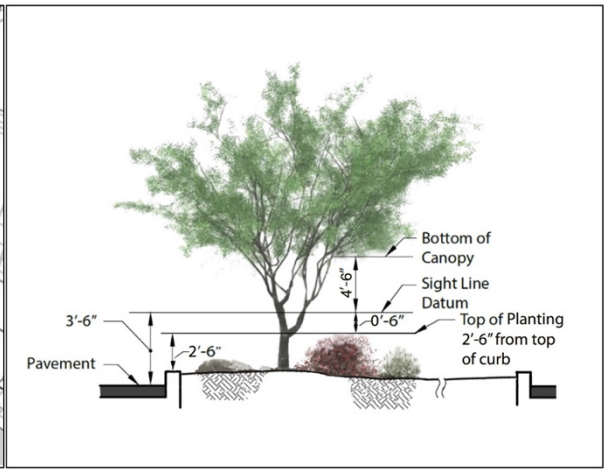
Proposed Policy

Traffic circle plantings and trees shall be designed and maintained to provide clear sight lines for drivers, as described below.

Sight Triangle Definition

1. Sight lines are defined as that horizontal plane (called the "sight triangle"), from the view of the driver stopped before entering the crosswalk to the corners of the opposite intersection, from 2.5 ft above the top of the traffic circle curb to the height of 7-8 feet.
    1. ~~Sight lines are defined as that horizontal plane (called the "sight triangle"), from the view of the driver stopped before entering the crosswalk to the corners of the opposite intersection, from 2.5 ft above the top of the traffic circle curb to the height of 8 feet.~~





Illustrations of sight triangle (left) and sight line heights (right)

Sources: *(left) Urban Street Design Guide Visibility/Sight Distance (NACTO 2013); (right; the original has been modified to reflect sight line recommendations for Berkeley) Sight Distance Triangles (Cochise County AZ)*

Traffic Calming Circle Vegetation Policy

~~a. All trees on existing circles at the time this policy is adopted shall be maintained even if the triangle contains multiple trees. However, the overall vegetation of the triangle shall not obstruct more than 25% of the sight triangle.~~

1. For traffic circles 20 feet in diameter or less, one tree is allowed, located in the central area of the circle, the trunk 6 feet or further from the outside perimeter of the circle.
2. Vegetation must be no taller than 2.5 ft (30 inches) above the traffic circle planter curb. Exceptions
    a. Flowers extending above the plant, such as hollyhocks and agapanthus, shall be permitted while in bud and bloom if less than 25% of the sight triangle is obstructed, considering total vegetation and signage within the sight triangle.
    b. All trees on existing circles at the time this policy is adopted shall be maintained even if the triangle contains multiple trees. However, the overall vegetation of the triangle shall not obstruct more than 25% of the sight triangle.

~~2.~~3. Trees more than 5 inches in diameter and 16 feet in height shall be maintained so that no foliage obstructs the sight triangle.

~~3.~~4. Trees smaller than 5 inches in diameter and less than 16 feet in height shall be permitted to maintain foliage within the sight triangle if less than 25% of the sight triangle is obstructed, considering total vegetation and signage within the sight triangle.

~~4.~~5. Tree limbs that extend beyond the curb line of the traffic circle, and are less than 14 feet above the curb line may be removed or pruned so that branches and canopies are 14 feet above the curb line in the area beyond the traffic circle where vehicles travel.

~~5.~~6. Tree pruning must adhere to American National Institute Safety Standards and International Institute of Arboriculture's Best Management Practices.

~~6.~~7. Traffic circle plantings and maintenance, as outlined in the best practices guidelines as periodically updated by the Parks and Waterfront Commission, are recommended.

~~7.~~8. Sight triangles shall be maintained so that no more than 25% of the sight triangle is obstructed from the vantage point of a driver stopped before a crosswalk bordering the traffic circle.

History of Traffic Circles

Overview

Islands or elevated protrusions in intersections have long been used for different purposes. They are popular in Europe, the United States and Canada.[4] Nomenclature is inconsistent. They are called roundabouts, traffic circles, rotaries, and mini-roundabouts and differ in purpose. The primary difference is circle size, intersection size,[5] traffic volume, and speed.

Some circles are used to facilitate traffic, particularly large circles in arterial intersections with high-volume traffic, so traffic can enter into an intersection at speeds between 25-45 mph, often without traffic signs or signals.[6] These circles range from 100 to 300 feet in diameter and have daily traffic ranging from 10,000 to 14,000 vehicles.[7] Berkeley has two of this type, Marin Circle and Channing Circle, both situated in heavily trafficked intersections.

Traffic Circles in Berkeley

The majority of Berkeley's traffic circles are small, generally 20 feet in diameter, in comparison to what traffic engineers term roundabouts. Berkeley's circles are traffic calming devices designed to discourage, limit and slow traffic on residential streets with light auto traffic. The majority of Berkeley's traffic circles originated to mitigate the impact on residential neighborhoods of commuter and development traffic diverting traffic from major arteries onto residential neighborhood streets.

History - Evolution of Traffic Calming and Traffic Circles in Berkeley

In Berkeley, the tradition of viewing streets as more than just traffic arteries goes back to the 19th Century. Berkeley's very first street design was done by famed landscape architect Frederick Law Olmsted for the private College of California in the 1860s. Olmsted wrote that streets in the neighborhood he was commissioned to design—the

---

[4] *Roundabouts Spreading Like Kudzu Across South Carolina* *https://www.postandcourier.com/news/roundabouts-spreading-like-kudzu-across-south-carolina-despite-some-opposition/article_06dc6030-3a4b-11e7-9dc8-93f0f4f8b236.html*

[5] Some call our traffic circles Mini-Roundabout. https://nacto.org/publication/urban-street-design-guide/intersections/minor-intersections/mini-roundabout/

[6] *Exploring Roundabouts,* Sheri Park, PhD., PTP, Kimberly Musey, James Press and John McFadden, PhD., P.E. PTP, June 2015, www.ite.org

[7] *Exploring Roundabouts*, supra.at p. 2

Berkeley Property Tract, along what is now Piedmont Avenue north of Dwight Way and east of College Avenue—should provide “good outgoings” embowered and calmed with overhanging trees. He divided the main street with landscaping and followed the natural topography, and included a large landscaped circle at the central intersection.

Thus, more than a century and a half ago, **in the 1860s**, **Berkeley installed its first traffic circle** Channing Circle.

Later, in the 1890s, as development began to proliferate along uniform grids of streets, a group of North Berkeley women formed the Hillside Club to advocate for urban planning. In the words of Berkeley historian Charles Wollenberg, “The club was dedicated to a new kind of urban development that would respect rather than destroy the natural environment. (They) fought any attempt to cut down the region’s trees. A club pamphlet said, ‘The few native trees that have survived centuries should be jealously preserved...Bend the road, divide the lots, place the houses to accommodate them!” (page 78/79, Berkeley: A City in History, Wallenberg).

Many of the pleasant winding streets and most picturesque neighborhoods of Berkeley are the result. Annie Maybeck, one of the founders of the Hillside Club, put the Club’s words into vigorous practice, successfully leading a protest that saved an old California Live Oak tree growing in the middle of Le Roy Avenue. The City agreed not to cut down the tree, leaving it on an informal island in the middle of the street. Decades later it was designated a City Landmark (when it eventually died, in 1985, the City planted a replacement oak in the same spot).

Early in the 20th century, East Bay civic leaders hired noted urban planner Werner Hegemann to advise on the development of Berkeley and Oakland, including streets. His 1915 report advocated for narrowing residential streets to 24 feet of pavement and landscaping them with “shapely and uniform avenue trees and planting the parkways between to shrubs or grass and flowers”. He also noted that residential property values were improved by “creation of small parks at street intersections and the use of shrubs or great masses of brilliant geraniums.” (page 104, Hegemann report)

Berkeley did not end up narrowing the pavement of its streets, but during the Great Depression chose to use much Federal money to plant a reported 16,000 ornamental street trees along residential blocks from 1935 to 1937. By 1944—seventy five years ago—Berkeley civic leader, businessman, and poet Lester Hink could rhapsodize about his town as a “city of hillside, homes and gardens gay. Sentineled by myriad traceried trees...”

After World War II as automobile use began to overcrowd the streets of Berkeley and communities all across the country, city traffic engineers began to concentrate on plans to speed vehicles, often at the expense of neighborhood livability.

This led to the 1950s/60s creation of one-way streets and dedicated turning lanes through some of Berkeley's residential and commercial neighborhoods. Some streets were widened and others converted into two- or three-lane, one-way, thoroughfares. The State of California similarly planned a grid of freeways. One was to connect Highway 13 as a freeway following--and replacing--Tunnel Road and Ashby Avenue all the way across south Berkeley to US I-80.

Transportation engineers then largely believed that the primary role of streets, was to move large amounts of traffic quickly and efficiently and they planned and advised cities accordingly.

In contrast, Berkeley, whose original design contemplated walkable neighborhoods, each with its own shopping district and elementary school, disputed the primacy of vehicles and responded with successful grassroots efforts.

In the 1960s, due to community protest, the Ashby freeway plans were shelved, and Berkeley also voted to become the only city that paid to entirely underground BART, helping to preserve surviving adjoining neighborhoods.

Traffic Barriers

In the 1970s widespread neighborhood activism led to a successful plan of traffic diverters and barriers[8] that channeled through traffic off Southside residential blocks onto a defined network of arterial streets.

To reduce traffic and speed in residential neighborhoods, Berkeley deployed traffic barriers, then speed bumps, and now traffic circles. Each tool promoted controversy.

Diverters

Diverters were temporary structures installed by the end of 1975, concentrated south of UC Berkeley. They were subjected to two rounds of voter initiatives to have them removed. Both initiatives failed and most are still in place, but the system was not expanded citywide.[9]

---

[8] *Traffic Calming In Berkeley, 1998* https://www.cityofberkeley.info/ContentDisplay.aspx?id=8238

[9] *Traffic Calming In Berkeley, 1998 supra.*

Speed Bumps

By 1996, the City has installed 156 speed bumps on 99 streets. By 1998, a moratorium had been placed on installing speed bumps due to criticism from the fire department for endangering back injury emergency transport patients, slowing response times and damaging fire truck transmissions.[10] As a result, Berkeley opted for the traffic circle as a calming device. The U.S. Department of Transportation's Federal Highway Administration has successfully promoted traffic calming circles for several decades, with their adoption in many US cities.[11]

Traffic Circles

By the turn of the century, the City documented excessive injury, vehicle speeds and volumes in Central Berkeley due to commute and commercial traffic cutting through Allston, Addison and Grant as alternatives to University Avenue and Martin Luther King. Neighbors proposed removing commercial and institutional traffic from the local residential streets when the City looked to expand the Public Safety Building into a residential area. When the City proposals for a half barrier plan failed to materialize, the City offered traffic circles as a first step for mitigation of existing excessive and speeding traffic dangers.

More than 20 traffic circles were first installed along California's bicycle boulevard, in central Berkeley and in Le Conte. Six traffic circles were installed on Addison and Allston between MLK and California to mitigate the documented danger and increased traffic from construction of the Public Safety Building on MLK and Addison. (community oral history) The City then had a list of trees and plants approved for plantings, paid for the initial plantings as part of its mitigation and neighbors contracted to plant and maintain the circles.

The City formally adopted a Traffic Calming Policy and Program in 2003, updated in 2009 for annual installations for traffic circles citywide with a $50,000 annual City

[10] *Traffic Calming In Berkeley, 1998 supra.*

[11] https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm

installation construction budget[12],[13] The City allocated no funds for traffic circles planting or maintenance.

By 2008, Berkeley had removed most of the speed bumps and installed 50 traffic circles, all in residential areas, mainly bordered by major arterial streets. The City's goal was that traffic circles were to "slow down" traffic and encourage drivers to stay on major arterial roads by making the residential streets less efficient to traverse. The City built and installed the traffic circles, but their planting and maintenance was left to circle neighbors due to City budget restraints. (community oral history)

Today there are 60 traffic calming circles, 37 of which contain trees.[14] District 5 and 6 have only 1 traffic circle each. District 8 has 3 traffic circles. District 1 has 5 traffic circles. District 4 has 6. The largest numbers are in districts with major arteries, San Pablo, Sacramento, Shattuck, Telegraph, University, and Martin Luther King. District 2 has 13 and 6 more along the border with District 3. District 3 has 15, not including the 6 along the border with District 2, and 5 along its border with district 7. So District 3 is impacted by enough traffic to warrant 26 traffic calming circles, almost half the total number in the entire city. District 7 has the 5 traffic circles along its border with District 3. The two districts most impacted by traffic and who have the largest number of traffic circles are District 2 and District 3, south and west Berkeley. In the City, South Berkeley has the lowest ratio of open space to population, and Districts 4, 2 and 3, in 94703 and 94702, are two of the densest zip codes.[15]

Traffic circles, the latest effort to maintain livability with ever-increasing traffic volumes, have been partly successful. Many areas remain unsafely burdened by excessive injury, vehicle volumes and speeds. The City has for many decades recognized the value of trees - as nature and as environmental screens. Now with many densely walked areas, it is critical that they not be increasingly polluted and dangerous.

---

[12] See records of City Transportation Commission and Transportation Division files.

[13] These circles and others in Berkeley were typically planted and landscaped by neighbors with the City's blessing. Karl Rhee, who led the Le Conte effort, recalls:
"In 1998 the LeConte Neighborhood Assn. received complaints that traffic on Ellsworth Street was frequently speeding[,]... realized that it was wider than our other residential streets and had no parking strips nor street trees. … …The City Forestry Dept. donated and planted the two Dawn Redwood trees at Stuart & Parker.[I inserted as footnote, seems to be a little repetitive to have in the body]
Three circles were installed on Ellsworth, then several years later 5 additional circles were installed on Fulton. By this time plans were already in place to put traffic circles though out Berkeley and the City began offering grants to pay for plantings (including trees)". (Karl Rhee, email to Mayor Arreguin, Dec. 6 2918).

[14] Map is in the appendix

[15] http://www.zipatlas.com/us/ca/berkeley/zip-code-comparison/population-density.htm

History - Berkeley Community Relations to Trees

The City of Berkeley in the last half century has experienced numerous community issues due to threats and damage to trees. Some examples: after a church removed a large, heritage oak on Virginia Street, the City passed the Oak Moratorium Ordinance (BMC 6.52.010), requiring permits for removing any live oak more than 18" in circumference at 4" from the ground. When the Central Library Plaza was redesigned and the lone tree was cut down, a protester chained herself to the stump overnight in protest .(community oral history) Dozens of trees were added to Shattuck Ave islands to settle the dispute.

In 2000, a "redesign" by landscape architects who had designed Palo Alto's downtown, proposed that all existing trees from Dwight to University be removed and replanted for uniformity. Public outrage resulted in the redesign being rescinded. (community oral history)

The most famous tree sit-in protest and the longest on record--December 2006 through September 2008--protested the University of California's felling of a grove of 75-year-old oaks in rebuilding its football stadium.[16] Despite the neighborhood-negotiated use permit condition that Redwood trees were to be preserved in the "TuneUp Masters" University Avenue housing redevelopment, trees were not preserved, damaged in construction, forcing removal - yet the project continues. In central Berkeley, some 17 fully mature trees (the majority redwood) have been removed despite use permit conditions which the City often fails to enforce or create. Recently, the community raised concern over damage to redwoods during construction of the West Branch Public Library and housing construction on University Avenue.[17]

Tree Preservation

Tree preservation ordinances exist across the United States, acknowledging the value and contribution of trees, particularly in urban environments, and the need to encourage and protect them.[18] Here are a few Bay Area examples: The City of Pleasanton has thirty-year-old heritage tree ordinance, certified arborists on staff, and a mandate that all tree pruning comply with International Society of Arboriculture standards. The stated goal of El Cerrito's tree committee is to ensure a "healthy growing forest" (Resolution 2007-96). The City of Oakland requires city review and permits for removing all private

[16] https://en.wikipedia.org/wiki/University_of_California,_Berkeley_oak_grove_controversy
[17] https://www.berkeleyside.com/2018/08/28/berkeley-disciplines-developer-after-redwood-trees-chopped-down
[18] https://www.charlestontreeexperts.com/tree-removal-guidelines/

and public trees, and encourages citizens to nominate trees for Oakland “Big Tree Registry”. UC Berkeley even maintains a slide show of heritage trees on campus, stating “there’s no place on campus that is not soothed and improved by trees.”[19] The university also offers periodic campus tours, often over-subscribed, of its prize trees.

We live in a manmade epoch of already devastating climate change as evidenced by unprecedented heatwaves, powerful storms, and destructive fires. Scientific research unequivocally shows that human activity is altering natural earth systems, to the detriment of all living organisms. In November, 2018, the United Nation Intergovernmental Panel on Climate Change (IPCC) recommended planting 1 billion hectares of forests as one important way to combat global warming. In the July 2019 edition of *Science*, Swiss scientists determined that such extensive tree planting is feasible and could remove 200 gigatonne of carbon from the air.[20]

Driver Patterns

In interviews with community members, testimony during public comment at subcommittee meetings, and from direct observation at traffic circles, the subcommittee observed that drivers generally negotiate traffic circles following a pattern. Drivers usually approach and enter the traffic circle cautiously. However, once the driver enters the traffic circle and negotiates half of the right turn, the driver speeds up to exit the circle, usually just before reaching the crosswalk 180 degrees across from where the driver entered the circle.

Speed & Sight Triangles

The National Association of City Traffic Officials (nacto.org) recommends that instead of removing a tree in a sight triangle, traffic speeds be reduced and other traffic calming devices considered.[21] For this reason, the vegetation subcommittee recommends that speeds in traffic circles be reduced to 15 miles per hour.

---

[19] https://www.berkeley.edu/news/multimedia/2004/01/trees.html

[20] https://science.sciencemag.org/content/365/6448/76

[21] “Fixed objects, such as trees, buildings, signs, and street furniture, deemed to inhibit the visibility of a given intersection and create safety concerns, should not be removed without the prior consideration of alternative safety- mitigation measures, including a reduction in traffic speeds, an increase in visibility through curb extensions or geometric design, or the addition of supplementary warning signs.” **Source**: Urban Street Design Guide. Visibility/Sight Distance (NACTO 2013)

Precedents

The Vegetation Subcommittee examined the policies and characteristics of traffic circles in cities around the US and Canada. We reviewed the various standards for traffic circle vegetation in national guidance documents in the published policies of other cities, and through interviews with traffic safety experts.

In addition, to capture an "on-the-ground" perspective we used the street-view feature in Google Maps to view neighborhood traffic circles in several cities, to gain an understanding of plantings and general layout. See the Section: "Photo Album of Traffic Circles…" (below) for a subset of photos captured. We found that landscaped plantings with trees are usual and customary practice for neighborhood traffic circles in numerous cities across the United States and are also recommended in the major national guidelines for traffic safety and urban design.

Trees are in fact recommended for their benefits to traffic calming, by making circles more visible at night, cueing drivers to slow at a greater distance.[22] Well-maintained trees and low plantings are also valued by many cities for their diverse community benefits, including beautification, neighborhood character, ecosystem services such as carbon storage and cooling, and local biodiversity. These city and national documents routinely feature pictures of neighborhood traffic circles with landscaping and a central tree.

Specifications for the height and clearance of vegetation are fairly standard, generally recommending low landscaping maintained at 2 to 3 feet height (in one case 5 feet), and trees with mature branches maintained at a minimum of 8-14 feet above the ground. Responsibility for maintenance varies between the neighboring communities and city departments. Several examples follow.

Policy Statements from Specific Cities Supporting Trees in Circles

- **Palo Alto**

The City of Palo Alto's Comprehensive Plan recognizes the value of traffic circles for reducing collisions and "**offer[ing] opportunities for added landscaping and tree**

[22] **Roundabouts: An Informational Guide** *(NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM/Transportation Research Board 2010, Research sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration)*

planting." The 2012 Transportation Plan "**calls for greater use of traffic circles**, particularly along bicycle boulevards."

Source: *Palo Alto Comprehensive Plan* *Transportation Element* (Palo Alto City Council 2017)

- **San Francisco**

The City of San Francisco recommends that "[T]raffic calming circles **should be landscaped with trees or plantings**. **Shrubs and grasses should be planted up to 3 feet tall and trees should be appropriately pruned**." In fact, the City specifies a recommended number of trees in relation to circle size: "In traffic calming circles with a diameter of less than 15 feet, **one tree should be planted in the center**. On a traffic calming circle with a diameter greater than 15 feet, **more than 1 tree** should be planted and should be equally spaced around the circle."

San Francisco's *Green Connections Design Guide* recognizes the value of landscaped traffic circles, noting that "Traffic circles visually reduce the scale of wide intersections and break up the monotony of the street grid. **When they include landscaping, they can beautify and enliven the streetscape."** In fact, the City's SF Better Streets website features a picture of a neighborhood circle landscaped with native pollinator plants and a central tree, similar to some of Berkeley's circles.

Sources: *SFBetterStreets: A guide to making street improvements in San Francisco* (City and County of San Francisco 2015); *SF Green Connections Plan* (City and County of San Francisco 2014)

- **Seattle**

The City of Seattle is a recognized leader in making streets safer for bicycles and pedestrians. As part of this effort the city supports and celebrates their community-planted traffic circles. In fact, Seattle's DOT maintains a Traffic Circle Flickr page

featuring attractive or charismatic circles with trees. Contacted for information, Seattle shared a photo of a circle with a mature tree, as shown below.

Seattle policy allows trees in traffic circles with an inner diameter of at least 8 feet, with city approval: " **All Traffic Circle trees must be approved by SDOT Urban Forestry prior to planting."** The city relies on maintenance by the community but reserves the right to maintain if this is not successful.

Seattle Traffic Circle with mature tree

- **Missoula**

The City of Missoula incorporates trees and substantial landscaping into their traffic circles. Referring to traffic circles, medians, and chicanes, the Missoula Parks and Recreation Design Manual (2018) states that "Landscaping in these areas consist of trees, woody and herbaceous shrubs, grasses, woody and herbaceous perennial-type ground covers, drought tolerant grass." (19)

Missoula also encourages growing traffic circle plants to 5 feet in height to assist with traffic calming: **"...Where median and traffic circle plants are used for specifically for traffic calming, the selected plants may grow to a height of 60" above the top of the curb."** (23)

The City also prioritizes the benefits of landscaping to neighborhood health and local biodiversity. It is the first certified "Community Wildlife Habitat™" City in Montana, **based on its endeavor to provide habitat for animals, especially birds and insects.** The Design Manual states: "When designing public landscape, greenway and park

facilities, the landscape architect must consider costs of construction and maintenance in relation to the **benefit derived by the community.** Proper design and effective use of the built environment can lead to **a happy and healthy community, as well as plant and animal diversity within the community."** (14)

Source: *Missoula Parks and Recreation Design Manual 2018 Edition* (Prepared by City of Missoula Parks and Recreation 2018)

Note newly planted tree in photo of Missoula Traffic Circle, in National Wildlife Foundation's announcement that Missoula became the first city in Montana to become a Certified Habitat City, with the caption: "Many Traffic Circles in Missoula provided excellent habitat!" Photo by Claire Grisham."

Source: "*Montana's Garden for Wildlife City*" (National Wildlife Federation Blog, August 29, 2019)

- **Tucson**

The City of Tucson has developed a guidance document to assist neighborhoods in obtaining traffic circles because they "have been shown to be very effective in reducing

the speed of vehicles traveling on residential streets . . . and for beautification" of residential streets. This document was produced by the Department of Transportation Traffic Engineering Division. The City encourages trees and provides specific, practical guidance for visibility:

> "Sight visibility around the traffic circle **must not be blocked with large dense shrubs**. Shrubs should be set back accordingly so that mature growth will not extend past the curb edge. **Tree selection and setback should be such that the mature tree branches do not extend into the travel lane below the 14' level around the traffic circle**."

Source: *Traffic Circles: Facts About Controlling Traffic in our Neighborhoods* (City of Tucson Traffic Engineering Division nd)

National Guidance Documents:

- ***Urban Street Design Guide*** **(NACTO 2013)**

This widely-cited manual was developed by the National Association of City Transportation Officials (NACTO), an association of 71 major North American cities and 10 transit agencies, whose mission is "to build cities as places for people, with safe, sustainable, accessible and equitable transportation choices that support a strong economy and vibrant quality of life." The Guide notes the value of trees and other vegetation not only for beautification but for their contribution to traffic calming: "Mini roundabouts and neighborhood traffic circles[1] lower speeds at minor intersection crossings…**Shrubs or trees in the roundabout further the traffic calming effect and beautify the street,** but need to be properly maintained so they do not hinder visibility."

The guidance diagram for the "mini roundabouts" section highlights a traffic circle with landscaping and a central tree (see below).

Note tree in center of mini-roundabout
Source: *Urban Street Design Guide* (**NACTO 2013)**

- ***Traffic Calming ePrimer*** **(USDOT Federal Highway Association 2017)**

The U.S. Department of Transportation/Federal Highway Administration's Office of Safety Programs provides an extensive Toolbox of Individual Traffic Calming Measures, including neighborhood traffic circles. In the section on traffic circles, they emphasize that these features are more effective as traffic calming devices when landscaped, including the use of trees:

> "A traffic circle can simply be a painted area, but it is **most effective when it is defined by a raised curb and landscaped** to further reduce the open feel of a street. **A traffic circle can be landscaped with ground cover, flowers, and street trees**."

The illustrative photo of a landscaped traffic circle provided in this FHA Traffic Calming guide includes a central tree (see below).

Source: *Traffic Calming ePrimer - Module 3* (U.S. Department of Transportation/Federal Highway Administration)

Phone Interviews with Cities with Traffic Circles:

We also interviewed traffic engineers, landscape architects, and traffic circle administrators from a number of cities to understand their perspectives on landscaping of traffic circles. These cities include Augusta (Maine), Austin (Texas), Boulder (Colorado), Chapel Hill (North Carolina), Columbus (Ohio), Minneapolis (Minnesota), Missoula (Montana), Pasadena (California), Portland (Oregon), San Francisco (California), Savannah (Georgia), Seattle (Washington), Tucson (Arizona), Vancouver (British Columbia), Williamsport (Pennsylvania), Washington D.C., and Winooski (Vermont).

We found that the vast majority of the cities contacted not only allow but encourage trees and vegetation to be planted in traffic circles, provided the plantings conform to city policy regarding stipulated sightlines and planting policy. Policies vary, but the great majority require:

- vegetation to be no taller than 2-3 feet,
- tree limbs to be no lower than 8 feet,
- boughs and canopy extending over the street to be no lower than 14 feet above pavement

Table of Findings on Traffic Circles in Other Cities

The table below summarizes key pieces of information related to traffic circle vegetation policy from our research. This information was found online (e.g. city websites) or

captured during phone interviews, including any material shared afterwards. For each city, it tracks the maximum allowed height of vegetation and pruning specifications for trees (“limbing up”). If trees are allowed but pruning specifications weren’t captured, the cell is noted with “Allowed”. If no details were captured the cell is marked with a hyphen, “–”.

#	City	Plant Ht	Trees*	Notes
1	Missoula MT	60in[W]	Allowed[W]	Robust Adopt-a-Circle program that promotes adoption and maintenance of circles, including a clickable Google Map. In July 2018~~Striving to~~ becaome the 1st city in MT to become a National Wildlife Federation certified “Community Wildlife Habitat™”.
2	Tucson AZ	36in[P]	14ft[O] (if extends beyond edge of circle)	200+ circles. Neighbors decide signage (STOP or YIELD). Biggest issue is watering, not sightlines.
3	San Francisco CA	36in[O]	Allowed[O]	Robust SF Better Streets Program. Multiple trees allowed: <15’ dia. 1 tree >15’ dia. 2+ trees
4	Boulder CO	30in[W]	8ft[W]	Sight line specs from Municipal Code 9-9-7 for Sight Triangles
5	Pasadena CA	30in[E] (from street)	7ft[E]	No yield control, Stop signs at each corner.
6	Seattle WA	24in[W]	Allowed[P]	First circles in 1970s, now 1,200+. Approx 5 new per year. Possible funding from “Your Voice, Your Choice” budgeting initiative.
7	Austin TX	24in[W,P]	14ft[P] (if extends beyond edge of circle)	Focus on native vegetation
8	Vancouver Canada	24in[O, E]	--	Robust Green Streets Program that promotes adoption and maintenance of circles, includes a list of recommended plants.
9	Columbus OH	--	Allowed[P]	1998 Planting Guidelines - more than half of all recommended are trees
10	Portland OR	--	--	“Trees placed in Traffic Circles break uninterrupted views of long straight street sections and help to focus driver attention on their local surroundings.”[W] Only deciduous trees allowed (for limbing up), no evergreens.
11	Arlington VA	--	14ft[O] (if extends beyond edge of circle)	For Neighborhood Traffic Circles the desirable maximum entry design speed is 15mph. Traffic circles may be planted with appropriate landscape and central islands greater than 12ft in diameter may be planted with a tree.

Key of superscripts:

— = No information collected

** = Sightline clearances (or "limbing up") not captured for all locations. If no specs captured, noted as "Allowed". If sightline clearance was captured, the allowance is by default for inside curbline, exceptions noted as "if extend beyond edge of circle"*
P = Information from phone interview
O = Information found online, usually city's webpage
E = Information from an email
W = Information from written document

Sources:
(Missoula) Adopt-a-Circle webpage, Parks & Rec Design Manual, Google Map of Circles; (Tucson) TDOT Traffic Circles Webpage, Traffic Circles Fact Sheet Brochure; (SF) San Francisco Better Streets Program; (Boulder) Boulder Municipal Code 9-9-7; (Seattle) SDOT Traffic Circles; (Vancouver) Green Streets Program, Recommended plant list; (Arlington) Roundabouts/Traffic Circles Guidelines

Photo Album of Traffic Circles in Selected U.S. Cities

The Subcommittee on Plantings and Vegetation opted to gain a contemporary on-the-ground perspective of traffic circles by sampling cities throughout the United States and Canada. We knew from our initial research that many cities promote circles as effective traffic calming devices and that trees are not only allowed but encouraged. The next logical step was to get a street-level view, to compare and contrast the circles in other cities with those in Berkeley.

The images below represent a sampling of images. Some were captured in the winter months when deciduous trees are without foliage. In others, the trees are small and still becoming established, apparently planted recently as part of traffic calming efforts. Better than words can convey, they offer a clear, visual understanding of how other cities approach this valuable traffic calming device.

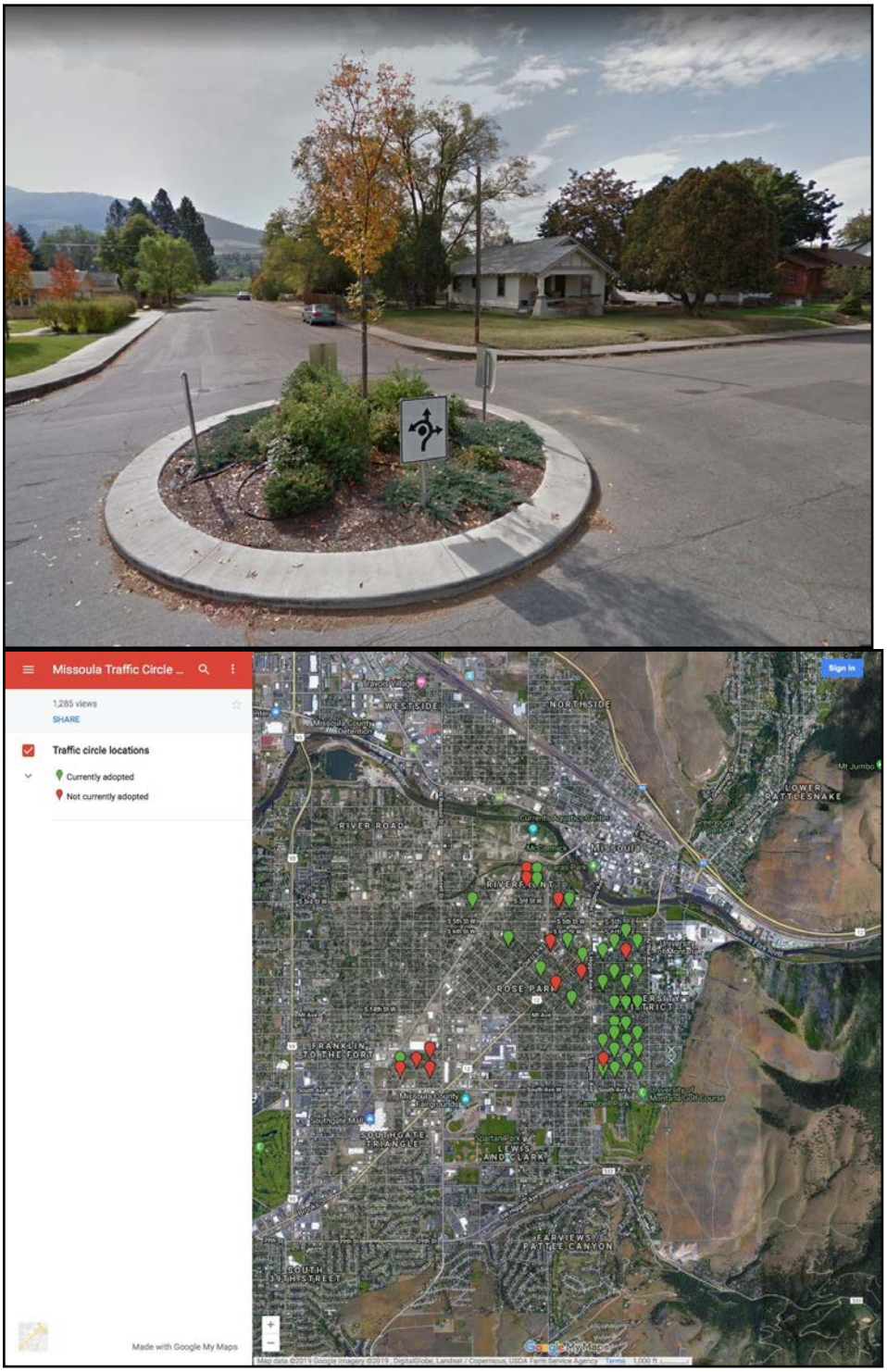
Seattle WA

Boulder CO

Vancouver BC

Tucson AZ

Missoula MT

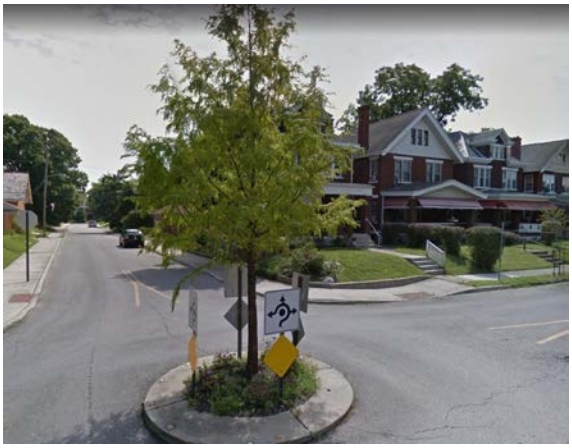


Map of Missoula's Adopt-a-Circle program. Illustrating adopted circles and those which are available to be adopted.

Source: [Missoula's Traffic Circle Locations]

Arlington VA

Columbus OH



Austin TX

Portland OR

Appendix

~~NOTE: Final order of Appendices to be determined~~

A. NACTO Recommendations on Sight Triangles and Speed

The following illustrations are taken from the NACTO (National Association of City Transportation Officials) guide for design streets and emphasize the importance of lowering speeds to promote safety. The task force concurs, especially in residential areas with heavy bicycle and pedestrian traffic. ~~Speed kills.~~ Reducing speed saves lives. For example, lowering the speed of a vehicle just 5-10 mph can reduce the crash risk by up to 10%, while simultaneously decreasing the risk of fatality by 3%. From the table below, reducing speed from 25 mph to 15 mph reduces the Crash Risk from 15% to 5% and Fatality Risk from 5% to 2%.

SPEED (MPH)	STOPPING DISTANCE (FT)*	CRASH RISK (%)†	FATALITY RISK (%)†
10–15	25	5	2
20–25	40	15	5
30–35	75	55	45
40+	118	90	85

* Stopping Distance includes perception, reaction, and braking times.

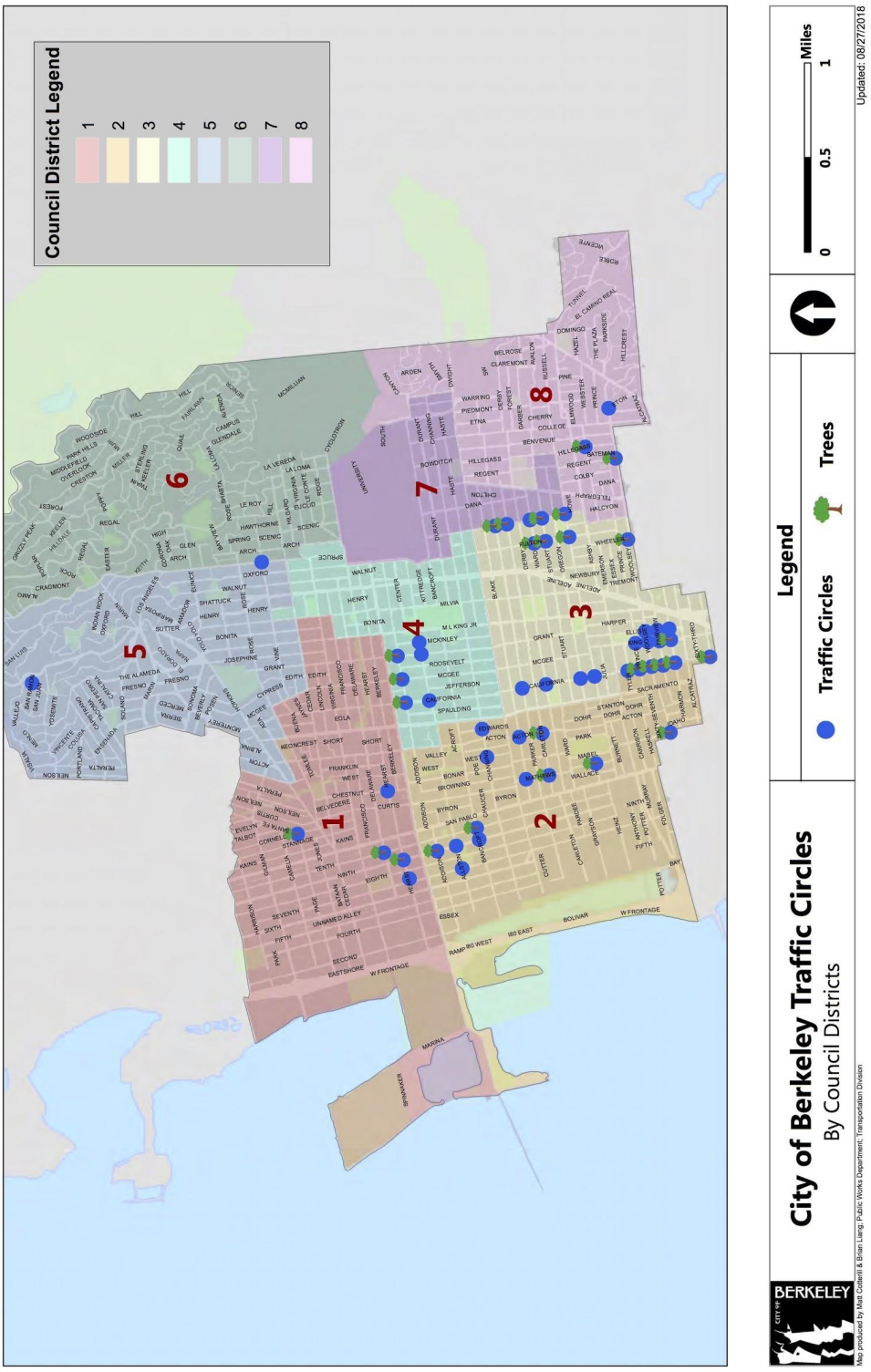
† Source: Traditional Neighborhood Development: Street Design Guidelines (1999), ITE Transportation Planning Council Committee 5P-8.

Driving Speed Fatality Risk Chart.
Source: *Urban Street Design Guide*. Design Speed. **(NACTO 2013)**

Slower speeds also enhance a driver's field of vision, which is paramount for promoting safety. See illustration, below, comparing the peripheral view corridor of a vehicle traveling at 10-15 mph (top image) vs. 20-25 mph (2nd image from the top). At slower speeds the field of vision is broader.

Driver's peripheral vision at different speeds.
Source: Urban Street Design Guide. Design Speed. **(NACTO 2013)**

B. Map of Traffic Circles in Berkeley



C. General Vegetation Guidelines

Planted traffic circles accord with Berkeley's environmental and sustainability values and, when regularly maintained, add to urban beauty and neighborhood quality of life. Circles should have a minimum of hardscape and a maximum of low growing plantings.

The following principles are suggested for guiding the planting of traffic circles.

1. The City should encourage circle plantings that are durable, diverse, and attractive. Planted circles also reduce hardscape and runoff and improve ground water retention. Plantings are strongly encouraged that provide habitat for native bees and other pollinators, butterflies and other insects, and birds, and that do not require pesticides or herbicides to maintain. Use of native plant species is encouraged.

2. Circle plantings can and should reflect the individuality and diversity of Berkeley in the same way that our buildings, people, cultures, public spaces, neighborhoods and activities are diverse. There is no need for all circles to look, or be planted, the same, although within specific neighborhoods or along individual streets circle designs might be coordinated.

3. We do not recommend a species list of approved plants. Developing and maintaining a species list will be costly, controversial, and difficult and expensive to administer. Instead, the City should permit a broad range of plantings that conform to general criteria. To aid residents who seek additional guidance, several planting lists (or "palettes") are provided.

4. One criteria is height. Non-tree plantings should not be allowed to grow taller than 2 1/2 feet (30") in height above the circle curb, in accord with national and regional standards. An exception should be made for seasonal flower stalks that may extend above this height.

5. The City may maintain a limited list of plants that are not recommended for circles because of very specific detrimental impacts, for example, poison ivy.

6. Trees in circles are welcome as a way to reduce the heat island effect, provide habitat and shade, and sequester carbon. Species selection should be coordinated with the City Forester.

7. Mature trees should have no substantial foliage below about eight feet above the pavement. Sapling trees will clearly have some foliage between two and eight feet, but species should not be used that grow extremely wide when low and young. When Circle

tree plantings are young they may also be selectively pruned to encourage growth to a taller height.

C-1. Tree Guidelines

Tree plantings in Berkeley's parks, along Berkeley's streets, and in traffic circles have clear and substantial benefits and value. Trees sequester carbon which helps fight climate change, remove carbon dioxide and other greenhouse gases from the air, reduce urban heat, help create and retain soil, reduce stormwater runoff and promote groundwater recharge, and create habitat for birds, animals, and insects. They also provide beauty, shade, a stately presence in the public landscape and a marker of the changing seasons, particularly in highly urbanized areas where mature trees are rare in private gardens and/or on public streets.

Other Bay Area and North American cities and expert analysis beyond Berkeley have identified trees as a welcome and useful component of traffic circles, particularly because they help slow traffic and identify for drivers the presence of a circle from a distance.

Half an acre of forest land can absorb three tons of carbon dioxide annually and produce two tons of oxygen. Berkeley's numerous existing current traffic circles cover about half an acre of land, all of it converted from asphalt. The City's Hazard Mitigation Plan and Climate Action Plan recommend more tree plantings in Berkeley to help fight climate change and reduce the "heat island effect" in lower elevation neighborhoods. Tree plantings are also an economic and social equity issue. City mapping has determined that tree cover is much higher in the Berkeley Hills than it is in the Flatlands.

Berkeley has a variety of existing trees in its traffic circles. Most have attained a size where they do not have any substantial small branching or leaf canopy below eight feet, and others are growing rapidly towards that expectation. These include California Live Oaks, Dawn Redwoods, California Buckeyes, palms of various species, strawberry trees, and even large woody shrubs that have been pruned up into a tree like canopy. These trees should be "grandfathered" into the City's policies after review of individual specimens to ensure they currently conform, or will conform as they continue to grow.

Pruning of circle trees should be done in consultation with circle coordinators and the City Forester. The pruning emphasis should not be on radical "limbing" or entirely removing everything below eight feet, especially for tree saplings, because this may retard rapid growth to appropriate height or permanently deform or weaken the tree. Instead, smaller trees can be thoughtfully pruned to improve sight lines and maintain healthy condition and growth. Pruning should be done at times of year best suited to

individual species. Trees should generally be planted at, or slightly offset from, the center of the circle so the perimeter areas do not have trunks or low tree branches.

The City Forester should be consulted and review the selection of tree species for individual circle planting, but we do not recommend a specific proscriptive list of tree species for circles or a requirement that circle trees be the same as nearby, or citywide, street tree plantings. Diversity should be encouraged. In some areas circle trees can be species that match existing nearby street trees, but special tree species in circles also have their own value. For example, palms in circles along Ninth Street and Dawn Redwoods in circles along Ellsworth are a distinctive presence.

Individual neighborhoods and circle coordinators should be trusted, with appropriate review by the City Forester, to suggest species that will work in specific circles. A goal of circle trees that are among the most attractive, unusual, and distinctive in a neighborhood is consistent with these policies.

Specific guidelines for species selection:

1. Trees that *require* frequent or major irrigation once established are not encouraged for circles.
2. It should be expected that circle trees will receive, and should be able to thrive and remain attractive in, conditions of full or close-to-full sun and reflected heat from surrounding pavement.
3. The existence of utility access shafts and underground utilities should be a factor in the selection of tree species for individual circles.
4. Trees that have long lifespans may be preferable since they will remain mature for a longer time without deterioration or low elevation growth. Short lived species will increase the frequency of replacement plantings and also increase the time that younger, and thus lower, trees are in a circle.
5. Multi-trunked species should not necessarily be discouraged. Visibility can be maintained between trunks as the tree grows older and trunks overall will have a narrower diameter.

If any single variety or species is preferred, it should be native oaks. Oaks meet many of the goals described in this section and, as described elsewhere, a “re-oaking” effort in Berkeley could be partially based in newly planted traffic circles. Oaks could be a preferred species for “orphan” circles and newly installed circles where the City is undertaking all the installation and maintenance work.

New tree plantings in circles may be from 15 gallon 24 inch box or larger specimens so the new planting already has substantial height and a clear lower trunk when it is placed

in a circle. However, smaller specimens may be selectively used / planted where the tree is expected to grow rapidly to greater height and clear sight lines. Research has shown that many tree species grow more rapidly when planted young. For example, the California Live Oak at Fulton and Russell was planted as a seedling less than three feet high and quickly attained adult maturity and size.

Circle tees may be planted as memorials to, or honoring, individual citizens, organizations, or causes, after appropriate city review. Special trees of this sort can reinforce neighbor and community ties and identity and increase neighbor maintenance attention to the circles. The City should develop guidelines and a process for approval of such memorial trees, and should have a process for reviewing and accepting community donations of tree specimens for circle plantings.

Small memorial plaques may be placed in circles in conjunction with memorial or other special plantings, but should be low and unobtrusive. An alternative, where space permits, would be a freestanding plaque on nearby sidewalks that can be read by passersby viewing the circle across the intersection.

D. Introduction to Suggested Planting Palettes

Whether or not you plant a circle to a specific palette, all appreciate the benefits of any type of planted circle.

About one quarter of Berkeley's land area is covered with asphalt or concrete pavement in the form of streets and parking lots. The typical Berkeley traffic circle provides 200-300 square feet of welcome growing ground, recovered from otherwise sterile asphalt pavement. When a new circle is created, it is quickly colonized by insects, plants, and soil organisms even without human help. Within a season or two birds can forage in circles for seeds and edible insects and find them a welcome place to take temporary refuge.

Traffic circles also absorb and filter rainwater, decreasing stormwater runoff and urban pollution. Circles with a mature central tree provide additional bird habitat and shade, sequester large amounts of carbon, remove greenhouse gases from the atmosphere, and combat the "heat island effect" prevalent in densely developed urban areas. Fruits and flowers produced by plants in circles provide food for birds and insects, including beneficial bees.

For generations Berkeley has prided itself on being a garden city, with plants and nature integrated into every area; planted circles reinforce that history. Traffic circles also function as miniature public open spaces in neighborhoods without large parks or other

plantings. Although they should be viewed, not actively used for recreation, their very existence helps reduce human stress and brightens and softens the streetscape.

Appropriate seasonal, secular, decorations in circles that are planned and positioned to not obstruct sight lines can cheer the passersby, especially during the winter.

The palette lists below are drought-tolerant plant assemblages that support native biodiversity and the benefits to human health and well-being that local access to nature provides. The palettes are based on local ecosystems, to bring the experience of nature into our neighborhoods and re-establish some of the lost habitats of Berkeley. They are also designed to be low-maintenance, climate-resilient and to conform with visibility and safety considerations.

D-1. Re-Oaking Guidelines

The re-oaking template is based on the native oak savannas and woodlands that were common throughout much of the Bay Area before modern development. California's oaks are keystone species that support tremendous local biodiversity through their leaves, branches, and acorns. In addition to their ecological benefits, coast live oaks and valley oaks also provide valuable ecosystem services to address climate change, providing large shade canopies while being drought-resilient and sequestering carbon at higher rates than most other trees. Matching oak canopy with complementary drought-tolerant understory vegetation creates an experience of local nature in the city that enhances the biodiversity benefits for local wildlife.

Biodiversity Benefits: Native oaks such as coast live oak and valley oak support a diverse range of native birds and insects. Planting neighborhood oaks within 500' of each other increases the likelihood of pollination and acorn production. The understory supports an extremely diverse range of native pollinators and other insects such as butterflies, beetles, bees, crickets and moths. For example, Great Spangled Fritillary Butterflies and wooly bear caterpillars use oak leaf litter for protection from cold weather and predators. The setting provides an opportunity for low-growing plants that were common to the area but now rarely find space given the priority for lawns and taller vegetation. A combination of different types of native oaks within neighborhoods (coast live, valley, blue, black) will support greater biodiversity and resilience to climatic variation.

Carbon Sequestration: Coast live oak and valley oak store more carbon per year than commonly used street trees.

Maintenance: As the oaks mature, their canopy provides shade and natural mulch, reducing the need for watering and weeding. The leaf drop – particularly from live oaks—can greatly reduce weeding needs.

Center tree

Coast live oak (*Quercus agrifolia*). Live oaks are hardy distinctive California trees with a striking dark green color and year-round canopy.
Valley oak (*Quercus lobata*). Valley oaks are a beautiful, graceful deciduous shade tree. Valley oaks are sensitive to salt in the air and tend to be found further away from the Bay. In Berkeley, healthy valley oaks appear to be more common east of Martin Luther King Way.

References: *Re-Oaking Silicon Valley: Building Vibrant Cities with Nature* (San Francisco Estuary Institute 2017). https://www.sfei.org/documents/re-oaking-silicon-valley
Oaks of California (Pavlik et al. 1993)

Suggested Plants for Oak Understory

Plant	Scientific Name	Height	Notes
Apricot Monkeyflower Bush	Mimulus bifidus	2-3 ft ht x 2-3 ft wide, might need some pruning to keep lower	Spectacular 2" azalea like flowers. No irrigation once established. Attracts hummingbirds. Host plant for Checkerspot butterflies.
Bush Monkeyflower 'Pt Molate'	Mimulus aurantiacus	2-3 ft ht x 3ft wide. Will need some pruning to keep low growing. Pinch to encourage more compact growth.	Very drought tolerant. No water once established. Hummingbirds attracted.
California Aster	Corethrogyne filaginifolia	1-3ft ht x 3ft wide, variable, prune to keep low.	Deciduous perennial. Bright lavender yellow centered 1" daisy like flowers summer into fall. A wildflower, pollinator and butterfly plant.
California Fuchsia	Zauschneria or Epilobium canum (low growing selections, such as 'Everett's Choice' or 'Select Mattole'))	1-2 ft x 2-3 ft wide	Fine textured gray green to silver leaves, mounding habit and bright red orange 1.5" tubular flowers in clusters later summer into fall. Deciduous during winter. Best hummingbird attracting plant. Drought tolerant. Best to cut to ground after bloom. Spreads by root runners.
California Lilac	ex. Ceanothus hearstiorum - San Simeon Ceanothus (low growing selections)	3"-6" ht x 6 ft wide	Many species and varieties, choose low growing selections. Ceanothus hearstiorum is fFlat growing, with dark green crinkled leaves and 1"deep blue flower clusters in the spring.
Coyote Mint	Monardella villosa	2ft ht x 2ft wide	Mint scented. Trailing groundcover for sun or part sun. 1" lavender puff balls July thru August. Attractive nectar source for bees and butterflies. Drought tolerant.
Douglas Iris	Iris douglasiana and hybrids and selections (ex. 'Canyon Snow' Iris Pacific Coast Hybrid)	1ft ht x eventually 3ft wide (Canyon Snow)	Ex. 'Canyon Snow' recognized as an outstanding white flowered selection. Disease resistant, little water, evergreen. Blooming in the spring.
Fragrant Pitcher Sage	Lepechina fragrans	2-3ft ht x 3ft wide. May need pruning to keep mature height lower.	Evergreen perennial with pink tube shade flowers. Blooming spring thru summer. Very drought tolerant. Attractive to hummingbirds.
Island Alum Root	Heuchera maxima, varieties	2 ft ht x 2 ft wide	Part Shade to full shade clump forming perennial with delicate airy pale pink to white flower spikes. A preferred groundcover for Coast Live Oaks.
Hummingbird Sage	Salvia spathacea	1-3ft ht x 4ft wide, may need pruning to encourage lower growth	Showy native groundcover for dry shade. Blooming late spring into summer, 1" bright magenta pink flowers emerge from spikes of burgundy calyxes. Attractive evergreen to

			semi-evergreen wavy fruity scented leaves. Low to average water.
Manzanitas	Low growing selections (ex. Arctostaphylos 'Emerald Carpet', Arctostaphylos edmundsii 'Carmel Sur', Arctostaphylos uva ursi 'Point Reyes'- Point Reyes Bearberry)	6"-12" ht x 6 ft wide	Low tidy evergreen groundcovers that are drought tolerant with pink to white small urn shaped flowers winter into spring provide bees with nectar earl in season. Edible red berries good for bears and birds.
Red Buckwheat	Eriogonum grande var. rubescens	12" ht x 2-3ft wide	Late bloomingOctober, short growing. Drought tolerant, attractive to butterflies and bees.
Seaside Buckwheat	Eriogonum latifolium	1ft ht x 2ft wide	Compact mound of softly felted blue grey spoon shaped leaves topped by pale pink 1" clusters of flowers blooming summer into fall. Used for erosion control, drought tolerant. Loved by bees, butterflies and many pollinators.
Sulphur Buckwheat	Eriogonum umbellatum	1ft tall ht x 2 ft wide	Compact evergreen mound. Blooms late spring to end of summer. Needs little or no water once established. Attractive to Bee and Butterfly.
Western Sword Fern	Polystichum munitum	2-3ft ht x 4ft wide	Drought tolerant fern recommended for growing under oaks. Adds bold visual structure. Cut old fronds back as they die. Part shade to full shade. Average to Low water.
Western Yarrow	Achillea millefolium	1-4ft ht x 2-3ft wide Will need pruning if growth gets too high. Choose low growing cultivars.	Usually a low spreading ferny leaved perennial with 3-4" clusters of white to pink flowers. Usually full sun, edge of shade under oaks. Attractive to pollinators.
Yerba Buena	Clinopodium douglasii	2" ht in. tall and spreading	Flat evergreen groundcover for shade. Easy, tough and long lived, used medicinally by native people. Makes a mint-like tea. Drought tolerant by best with a little summer water.

D-2. Bee/Pollinator Guidelines

Bees are essential pollinators in the plant world. About 75% of plants rely on an animal pollinator—most often a bee—to create seeds and fruit that produce the next generation of plants. In recent years bee populations have seen significant declines; habitat loss and pesticides are thought to be primarily responsible.

By providing food for bees—and, simultaneously, many other pollinators—we help sustain local bee populations, especially natives which can actually be more efficient and productive at pollination than honey bees.

Aside from the common European honeybee, there are some 1,600 species of native bees in California which can look quite different and do not construct and live in large, organized hives. Many native bee species form small colonies of just a few dozen adults. Some are solitary. Many live in the soil and do not make above-ground colonies.

This suggested planting palette serves bees in the following ways: it provides specific types of flowers especially rich in nectar and/or pollen that bees find most useful; the flowers bloom over a long period of time, giving bees a steady source of food during the seasons when they're most active; it concentrates many flowers in a small space, allowing the bees to forage efficiently without having to fly long distances; it emphasizes a diversity of native plants to which native bees are best adapted, thereby sustaining those bee species most adapted to California's climate.

Bee friendly traffic circle planting should avoid all insecticides and herbicides and heavy mulching (which can bury the homes of ground-dwelling native bees). A traffic circle which gets little human foot traffic can be an excellent oasis for bee colonies, especially native bees which live in small numbers and/or in the ground.

Planting a traffic circle with bee friendly plants and habitat will reward your neighborhood many times over with increased yields of vegetables, fruits, and nuts from nearby gardens.

References:

UC Berkeley Urban Bee Lab
http://www.helpabee.org/best-bee-plants-for-california.html
UC Davis Arboretum and Public Garden: California Native Bees
https://arboretum.sf.ucdavis.edu/blog/beyond-honey-bee-learn-more-about-california-native-bees
World Bee Day: Best plants to help save bees
https://www.worldbeeday.org/en/did-you-know/86-best-honey-plants-to-help-save-bees.html
Theodore Payne Foundation: Bee Friendly Native Plants
http://theodorepayne.org/wp-content/uploads/2018/07/BEE-FRIENDLY.pdf

Suggested Plants for Bees/Pollinators

~~Under Construction~~

Plant	Scientific Name	Height	CaNa	Notes
Blanket Flower	Gaillardia x grandiflora	10-14” ht x 12” wide -Use varieties described as Dwarfs		Pollen and Nectar source for many native bees. Daisy like flowers summer to fall in shades of orange red and yellow many banded. Perennial, but short lived 2-3 years. Drought tolerant.
Blue Thimble Flower	Gilia capitata	12-18” ht x 12” wide	Ca Native	Annual native wildflower loved by pollinators as pollen and nectar source. Ferny foliage and lavender blue flower clusters spring into summer. May self sow.
Borage	Borago officinalis	2-3ft ht x 1-2ft wide		Annual Herb, reseeds, Spring to summer bloom of start shaped Clear Blue flowers. Poor soil, drought tolerant Mediterranean. Edible.
Calamint	Calamintha ssp. Ex. C.nepeta	1-2ft ht x 1ft wide		Airy plumes of tiny barely blue flowers over mint scented oregano like foliage bloom summer to fall. Bees love it, drought tolerant. herb/perennial.
California Aster	Corethrogyne filaginifolia	1-3ft ht x 3ft wide, variable, prune to keep low.	Ca Native	Deciduous perennial. Bright lavender yellow centered 1" daisy like flowers summer into fall. A wildflower, pollinator and butterfly plant.
California Buckwheat	Eriogonum fasciculatum	2-3ft ht x 2-3ft wide	Ca Native	Small evergreen shrublet with clusters of cream colored flowers April to October, aging pink to rust. Attractive to many pollinators. Seeds prized by birds. Drought tolerant once established.
California Lilac	ex. Ceanothus hearstiorum - San Simeon Ceanothus (low growing selections)	4” ht x 5 ft wide	Ca Native	Flat growing, dark green crinkled leaves and 1"deep blue flower clusters in the spring. C. hearstiorum likes clay, not sand. Better with some summer water (Native to foggy coast).
California Lilac Low Blue Blossom	Ceanothus thyrsiflorus repens	2ft ht x 6 ft wide prune to keep low	Ca Native	Evergreen prostrate shrub that can be 6” ht but also mounds - pruning required to keep low. Round dark green leaves, clusters of light blue flowers in spring. Drought tolerant, but likes to washed off occasionally. Attractive to bees as well as a butterfly host plant.
California Poppy	Eschscholzia californica	1-1.5ft ht x 1ft wide	Ca Native	Perennial grown as Annual. Reseeds. Start from seeds or plants. Drought tolerant state flower. Mainstay Pollen source for many native bees.
Coyote Mint	Monardella villosa	2ft ht x 2ft wide	Ca Native	-Mint scented. Trailing groundcover for sun or part sun. 1" lavender puff balls July thru August.

				Attractive nectar source for bees and butterflies. Drought tolerant.
Fernleaf Carpet Tickseed	Bidens ferulifolia	12” ht x 1.5 ft wide		Short lived perennial (3-5yrs) Native to US/Mexico. Drought, deer and heat tolerant. Bright yellow daisies summer to fall or more. Moderate to low water.
Frikart’s Aster	Aster x frikartii ‘Monch’	2ft ht x 2ft wide		Moderate water, sun part shade, pruning late spring will lower overall ht. Cut to ground after bloom. Late summer fall bloom provides nectar and pollen late in season. Lavender Blue 2”daisy flowers in profusion. Attractive to butterflies too.
Hairy Gumplant	Grindelia hirsutula	1-2ft ht x 1-2ft wide	Ca Native	Low herbaceous perennial, 2” sunny yellow daisies, summer to fall. Drought tolerant, but best with some summer water. Pollen and nectar source. G. stricta. Similar, lower growing.
Hummingbird Mint	Agastache spp.	2-3ft ht x 2ft wide	West US Native	Long blooming perennial, hummer magnet, spikes of orange flowers, minty fragrant leaves. Low water once established
Lavender	Lavandula spp.	1-2ft ht x 1-3ft wide		Choose dwarf varieties that mature at or below guideline mature ht. Example: Hidcote - darkest purple, Munstead - blue w/grey foliage. Summer bloom of lavender flower clusters. Fragrant.
Manzanitas	Low growing selections (ex. Arctostaphylos 'Emerald Carpet', Arctostaphylos edmundsii 'Carmel Sur', Arctostaphylos uva ursi 'Point Reyes'- Point Reyes Bearberry)	6”-12”ht x 6ft wide	Ca Native	Low neat evergreen groundcover shrubs that are drought tolerant with pink to white small urn shaped flowers winter into spring provide bees with nectar early in season. Bumblebees. Edible red berries good for birds.
Pot Marigold	Calendula officinalis	12-18” ht x 12”wide		Short lived perennial grown as annual. Winter to spring bloom, Yellow and Orange Daisy like flower is edible. Easy to start from seed.
San Miguel Island Buckwheat	Eriogonum grande var. rubescens	12" ht x 2-3ft wide	Ca Native	Low growing. Drought tolerant, attractive to butterflies and bees. Red pink pom pom clusters Summer bloom.
Sea Holly	Eryngium spp.	1-2ft ht x 1-2ft wide		Thistle like perennial produces striking purple blue flowers with silver bract collars, often deeply lobed leaves. Drought tolerant. Very attractive to bees. Blooms summer to fall.
Seaside Buckwheat	Eriogonum latifolium	1ft ht x 2ft wide	Ca Native	Compact mound of softly felted blue grey spoon shaped leaves topped by pale pink 1" clusters of flowers blooming summer into fall. Used for erosion control, drought tolerant. Loved by bees, butterflies and many pollinators.

Squash	Squash, Pumpkin and Zucchini	2ft ht x 6 ft wide		Vegetable. Summer annual. Needs moderate water. Bushy to rambling vine. Large yellow trumpet shaped flowers attractive to bees. Food for humans after bees get Nectar and Pollen.
Sulphur Buckwheat	Eriogonum umbellatum	1-3ft ht x 2 ft wide, can mound high, may need pruning to keep lower	Ca Native	Compact evergreen mound. Cream to yellow flower clusters late spring to end of summer. Needs little or no water once established. Attractive to Bee and Butterfly.
Tickseed	Coreopsis spp.	1-2ft ht x 1-2ft wide	US	Short lived perennial (3-5yrs) Drought tolerant, long blooming, profuse, cheerful yellow to yellow and maroon daisy-like flowers summer to fall. Moderate water until established
Tidy Tips	Layia platyglossa	1.5ft ht x 1.5ft wide	Ca Native	Native annual wildflower. Spring 2” yellow with white edges daisies. Many types of bees at low numbers. Pollen and nectar source.
Toadflax	Linaria purpurea	2-3ft ht x 1ft wide		Easy slender spikes of tiny violet lavender purple snapdragon like flowers over narrow blue grey leaves. Blooms summer. Perennial and reseeds. Many pollinators attracted.
Wayne Roderick Daisy	Erigeron glaucus ‘Wayne Roderick’	1ft ht x 1-2ft wide	Ca Native	Pollen and Nectar source for bees. Profusion of 2” lavender daisies with golden centers, easy tough and reliably perennial. Long blooming Spring to Fall with some deadheading. Drought tolerant. Better with some summer water.
Western Yarrow	Achillea millefolium	1-3ft ht x 3ft wide, variable, prune to keep low.	Ca Native	Usually a low spreading ferny leaved perennial with 3-4” clusters of white to pink flowers. Long bloom season. Attractive to pollinators.

D-3. Butterfly Habitat Guidelines

> *"The power to enrich a patch of earth with beautiful butterflies, no matter how humble the plot or simple the effort, is awesome"*
>
> *-Robert Michael Pyle, author, lepidopterist*

Our Bay Area is home to 142 species of butterflies and they depend on specific types of plants. The Bay Area also has the largest concentration of endangered butterfly species in California.

Habitat loss is a primary cause of decreasing populations of butterflies. Berkeley is home to many of these species and by planting for their specific needs we can help keep butterflies flying in our neighborhoods.

Despite the common and understandable focus on planting pretty flowers to provide nectar for adult butterflies, butterflies actually have two more essential needs. First, each species has certain plants—sometimes just one kind of plant—on which its larva / caterpillars feed; planting those species is the way to provide useful habitat, even if there aren’t flowers in the same place. Second, pesticides kill butterflies and their caterpillars and should not be used in their habitat.

There are four stages of the butterfly's lifecycle —the egg, the caterpillar or larva, the chrysalid in which the larva turns into the winged butterfly, and the adult butterfly. A traffic circle can provide excellent space for all these life stages, starting with low growing caterpillar food plants.

Some spectacular species common to Berkeley are the Monarch, Western Tiger Swallowtail, Anise Swallowtail, Pipevine Swallowtail, West Coast Lady, Red Admiral, Gulf Fritillary, Buckeye, Cabbage White and Fiery Skipper Butterfly.

The suggested plants below can all grow low and thrive in traffic circles and provide food plants that will help generate a glorious annual bloom of butterflies like these for the surrounding neighborhood.

Suggested Plants for Butterflies

~~Under Construction~~

Plant	Nectar Or HOST	Scientific Name	Height	CaNa	Notes
Apricot Monkey-flower Bush	Larval Host	Mimulus bifidus	2-3 ft ht x 2-3 ft wide, might need some pruning to keep lower	Ca Native	Spectacular 2" azalea like flowers. No irrigation once established, but better with a little water. Attracts hummingbirds. Host plant for Checkerspot and Buckeye Butterflies.
Pincushion Flower 'Butterfly Blue'	Nectar only	Scabiosa 'Butterfly Blue'	12-18" ht x 12-18" wide		One selection of many scabiosa. This one is perennial, low mounding and blooms for a long period. Summer to late fall. Frilly flat lavender 2" flowers. Moderate water best.
California Aster	Nectar & Host	Corethrogyne filaginifolia	1-3ft ht x 3ft wide, variable, prune to keep low.	Ca Native	Deciduous perennial. Bright lavender yellow centered 1" daisy like flowers summer into fall. A wildflower, pollinator and butterfly plant.
California Lomatium	Larval Host	Lomatium californicum	1ft ht x 1ft wide, narrow flower stalk 30" ht	Ca Native	Forms clumps of beautiful ferny blue green leaves. Looks like celery. No irrigation once established, Anise Swallowtail Butterfly host plant.
California Lilac Low Blue Blossom	Nectar & Host	Ceanothus thyrsiflorus repens	2ft ht x 6 ft wide prune to keep low	Ca Native	Evergreen prostrate shrub that can be 6" ht but also mounds - pruning required to keep low. Round dark green leaves, clusters of light blue flowers in spring. Drought tolerant, but likes to washed off occasionally. Tortoiseshell Butterfly host plant. Attractive to pollinators too.
California Showy Milkweed	~~Larval Host and nectar~~ Nectar & Host	Asclepias speciosa	3-4ft ht x 3ft wide	Ca Native	Monarch Butterfly caterpillar food. Deciduous (disappears in winter) Fuzzy leaved stalks with 5"clusters of star shaped rose & white flowers. Spreads by underground rhizomes. Sun. Some summer water appreciated.
Checker-bloom	Nectar & Host	Sidalcea malviflora	2ft ht x 1ft wide	Ca Native	Perennial wildflower. Dense low 6" mound of small round scalloped leaves, 12-20" spikes of bright to dark pink 1" flowers in spring. Native larval host plant for Westcoast Lady Butterfly.

Coyote Mint	Nectar only	Monardella villosa	2ft ht x 2ft wide	Ca Native	-Mint scented. Trailing groundcover for sun or part sun. 1" lavender puff balls July thru August. Attractive nectar source for bees and butterflies. Drought tolerant.
De la Mina Verbena	Nectar	Verbena lilacina 'De La Mina'	3ft ht x 3ft wide	Ca Native	Long blooming perennial, profuse 1" clusters of lavender flowers spring summer into fall. Better with occasional summer water. Attracts pollinators.
Dill	Larval Host	Anethum graveolens	2ft ht x 6" wide	Herb	Annual grown from seeds. Widely used culinary herb by many Old World cultures. Anise Swallowtail Butterfly caterpillars use as host plant. Start seed in summer, regular water.
Fernleaf Carpet Tickseed	Nectar only	Bidens ferulifolia	12" ht x 1.5 ft wide		Short lived perennial (3-5yrs) Native to US/Mexico. Drought, deer and heat tolerant. Bright yellow daisies summer to fall or more. Small butterfly nectar. Moderate to low water.
Frikart's Aster	Nectar only	Aster x frikartii 'Monch'	2ft ht x 2ft wide		Moderate water, sun part shade, pruning late spring will lower overall ht. Cut to ground after bloom. Late summer fall bloom provides nectar and pollen late in season. Lavender Blue 2"daisy flowers in profusion. Attractive to butterflies & bees.
Frogfruit Lippia	Nectar ~~and~~ & Host	Lippia nodiflora	1-4" ht x 2ft wide. Can be invasive spreader Or lawn substitute	Ca Native ?	Evergreen perennial flat groundcover. 1/2" flower clusters like tiny lantana in pink and white. Host for Buckeye Butterfly. Attractive to pollinators.
Grasses	Larval Host	Poacea family	1-2ft ht x 1ft wide	Ca Native +	Fiery Skipper butterfly caterpillars feed on grasses. In urban areas mostly on Bermuda Grass. Also feed on several native grasses ex. Purple Needlegrass (Nassella pulchra)
Lovage	Larval Host	Levisticum officinale	2-6ft ht x 4ft wide Usually much smaller in our dry climate. Prune to keep low for traffic circles.	Herb	Perennial Herb. Looks and grows like a big Parsley, leaves all originating from central basal rosette. Carrot like flowers. European herb that Anise Swallowtail caterpillars eat. Prune to keep low growing. Need moderate water. All parts of plant edible to humans too.
Narrow leaved Milkweed	Larval Host	Asclepias fascicularis	2-3ft ht x 2-3ft wide	Ca Native	Deciduous/semi deciduous perennial. 5"flower heads creamy white. Larval host plant for Monarch Butterfly. Full sun, occasional summer water.
Narrowleaf Plaintain	Larval Host	Plantago lanceolata	3-15" ht x 10"wide		Rosette forming perennial herb. Lance shaped base leaves. Flower stalks narrow ending in 1" club. Often seen in lawns. Primary Bay Area Larval host of the Buckeye Butterfly. Moderate water.

Nasturtium	Larval Host	Tropaeolum majus	1ft ht x 2-3ft wide		Annual trailing herb. Sow seeds before winter rains. Reseeds. Larval host for European Cabbage White Butterfly. Better with some summer water. Clean up dead foliage after flower slows.
Parsley	Larval Host	Petroselinum crispum	10" ht x1ft wide	Herb	Biennial grown as annual, reseeds. Mediterranean herb/vegetable used by Anise Swallowtail caterpillars as host plant. Grows best with regular water, bees and birds also attracted.
Pellitory	Larval Host	Parietaria judaica	18" wide x 3ft wide	Weed	Herbaceous perennial, considered a weed. Larval food plant for the Red Admiral butterfly. Drought tolerant, evergreen, dense mound forming. May cause allergic reactions in some people.
Red Buckwheat	Nectar & Host	Eriogonum grande var. rubescens	12" ht x 2-3ft wide	Ca Native	Long blooming~~October~~, short growing. Drought tolerant, Larval host for Lycaenid butterflies.
Seaside Buckwheat	Nectar & Host	Eriogonum latifolium	1ft ht x 2ft wide	Ca Native	Compact mound of softly felted blue grey spoon shaped leaves topped by pale pink 1" clusters of flowers blooming summer into fall. Drought tolerant. Caterpillar host for Blue butterflies.
Sulphur Buckwheat	Nectar & Host	Eriogonum umbellatum	1ft ht x 2 ft wide	Ca Native	Compact evergreen mound. Blooms late spring to end of summer. Needs little or no water once established. Caterpillar food for Gossamer Wing butterflies.
Toadflax	Larval Host	Linaria purpurea	2-3ft ht x 1ft wide		Easy to grow, slender spikes of tiny violet lavender purple snapdragon like flowers over narrow blue grey leaves. Blooms summer. Perennial and reseeds. Larval host of Buckeye Butterfly caterpillar.
Western Yarrow	Nectar Only	Achillea millefolium	1-3ft ht x 3ft wide, variable, prune to keep low.	Ca Native	Usually a low spreading ferny leaved perennial with 3-4" clusters of white to pink flowers. Long bloom season. Attractive to pollinators.
Yampah spp.	Larval Host	Perideridia ssp ex.P.kelloggii - Native to SF Bay Area. P.bolanderi native to western US.	1-3ft ht x 1ft wide	Ca Native	Ancient Native host plant for Anise Swallowtail Butterfly. Current urban caterpillars feed on introduced Fennel. Yampah is perennial, small greyish parsley-like plant with tall flat topped carrot-like flower stalk. Plant several to provide food for caterpillars

D-4. Native Wildflowers Guidelines

This palette draws on the rich wildflower meadows and flowering trees of the East Bay, bringing the colors and aromas of native California into our neighborhoods. The mix of native flowers provides pollen and nectar for native bees, butterflies, and other insects as well as providing high-value leaves and seeds for birds and insects. This array of flowering plants provides floral continuity through the year, so local species have reliable resources year-round.

One possible source for Wildflower seeds would be Larner Seeds of Bolinas CA. https://www.larnerseeds.com/store/term/wildflower-seed-mixes

~~UNDER CONSTRUCTION~~

Suggested Wildflower Plants

Plant	Scientific Name	Height	CaNa	Notes
Azalea flowered Monkeyflower	Diplacus grandiflorus	1-2ft ht x 2ft wide	Ca Native	Large azalea like flowers. No irrigation once established, better with a little water and some shade. Attracts hummingbirds. Host plant for Checkerspot and Buckeye Butterflies.
Bolander's Phacelia	Phacelia bolanderi	1ft ht x 0.5ft wide	Ca Native	Papery inch wide lavender flowers late spring thru summer. Perennial groundcover, appreciates some summer water and some shade. Bee pollen and nectar source.
California Fuchsia	Zauschneria or Epilobium canum Use Low growing selections such as 'Everett's Choice' or 'Cloverdale'	1-2ft x 2-3ft wide	Ca Native	Fine textured gray green to silver leaves, mounding habit and bright red orange tubular flowers in clusters later summer into fall. Can be winter deciduous. Best hummingbird attracting plant. Drought tolerant. Cut back during winter.
California Poppy	Eschscholzia californica	1-1.5ft ht x 1ft wide	Ca Native	Iconic California Wildflower. Perennial often grown as Annual. Reseeds. Start from seeds or plants. Drought tolerant state flower. Mainstay Pollen source for many native bees.
Coast Gum Plant	Grindelia stricta platyphylla	6" ht x 2-3ft wide	Ca Native	Low herbaceous perennial groundcover with 2"wide sunny yellow daisies, summer to fall. Drought tolerant, but best with some summer water. Bee pollen and nectar source.
Douglas Iris	Iris douglasiana and hybrids and selections (ex. 'Canyon Snow' Iris Pacific Coast Hybrid)	1ft ht x eventually 3ft wide (Canyon Snow)	Ca Native	Perennial. Appreciates some summer water. Many hybrids, many colors, most lavender purple blue white and yellow. Example 'Canyon Snow' recognized as an outstanding white flowered selection. Disease resistant, little water, evergreen. Blooming in the spring.

Dwarf Lupine	Lupinus nanus	12-18” ht x 1ft wide	Ca Native	Also called Sky Lupine. Annual wildflower that turns California fields blue in the spring. Reseeds. Seeds need moisture to germinate.
Fairyfan Farewell-to-Spring	Clarkia williamsonii	12-14” ht x 12” wide	Ca Native	Magenta blotched lavender pink silky cup shaped flowers in late Spring into Summer. Annual that reseeds. Needs good drainage. Appreciates a little supplemental water.
Great Valley Phacelia	Phacelia ciliata	16” ht x 16” wide	Ca Native	Beautiful self sowing annual. Clusters of cupped lavender blue flowers over ferny foliage. Good for bees.
Red Buckwheat	Eriogonum grande var. rubescens	12" ht x 2-3ft wide	Ca Native	Low growing perennial. Drought tolerant, attractive to butterflies and bees. Red-pink pom pom clusters of flowers summer thru fall.
Sulphur Buckwheat	Eriogonum umbellatum	1-3ft ht x 2 ft wide, can mound high, may need pruning to keep lower	Ca Native	Compact evergreen mound. Cream to yellow flower clusters late spring to end of summer. Needs little or no water once established. Attractive to Bee and Butterfly.
Western Yarrow	Achillea millefolium Choose low growing selections like ‘Salmon Beauty’ Yellow ‘Moonshine’ or white “Sonoma Coast’	1-2ft ht x 2ft wide	Ca Native	Usually a low spreading ferny leaved perennial with 3-4” umbels of flowers in cream, white, yellow, salmon,pink or red. Flowers summer thru fall. Drought tolerant, but better with a little water. Cut flowers back in late fall/winter. Attractive to pollinators.

E. Pruning Standards & Guidelines:

https://sfenvironment.org/sites/default/files/fliers/files/sfe_uf_pruning_guide.pdf

City of Berkeley Traffic Circle Policy Task Force
Operation and Maintenance Sub-Committee
Draft Policy Statement, July 19, 2019

The Berkeley City Council should direct the City Manager to have the Public Works Department formalize and create the Traffic Circle Community Stewardship Program to support the management of neighborhood traffic calming. The program will establish a partnership with a clear set of guidelines for community volunteers who adopt and maintain traffic circles, address safety concerns, as well as define responsibilities between the City and community volunteers. There isn't a real "home" or ownership for traffic circles within the City's departments, and there isn't consistent communication with community members about rules, plants, maintenance, roles or responsibilities. With a few serious traffic interactions between cars and people at traffic circles recently in Berkeley, there is a need to address the traffic circles in a more comprehensive manner and support the community volunteers and neighborhoods who have been mainstays of the traffic circle program.

1. Develop a Formal Partnership Program within Public Works
   Berkeley has many civic-minded and engaged community members who volunteer their time and resources maintaining parks, open spaces and traffic circles. There is no formal mechanism for the City to engage these volunteers or to recruit new ones, although the City does have successful working relationships with community organizations who maintain some public spaces including Berkeley pedestrian paths and The Circle on Marin Avenue. Berkeley City leaders have expressed their willingness to work with the community and develop a real partnership by creating and supporting the establishment of the Traffic Circle Policy Task Force. A formal partnership program needs a shared commitment and written guidelines, structure, budget and resources to deliver the benefits to both the City and the community. There are many existing community-based partnership programs in the San Francisco Bay Area as well as around the country. The City of Oakland's "Adopt a Spot" program is a long-standing and successful model that has also served as a template for similar programs in Livermore and Richmond and should be considered a template for the City of Berkeley's program. In addition, members of the Traffic City Policy Task Force have done considerable research and found many good examples of other programs around the country that can be found in Appendix X.

2. Provide Staff Resources
   In order to establish and operate a successful partnership program, staff resources are required. Staffing could be provided through the City or through an existing non-profit entity that would be contracted for staff resources (at this point it's not clear if this would be a full-time position or could be part time after the program is set up). A Traffic Circle Community Engagement Coordinator would report to Public Works and be responsible for coordinating with all existing traffic circle volunteers, recruiting new volunteers, act as a liaison between community volunteers and City staff, coordinate between Public Works, Parks and Recreation and Planning Departments as well as third-party utilities, and develop and maintain an on-line tool for tracking traffic circle compliance and administration. The Coordinator would also be responsible for developing an annual

budget, hosting annual work days, provide assistance with technical issues, and develop a plant discount program, free mulch delivery, tool and safety equipment lending library, and a green infrastructure mini-grants program with matching funds and/or in-kind support. The Coordinator and City leaders should explore consolidating all resources and responsibilities for traffic calming measures (traffic circles, bulb-outs, traffic diverter replacement/conversions and parklets) as well as supporting the Berkeley Bicycle Plan under the Traffic Circle Community Stewardship Program. The core goal of this position should be nurturing and supporting a Citywide and expanding program of traffic circles that are both beautiful and safe and that make use of community volunteer resources, while also coordinating City staff resources and interests as they apply. It should be noted that this position could also be defined to coordinate City staff and volunteer stewardship resources (through friends of parks and creeks groups) and efforts associated with maintaining and enhancing city parks, creeks, and open spaces. In this case, additional FTEs/staff capacity would likely be required.

3. Enhance Relationship between Public Works and Community Volunteers
   Public Works needs to cultivate and enhance its reputation and relationship with the community volunteers to implement a successful program. The Traffic Circle Policy Task Force's report and recommendations and the City's approval and adoption is only the first step to implementation. Any changes to the status quo (where there is no program and no publicized or consistent rules) will be new and possibly startling to the community. A thoughtful communication plan with multiple ways to communicate within a set time period should be developed in concert with rolling out the new policy and program. Public Works should also strive to be seen as an ally and support for the community volunteers with expertise and resources to support them and the program. Public Works and the Coordinator should investigate incentives to help recruit additional community volunteers, especially in under-represented neighborhoods of the City. It is also recommended that Public Works establish an advisory board comprised of leaders within Public Works, Parks and Recreation, and Planning Departments and a representative group of relevant Commission representatives and community volunteers to meet periodically to review the programs progress. Note, we are not suggesting a new commission, with all the issues that would entail.

4. Structure Volunteer Program and Resources
   All of the community volunteer programs that the Traffic Circle Policy Task Force reviewed have a more formal structure for their programs and volunteers. Typical elements include: a volunteer job description used for recruiting purposes, volunteer application or agreement with a minimum term, maintenance rules and guidelines, planting guidelines, and safety rules and guidelines. Public Works should borrow from the best programs, specifically Oakland's "Adopt a Spot," to develop the documents needed to support the program. All program documents should be maintained on the City's website with easy to use on-line applications and approvals.

   This proposed program and its recommendations are designed in part to reduce City liability and risk from traffic circles. By the same token, the City should be willing to extend protection from liability to neighborhood volunteers who maintain traffic circles

and are in compliance with the program. The advice of the City Attorney and specialized legal experts on municipal volunteer programs should be sought in formalizing this two-way arrangement.

5. Provide a Clear Set of Guidelines and Best Practices for Safety and Maintenance Activities

   Whether community volunteers are experts or novices, everyone needs common sense guidelines for safely maintaining the traffic circles. Most of the cities that support volunteer programs have all of the documents on the city's website. These guidelines and best practices will be important to help ensure compliance with overall vegetation traffic calming measures over time, as plants grow and obscure sightlines and as volunteers turn over. The coordinator and community volunteers could also work together by hosting demonstrations, workshops, and work days to share knowledge and expertise.

   Here is a suggested list of topics for Guidelines and Best Practices (which will be more fully developed by the end of August, 2019)
   Operation and Maintenance Guidelines and Best Practices:
   1. General conduct, safety, tools, watering
   2. Managing sightlines and vegetation
   3. Plant maintenance, pruning, weeding, new planting and tree replacement and/or removal
   4. Integrated Vegetation Management and Pest Control
   5. Garbage and Debris Removal
   6. Decorations, boulders, bird feeders, etc.
   7. Coordinating with Public Works,
   8. Self-Certification of Compliance with Best Practices
   9. On-line Arc-GIS/Google Maps traffic circles GIS database

   It is important to emphasize that guidelines should be common sense but not punitive, onerous, unreasonable or bureaucratic. Community volunteers are already giving a considerable amount of free time to maintain City spaces. The goal of City policy should be to support their contributions in a safe and reasonable manner and to find ways of recognizing and acknowledging their efforts.

6. Develop and Implement Consistent Traffic Standards for all Traffic Circles

   Unlike large arterial and collector road round-a-bouts, neighborhood traffic circles located on local streets are designed first for traffic calming and not primarily for efficiently moving traffic quickly along the road. This is a fundamental issue. The City's existing (2009) Traffic Calming Policy is useful to quote in this regard:

   "Traffic calming is intended to reduce the impact of motor vehicles on roadways, residents and road users. In Berkeley, this means primarily the reduction of motor vehicle speeds…Physical traffic calming measures are categorized in two ways: (1) vertical deflection: raising the road by using speed humps or speed tables, and (2) Horizontal shift moving vehicles off a certain alignment from one side or another (e.g.

traffic circles). Generally, physical traffic calming measures are the most effective form of traffic calming available."

The Council should note that nowhere in that policy is an expectation or requirement that traffic circles should exist to make it easier for motor vehicles to move speedily or more efficiently along neighborhood streets. In fact, the opposite is the case.

Members of the Traffic Circle Policy Task Force have taken note of the various street intersections where traffic circles are located and the different traffic signing, speed limits, and crosswalk marking standards used.

The City should inventory all existing traffic circle intersections and develop consistent standards for signing, speed limits, installing traffic tables, etc. with an implementation timeline. Effective and safe traffic circles don't end at their curb-line. The City should work towards other holistic street improvements and modifications that will improve safety at traffic circle intersections. These might include: a uniform speed limit reduction at all intersections with traffic circles on neighborhood streets; uniform signage that clearly communicates expectations for drivers (the current ambiguous "Yield to traffic in circle" signs do not do this); four-way stop signs at all neighborhood circles; bulb outs or speed tables on the adjacent streets that act to mechanically reduce vehicle speeds, particularly for those drivers who ignore posted signage.

Pedestrians, cyclists, and motor vehicle drivers should be able to expect consistency in City rules for traffic circles. It is often this uncertainty—the driver, bicyclist or pedestrian who doesn't realize they've come to a two-way, not four-way, stop sign intersection around a circle—that increases hazards, not the existence or character of the circle itself.

Traffic Circles - Policy Alignment Issues - Subgroup 3 DRAFT 7-19-2019

Subgroup #3 task: Assess coordination needs for working within City policies and cooperatively with regional and state agencies; Current traffic circle policy: here

Members: Jean Pfann, Charlene Woodcock, Wendy Alfsen, Fred Krieger, John Steere, Diane Ross-Leech

Current task: *Subcommittees send the primary elements of their policy to Tano by July 19.*

Current situation and its effects

Traffic Circles are islands in the middle of an intersection that encourage motorists to slow down to maneuver around the circle. A major benefit of traffic circles is that vehicles do not need to cut directly in front of oncoming traffic to make a left turn. This tends to eliminate broadside hits, which are often the deadliest intersection crashes

Currently, Berkeley has 62 [?] traffic circles in the middle of intersections. In other locations, Berkeley also has bulb-outs extending from the sidewalk into the street. Both the traffic circles and bulb-outs have vegetation, including trees in some cases. This vegetation is generally maintained by the neighbors. Greenery in and along streets makes Berkeley a more beautiful city and is critical to Berkeley's livability and success as a place.

Berkeley currently has a traffic circle policy which is being revised with the assistance of the Traffic Circle Policy Task Force. The Task Force is composed of interested citizens, mostly volunteers who maintain the current traffic circles. The Task Force is being coordinated by the Mayor's Office.

In a recent lawsuit against the City, the plaintiff alleged traffic circle vegetation obstructed the view of an approaching driver and contributed to a collision with a pedestrian. The purpose of this new policy is to identify the appropriate design and operation characteristics of traffic circles that provide both traffic calming and other benefits while maintaining pedestrian safety.

(*Recommendations and suggestions are presented later in this document*)

Goals

Short version: This Policy intends to support the construction and maintenance of traffic circles. The Policy may be expanded to include related street facilities such as bulb-outs. The goals of traffic circles are to increase public safety by calming traffic and to create a desirable streetscape for the public to enjoy.

Long version: The goals of the traffic circle program include the following:

- Maintain traffic calming benefits of traffic circles
- Help beautify Berkeley - *Greenery in and along streets makes Berkeley a more beautiful city and is critical to Berkeley's livability and success as a place*
- Encourage joint activities by neighbors and friends for the betterment of Berkeley
- Maintain visibility to protect pedestrians and bicyclists
- Capture and infiltrate rainfall
- Reduce noise pollution (enhance noise abatement through the use of vegetation)

- Provide habitat for native creatures (birds, butterflies)
- Increase carbon sequestration (current traffic circles constitute ½ to 1-acre total surface area; trees are about 50% carbon)
- Help cool the urban environment.

Conformance with Berkeley Plans and Policies

This section provides a review of existing plans and policies and identifies sections that are relevant to the implementation of traffic circles.

- **General Plan**

  The General Plan directly addresses traffic circles and encourages their construction, particularly for traffic calming. The Transportation Element describes its function:

  > *Traffic circles and bulb-outs have been used successfully in Berkeley neighborhoods to calm traffic without diverting traffic onto neighboring streets.*

  Also, Policy T-22, ***Traffic Circles and Roundabouts***, states:

  > *Encourage the use of landscaped traffic circles to calm traffic in residential areas.*
  >
  > ***Action**: A. Consider roundabouts as a viable traffic-calming device, especially at the Shattuck and Adeline intersection, the Gilman Street Freeway on and off-ramps, and at other appropriate intersections in the city.*

  The Public Works Transportation Division provides additional material on the benefits, including data indicating a significant reduction in collisions. These studies have shown that traffic circles reduce automobile speeds at intersections by up to 10% and that they reduce collisions significantly. To facilitate fire truck access, a minimal amount of parking might be prohibited at some intersections, depending upon the intersection layout.

- **Berkeley Climate Action Plan**

  This Plan is an emissions elimination or prevention strategy. The Action Plan identifies traffic circles and other modifications as essential to slow or reduce automobile traffic and make walking and cycling more safe and viable. The Plan also suggests that replacing stop signs with yield signs at traffic circles on bicycle boulevards would improve the flow of cycling, consistent with public safety.

  To change commute patterns, travelers, including bicyclists and pedestrians, require increased safety, that is, reduced vehicle speeds and volumes. Traffic circles are recognized traffic calming measures on a local street. Without vehicle speed and volume reduction to improve safety, the necessary changes to travel modes will not occur. A complementary benefit is that trees and plants sequester carbon.

  The Climate Action Plan states:

  > **Policy:** Promote tree planting, landscaping, and the creation of green and open space that is safe and attractive, and that helps to restore natural processes

A healthy urban forest has several benefits, including:

- Reducing the energy consumption associated with air conditioning buildings by providing shade
- Reducing local ambient temperatures by shading paved and dark-colored surfaces like streets and parking lots that absorb and store energy rather than reflecting it
- Intercepting and storing rainwater, thereby reducing water runoff volume
- Improving community quality of life through beautification and by reducing noise pollution and encouraging pedestrian traffic

Implementing actions include:

- Maintain and protect mature trees wherever possible and maximize tree planting as part of public open space and street improvements.
- Consider developing a tree preservation ordinance that would articulate strong standards for the preservation and replacement of trees in the public right of way.
- Identify opportunities for tree planting and to maintain existing and create new public open spaces to increase community access to parks and plazas. The City should ensure that as development increases along certain transit corridors, it is accompanied by an appropriate level of tree planting and green and open space enhancements.
- Establish standards and guidelines to ensure that ecologically beneficial stormwater quality and retention features and water conservation features are integrated into the design of landscaping features on both public and private land.
- Identify opportunities to modify City streets to better serve the safety and needs of pedestrians and cyclists. Street modifications that serve to slow or reduce automobile traffic and make walking and cycling more safe and viable include traffic circles and allocating additional roadway space to cyclists. The City should develop and adopt “Complete Streets” design standards, and routinely accommodate bicycle and pedestrian improvements in all streets and sidewalks projects.
- Identify and implement opportunities to improve the flow of cycling along bicycle boulevards, consistent with public safety, including consideration of replacing stop signs with yield signs at traffic circles on bicycle boulevards. Many Berkeley cyclists see the stop signs as unnecessary and inconvenient given that the traffic circles already effectively slow automobile traffic, and are designed to function as “all-yield” intersections.

Therefore, a City Traffic Circle Policy which effectively increases non-gasoline vehicle travel and provides carbon sequestration is critical to reaching the City’s Climate Action Plan goals

- **Berkeley Pedestrian Master Plan**

The Pedestrian Master Plan strongly supports the traffic calming benefits and safety improvements provided by traffic circles. The Plan reports a Vancouver study that showed an average collision reduction of 40 percent in four neighborhoods that used a combination of traffic calming types, including traffic circles. The Plan also identifies some constraints:

- Fire Department approval of design (which may include removal of parking spaces to allow trucks to pass by the traffic circles.
- Landscaping should be based on low-growing shrubs that maintain visibility for pedestrians, particularly those in wheelchairs.

***Key requirements of the Pedestrian Master Plan*:**

4.3.2. TRAFFIC CIRCLES

Traffic circles are located in intersections throughout the southern and western areas of the City. There were 62 traffic circles at the start of the planning process, with many additional traffic circles being constructed through the duration of the plan. Most of the traffic circles are along Blake, Carleton, Fulton, Ellsworth, Stuart, Parker, and Woolsey and California Streets. California Street has the most traffic circles of any street in the city. Traffic circles are accepted by the Berkeley Fire Department, provided the department has approval over the design.

4.3.3. TRAFFIC DIVERTERS

Traffic diverters, like traffic circles, are mostly located in the southern, central, and western portions of the city. The diverters complement the use of traffic circles and speed humps. There are a total of [XX] traffic diverters. The type of diverter varies from landscaped barriers to wide planter-type bollards. The diverters are completely permeable to pedestrians and bicycles but not to motor vehicles. There is a mixture of full diverters and semi-diverters which allow motor vehicle traffic through in one direction. A majority of diverters are located along streets surrounding the east-west portion of the Ohlone Greenway that parallels Ohlone Park and along streets feeding to Ashby Avenue.

_____

10.4.4.3. LOCAL TRAFFIC CALMING FUND

(p. 10-13) The Berkeley City Council has made an annual allocation from the General Fund of $50,000, which is utilized by the Department of Public Works to respond to residents' traffic calming requests. Periodically, the Council has made special one-time allocations of funding to supplement this program; for example, in 2008 an additional $200,000 was programmed for traffic calming requests. These funds have been applied toward traffic circles, curb bulbouts and speed feedback signs. It is likely that this fund will be continued at a minimum level of $50,000 and may be increased.

_____

8. TRAFFIC CALMING

(p. B-31) Traffic calming interventions slow traffic by modifying the physical environment of a street. The City of Berkeley has employed a variety of traffic calming measures, including speed humps, chokers, traffic circles and both full and partial street closures.

Research into the efficacy of traffic calming devices to improve pedestrian safety has shown that traffic calming can reduce the number of automobile collisions. A Vancouver study published in 1997 showed an average collision reduction of 40 percent in four neighborhoods that used a combination of the traffic calming types described below. [Reference to "*Safety Benefits of Traffic Calming*"

Care should be taken to ensure that any landscaping in the [*traffic*] circles uses low-growing shrubs that maintain visibility for pedestrians, particularly those in wheelchairs. The City maintains a list of acceptable plant species for traffic calming circle plantings.

[Comment: A definition of "low-growing shrubs" would be helpful.]

- **Berkeley Bicycle Plan**

[The following is a condensed description of the plan and its implementation.]

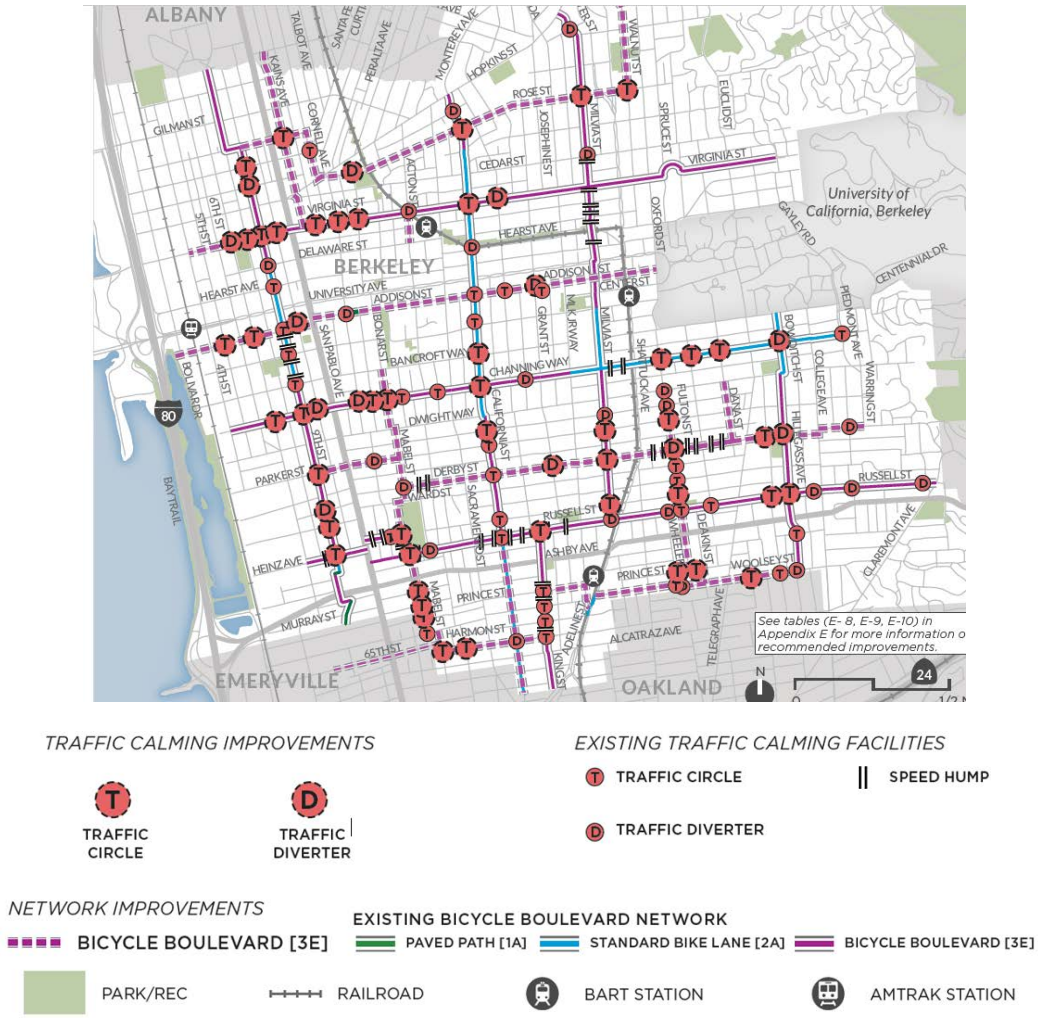
As envisioned in the 1977 Master Plan, bicycles continue to be an important mode of transportation in Berkeley. In 1990, about 5% of employed Berkeley residents commuted by bicycle and many residents use bicycles for recreation and personal tasks. Students also use bikes to get to school. In 2000, the City Council adopted the Berkeley Bicycle Plan and Bicycle Boulevard Design Tools and Guidelines. The Bicycle Plan is incorporated by reference into the General Plan.

The goal of the Bike Plan is to improve safety for cyclists of all ages, with the larger aim of encouraging a clean, carbon-free mode of transportation and reducing pollution as well as traffic accidents in Berkeley. The traffic circles are designed to slow traffic and improve safety for occupants of cars, cyclists, and pedestrians. Traffic calming will encourage more people to ride bikes and allow their children to bike on their own. An increase in the use of bikes instead of cars will reduce carbon and enhance resiliency by encouraging an energy-independent mode of transportation.

This Plan proposes several new Bicycle Boulevards and enhancements to the existing seven Bicycle Boulevards to provide greater traffic calming and convenience for through bicycle travel. Bicycle Boulevards make riding a bicycle feel safer and more intuitive for all ages and abilities.

Figure 5-15 below, excerpted from the Plan, shows recommended conceptual traffic calming improvements along the Bicycle Boulevard network. Diverters are recommended to direct vehicles off the Bicycle Boulevards and onto larger roadways, decreasing vehicle speeding and cut-through traffic. New recommended diverter locations were generally selected to provide at least one diversion point between each major street along the Bicycle Boulevard network. Recommended traffic circle and diverter locations in this Plan may be changed based on traffic studies, public process, and neighborhood feedback. The City may pilot these locations with temporary installations to understand their traffic impacts before making them permanent.

Recommended Low-Stress Bike Boulevard
Traffic Calming Improvements
(*Excerpt from Figure 5-15*)



The Plan includes *Project Recommendation Tables and Prioritization* in Appendix E. Following is an excerpt from Table E-2:

Summary of Intersection Recommendations
(Excerpt from Table E-2)

Recommended Project Type	Count	Cost Estimate
Protected Intersection	10	$6,500,000
Traffic Circles	42	$2,100,000
Traffic Diverters	13	$650,000

Traffic Circle projects are prioritized within each corridor. Tier 1 projects, including traffic circles, are planned to be implemented in the short-term by 2025, Tier 2 in the medium-term (between 2025 and 2035), and Tier 3 in the long-term (by 2035).

Future Traffic Circles - Tier 1 Projects:
Implementation planned by 2025
(Excerpt from Table E-8)

Corridor	Location	Cross St.	Est. Cost
Addison St	Addison St	7th St	$50,000
	Addison St	5th St	$50,000
Channing Wy	Channing Wy	7th St	$50,000
	Channing Wy	Browning St	$50,000
	9th St	Channing Wy	$50,000
	Bonar St	Channing Wy	$50,000
	California St	Channing Wy	$50,000
	Channing Wy	Dana St	$50,000
	Channing Wy	Ellsworth St	$50,000
	Channing Wy	Fulton St	$50,000
Fulton/Bancroft/Hearst	Fulton St	Parker St	$50,000
	Fulton St	Oregon St	$50,000
	Prince St	Wheeler St	$50,000
	Prince St	Deakin St	$50,000
Hillegass Ave	Hillegass Ave	Russell St	$50,000
Milvia St	Milvia St	Oregon St	$50,000
	Milvia St	Parker St	$50,000
Russell St	Russell	King St	$50,000
Total cost			***$900,000***

Overall, traffic calming via traffic circles should be very beneficial to bike riders and traffic circles are strongly supported by the Bicycle Plan. The plan notes that traffic circles can be landscaped but must be maintained to preserve sightlines.

- **Revised Traffic Calming Policy**

  This policy states:

  > NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City shall adopt the Traffic Calming Policy – 2009 as set forth in Exhibit A to:
  >
  > > 1) establish an annual cycle with specific timelines and procedures for submitting, qualifying and processing traffic calming requests, regardless of where the request originates; 2) conduct data collection and traffic calming studies for requests with a validated problem and that meet specified criteria; 3) generate an annual, updated prioritized list of traffic calming capital improvement projects; and 4) allocate available funds for implementation of projects according to their priority.

  This Resolution and implementing policy justify and support the creation of calming measures, including traffic circles. (See Resolution No. 64,732-NS and the Policy)

- **"Vision Zero" Policy**

  This initiative is a road traffic safety project intended to create a roadway transportation system with no fatalities or serious injuries involving road traffic. The Vision Zero approach has been effective in other cities. Berkeley plans to develop a policy and implementation strategy, as well as to identify funding sources. Traffic circles are a component

  The *Considerations for Effective Implementation* include the following (*excerpt from p. 19*):

  Engineering

  Horizontal traffic-calming elements: chicanes, curb extensions, traffic circles, ped refuge islands

  - Carefully select design vehicle
  - Consider use of mountable features for very large vehicles

  The Policy notes that a particular benefit of traffic circles is that vehicles do not need to cut directly in front of oncoming traffic to make a left turn. This tends to eliminate broadside hits, which are often the deadliest intersection crashes.

  Traffic calming via traffic circles conforms to the Vision Zero goals. Possible view obstruction by vegetation will need to be considered.

- **Resilience Strategy**

  The Resilience Strategy emphasizes building community resilience by building stronger connections:

  Between neighbors (including those in adjacent cities)

  Between public, private, nonprofit, and academic institutions;

  Between departments within the City government;

  Between Bay Area local and regional governments.

  Key goals relevant to traffic circles:

  #1 – Build a connected and prepared community;

  #3 Adopt to the changing climate;

  Suggestions for Berkeley citizens:

  In the spirit of connectedness, the Resilience Strategy is also an invitation for all residents and organizations to partner with the City government and other community leaders to build Berkeley's resilience together. Relevant items:

  - *Know your neighbors* -The City provides incentives, such as a free dumpster or a cache of emergency supplies for neighborhood groups that work together to prepare for disasters.
  - *Get involved***-** Join Climate Action efforts to advance Berkeley's Climate Action Plan.

  The Traffic Circle Policy conforms to the Resilience Strategy by building stronger connections between neighbors through neighborhood cooperation in caring for the traffic circles.

- **Streets and Open Space Improvement Plan**
  (Applies to downtown, but the general concepts are relevant city-wide)

  This Plan strongly supports the use of street trees for shading and stormwater control:

  Chapter 8 - Street Trees and Landscaping (here)

  - Policy 5.1, Planting Program & Priorities. Promote the installation of Downtown street trees to the extent possible, with the ambitious but attainable goal of 1000 Trees by 2020.
  - Policy 5.3, Tree Location. Use trees to shade and provide a canopy over sidewalks, and over bicycle and vehicle lanes to the extent possible,…[*emphasis added*]
  - Policy 5.4, Preparation & Installation. Trees and associated features should be installed in ways that promote the sustained health of the trees.

  Relevant provisions:

  c. …. Under this citywide program, abutting residents, agree to follow City procedures including watering the tree for at least three years; keeping the tree well clear of weeds and filled with soil or mulch; and to clean-up all leaf debris.

  f. Permeable materials should be used to maximize tree root access to water and oxygen….

  h. Street trees can be positioned and installed in ways that capture stormwater and filter pollutants in urban run-off (see also "Watershed Management & Green Infrastructure"). [*emphasis added*]

  Similar to several of the other city plans, the use of trees is promoted because of the multiple benefits provided. Permeable materials are encouraged to allow infiltration of stormwater. This infiltration reduces runoff and also provides water for the vegetation.

Recommended roles and responsibilities

- **Public Works Department**

  The functions of the Public Works Department include construction and maintenance of all streets, rights-of-way, etc. The Public Works Department will have oversight and approval responsibility for traffic circles including the construction, maintenance (in coordination with local community groups), vegetation.

  Suggested code provision: *Notwithstanding anything to the contrary in this Chapter, the City of Berkeley Engineering Division of the Department of Public Works, or its successor, may approve new Traffic Circles in the public right-of-way …as set forth in, and in compliance with, the Berkeley traffic calming policy*.

- **Traffic Circle Coordinator**

  The Coordinator is a Berkeley City Employee who coordinates the activities of the neighborhood traffic circle committees. The Coordinator functions as the liaison between the City and these groups. The Coordinator maintains the list of the groups and their members. The Coordinator also identifies abandoned traffic circles for the "flying squad" to address…..[expand]

- **Parks, Recreation & Waterfront Department (Urban Forestry Unit)**

  The Urban Forestry Unit plants and maintains street trees in the parkway (planting) strip between the curb and sidewalk. Upon request, the Urban Forestry Unit will assist local community groups in selecting trees and maintenance. Specifically, the Urban Forestry Unit will assist in trimming trees to ensure they maintain this Policy's specified distance above the curb of the traffic circle [8 ft] and above the adjacent roadway [14 feet].

- **Neighborhood Traffic Circle Committees**

  The committees are a group of friends and neighbors who have agreed to beautify their neighborhood by maintaining their local traffic circle. The Committees agree to the following:

  - Keep all plants in good health
  - Keep the traffic circle free of debris and grime
  - Adequately maintain the surface of the traffic circle

  (Adopted from Missoula, Mt. - here; this and other group requirements are addressed later)

- **Proposed Traffic Circle Flying Squad**

  This committee is a group of citizen volunteers available to plant and maintain "abandoned" traffic circles that do not have a local neighborhood group to support them. The Traffic Circle Coordinator identifies traffic circles for this group to address.

Needed changes to the Municipal Code

- BMC section 16.18.040 - **Exemptions from permit requirements** - Add traffic circles to this list. Otherwise, the requirements are onerous: public liability insurance, etc.
- BMC section 16.18.280 - **Care of drainage** – May need clarification to allow for or encourage the installation of permeable pavers or to facilitate green infrastructure (e.g., curbside infiltration into planters).
- *Other sections may also need modification*.

Other possible additions

1. **Local Traffic-Circle Committee requirements**
   - **Release and Waiver** [needed?]

     Every individual participating in a City of Berkeley Traffic-Circle committee shall sign a copy of this agreement form and fill out the volunteer release and waiver before any work on City property. The forms should be returned to the Traffic Circle Coordinator. (Adopted from Missoula, Mt. program- *here*)

     The individual listed below recognizes the inherent risks associated with participating in work in the Traffic-Circle program. The individual below shall indemnify and hold harmless the City of Berkeley, its officers, employees, agents and elected officials from and against any and all claims, suits, actions or liabilities of any nature, including but not limited to injury or death of any person, loss or damage to property, or any other basis whatsoever, arising out of the use of city property or participation in this program resulting from any act or omission, or thing done, permitted, or suffered to be done, by the organization/individual, except claims, suits or actions occasioned by the sole negligence of the City of Berkeley.

   - **Maintenance Agreement** (to be signed by participants) [*is this needed*?]

     Keep all plants in good health

     Keep the traffic circle free of debris and grime

     Adequately maintain the surface

   - **Suggested Traffic Circle Participant Safety Rules and Guidelines**

     Each participant in maintaining traffic circle circles should consider the following Safety Guidelines (adopted from Missoula, Mt. - here)

     1. Work only during daylight hours and in appropriate weather.
     2. Wear protective clothing including work gloves, sturdy shoes, long-sleeved shirts, and pants to prevent injury from sharp objects, insect stings, and sunburn.
     3. Don't overexert yourself. Take breaks and drink plenty of water [beer is acceptable]
     4. Do not wear headsets or engage in horseplay or other conduct which could divert your attention from hazards such as traffic or other dangerous situations.

5. Be aware of your surroundings to ensure your safety and the safety of others. Be especially careful if you are using tools.
6. Provide adequate supervision for participants under the age of 18.
7. If picking up litter, use caution in handling collected items. Do not try to pick up heavy, large, or hazardous materials. Notify Berkeley Public Works for management of those materials.
8. Consider the possibility of any participant's known allergies before working at the site.
9. Ensure that power tools are only used by fully trained volunteers 18 years or older and use proper safety equipment (latex gloves, work gloves, eye protection, hard hats, face shields, safety vests, respirators, closed-toed shoes) when working with tools.

2. **Grandfathering current traffic circles** – Most traffic circles were built by the City or supported through grants with approved designs. Should traffic circles built by the City or with City approval be allowed to continue as currently constructed even though they may not conform completely to the provisions of the new Policy? Perhaps they would be processed through the exception provision described below.

3. **Flexibility (exceptions)** – In some cases, a traffic circle may have unique characteristics, and separate design parameters should be applied. For example, if a traffic circle has a 4-way stop or adjacent speed bumps, then it may be appropriate to relax the sight-line requirements. Proposed exceptions would be submitted via the City's traffic circle coordinator (or direct to Public Works or Traffic?)

4. **Policy for permitting and funding of <u>new</u> traffic circles** – Develop procedures for permitting and funding new in-street facilities.

   - Permit process
   - City approval
   - City support and oversight
   - Funding

   The Bicycle Plan has identified locations and costs for additional traffic circles and other traffic calming devices (see previous discussion).

5. **Environmental equity** – Consider whether traffic circle benefits are equitably distributed in the City. Should certain areas be prioritized for new circles, bulb-outs, or parklets, especially areas with few street trees*? [Need to compare current map of traffic circles with Bicycle Plan map, if possible].*

6. **Research** – Assess various traffic circle related issues such as 1) the policy for having boulders in the traffic circles; 2) compile available research on traffic circle safety issues versus intersections with no traffic circles; 3) visibility and risk comparison of tree trunk vs. the traffic control sign.

7. **Signage wording** – Evaluate options for signage (location, size, wording). Various people have noted that the "Yield" wording makes some drivers believe that they do not stop when stop signs are present. <u>Do we need stop signs for traffic circles? Or maybe a dual sign: "Stop & Yield."</u>

8. **Homeless encampments** – Consider a possible approach to address future homeless encampments in traffic circles? A specific ban may be necessary because of safety concerns.

9. **Harmonization with plantings (greenways and median strips)** – Assess coordination and compatibility with Ohlone Park and other greenways. Also, evaluate possible coordination with plantings in the curbside median strips and roadway center strips in the vicinity of the traffic circles.

Expanded Berkeley Partners for Parks (BPFP) Proposal to City of Berkeley Regarding Strengthening Volunteer Engagement by Establish a citywide *Adopt a Spot* program

See February 25, 2016, Summary Proposal Letter from BPFP and Berkeley Climate Action Coalition

We recommend that the City of Berkeley develop a citywide "Adopt a Spot" pilot program as a community-based public lands (i.e., open space and Rights of Way (ROW)) stewardship initiative that would be modeled after the City of Oakland's "Adopt a Spot" program. An "Adopt a Spot," or similarly named program, could be set up through City of Berkeley's (City) Public Works Department and/or Parks and Recreation Department. The Adopt a Spot program would help bridge maintenance funding gaps for parks, community gardens, medians, roundabouts, etc. by establishing community partnerships between the City of Berkeley staff and organizations such as Berkeley Partners for Parks and the Climate Action Coalition and engaging residents in volunteering actions related to implementing the Climate Action Plan.

To appropriately incentivize community participation in public lands stewardship and to fund small-improvement and deferred maintenance projects, we also request that the City establish a public infrastructure mini-grants program. This would be similar to the successful Parks Mini-grants Program that the City operated between 1995 and 2000. The mini-grants program would explicitly include other "green" infrastructure such as community gardens, medians, and roundabouts. We advise that the proposed mini-grants program, like its predecessor, require matching funds and/or in-kind support.

We intend to bring this proposal to the City Council but wish to discuss it with staff before we do.

Background

Why a community-based public lands stewardship program (on the model of Adopt a Spot):
Berkeley has a long history in cultivating participatory democracy and of supporting community activism as an ethos. And our city is uniquely blessed with many civic minded and engaged residents. Unfortunately, there are no formal programs or mechanisms for the City of Berkeley and its staff to harness that energy in the community and to engage its citizenry in partnerships and community-based stewardship efforts; indeed residents often experience a lack of receptiveness to volunteer initiatives by staff, particularly over the past 5 to 7 years. This proposal will enable a positive, formalized context for City/resident/organization partnerships that will help the participatory democracy philosophy to flourish and incentivize community contributions to civic improvements and reduce certain maintenance needs over time through long term resident-driven infrastructure stewardship activities.

We have researched several existing community-based streetscape "stewardship" programs sponsored by municipal public works departments. Of these, the one that appears to have among the best track record and the longest lifetime (30 years) as a model for the Berkeley's Program would be the City of Oakland's "Adopt a Spot" program. It should be noted that Oakland's Adopt a Spot was also a template for the comparable programs at the Cities of Livermore and Richmond. Oakland's program is a community-based partnership of the City of Oakland's Public Works Department with its residents that enables the latter to maintain specific public spaces by committing to regularly cleaning and beautifying them for no less than one year. For details of Oakland's program see:

www.Oaklandadoptaspot.org. All "spots" in this program must be City of Oakland properties or Rights of Way (ROWs). It is recommended that City of Berkeley (City) use the Oakland *Adopt a Spot* as its model, including adapting its liability and application forms, since the Oakland edition of Adopt a Spot is successful and has been "field tested" for almost 30 years. It is proposed that the City adapt the Oakland program to 1) provide the basis to foster regular street/neighborhood litter clean-ups; 2) promote a greater sense of place and belonging to neighborhoods through constructive streetscape stewardship activities; and 3) addressing current and primary interests of the City in supporting Municipal Regional Permit (MRP) implementation and NPDES compliance in a manner that involves the local community. Residents would be trained to perform before and after visual assessments of randomly selected transects within the trash challenged neighborhoods targeted for clean-ups.

The City of Berkley's *Adopt a Spot* should be designed to provide a community-building emphasis, since it would engage neighbors to undertake minor maintenance and improvement projects. This would serve to increase their awareness of and capacity to care for their local infrastructure, providing incentives for neighbors to participate and stay committed to community stewardship activities.

The following section, which analyzes Oakland's *Adopt a Spot* Program and focuses on those components that would be especially relevant to adapting it for City of Berkeley, was derived from interviews with Mike Perlmutter, Coordinator of Oakland's program.

Analysis of Oakland's "Adopt a Spot:" The City of Oakland (Oakland) has pioneered an *Adopt a Spot* program (Program) that allows individuals, neighborhood groups, civic organizations and businesses to play a direct and long term role in cleaning, greening and beautifying parks, creeks, shorelines, storm drains, streets, trails, medians and other public spaces. Volunteers involved in it have adopted hundreds of sites around Oakland. Oakland's Public Works Dept. supports these efforts with tool lending, debris collection services and technical assistance. Residents can perform the following tasks as part of this program:

- Planting/pruning/weeding in parks and ROWs and along creeks (with pre-approval from Public Works staff)
- Beautification of litter containers and utility boxes with mosaics and murals (similar to Earth Island's existing "60 Boxes" program with the City of Berkeley)
- Litter pick-up
- Graffiti removal
- Keeping storm drains free of debris ("Adopt a Drain")

A subset of Oakland's Adopt a Spot program, *Adopt a Drain*, allows for individuals to adopt specific storm drain inlets (SDIs) that are shown on a web-based/IMS map (modified Google map) –which displays streets and properties along with both drains that are "Available" and ones that are "adopted" for maintenance purposes: http://adoptadrainoakland.com/. Residents or groups can adopt "available" drains by completing an online form which automatically signs them up for the available drains.

The City of Oakland has 4 full time employees who are affiliated with the program and two part-time trainees. They are deployed by subject area. That is, projects and staff are divided between 3 subject areas: 1) parks; 2) creeks/storm drains; and 3) streets. One staff person is tasked to work with

residents in carrying out projects in each subject; they get to know the volunteers and projects within their respective subject areas, which increase the quality and specificity of support of residents who are involved in the program.

Oakland tracks hours spent by volunteers through its Volunteer Hours Tracking form: https://docs.google.com/forms/d/1UphXhPsn0BtVsquilDYnZDfcirO7xvt1sUnh-OoCj28/viewform?c=0&w=1&usp=send_form. This allows the City of Oakland to have both documentation of the Program's benefits and maintenance of an ongoing database of the extent and type of resident involvement and it provides it with evidence of the in-kind matches of incentives for grant applications that the City is regularly submitting to support the program.

***Incentives and Rewards*:** How does Oakland reward and attract volunteers? There are not many formal incentives, other than the annual "Volunteer appreciation party," which also provides volunteers a forum to meet and to get to know other civic-minded citizens. As Mike Perlmutter, its coordinator (and who is also a resident of Berkeley) said, the "City relies on citizens' desire to do good for the community;" another motivation, he noted, is that it "provides them with the means to rectify problems, or to get access to City resources and tools." The City of Berkeley should consider including recognition parties as well, but also permanent signage for active projects or adopted neighborhoods to acknowledge volunteer efforts; T-shirts with the name of program or group; and trainings of volunteers.

Public Outreach: Oakland does very little targeted outreach, except for its two annual cleanups. It does coordinate with Keep Oakland Beautiful and the Oakland Parks Coalition who actively promote and support volunteer efforts at Oakland's parks, creeks, streets and other public places. Materials and forms are also being translated into Spanish and Chinese. Oakland has a MOU with Keep Oakland Beautiful, which establishes the roles and responsibilities of each organization, e.g. in relation to promotion of the Program, specific projects and the volunteer appreciation party. They also provide financial resources/grants to groups who want to do projects. Oakland Parks Coalition functions as a watchdog and advocacy group for the parks, which provides a source of projects and advocacy for greater capacity. The City of Berkeley should identify its own affiliates, which can include BPFP and the Berkley Climate Action Coalition.

To obtain a more detailed analysis of Oakland's Adopt a Spot Program, John Steere spoke with its manager, Mike Perlmutter. Notes from this interview follow.

***Interview with Mike Perlmutter*,** Environmental Stewardship Team Supervisor, Environmental Services Division of the City of Oakland Public Works Department.

1) *Are there different forms, requirements or protocols depending on whether a group adopts a creek, a SDI, blocks, parks, etc.?*

   No, there is one form, the "Oakland Adopt a Spot Request and Agreement" (Attachment 1) that covers all activities, though if a resident wants to adopt a drain, the process is streamlined further through an automated on-line form.

2) *Do you allow individuals or just groups to adopt a spot? What about businesses? That is, does the City of Oakland have criteria for who can and cannot adopt a city feature?*

Individuals, as well as groups, can adopt spots. There are about 200 groups and 300 individuals who have adopted spots around Oakland. In addition, about 800 drains have been adopted (by 600 residents, some of whom have adopted multiple drains). The City staff reviews forms submitted for projects (non-drain components) of the program, whereas the drain forms are automated and thus permit automatic adoption of the drains without staff vetting).

3) *What are the Adopt a Spot's criteria for deciding what spots qualify?*

Spots have to be ROWs or public spaces owned by City (but not other agencies.). The City partners with the Alameda County PWD in its "Adopt a Creek" projects. The City also works with East Bay Regional Park District (EBRPD) and with East Bay MUD in implementing the Program. Other criteria includes analysis of whether a project is safe and appropriate, e.g. of medians. Trash pick-ups don't involve much vetting, just how to go about. If pavement or vegetation is proposed for cutting in a park, then the PWD staff reaches out to the Park Staff to see if it corresponds to their goals; sometimes Parks or PWD staff functions as liaisons.

4) *What Open Source software do you use to administer the Program? And what GIS program do you use for mapping them and monitoring/updating them (e.g. volunteer work days; tasks accomplished etc.).*

Adopt a Drain was developed by *Open Oakland*, which is affiliated with **Code for America**. If Berkeley wishes to have its own Adopt a Drain program, then we should work with Code for America to offer a fellowship to conduct a hackathon to define a specific program for the City – or we could use the code on the Oakland website (Burlington VT has an identical program). The interactive GIS/mapping utility of Oakland's Program is only available at this time for its "Adopt a Drain" component. A geospatial database is being developed for tracking projects in the overall Program. Public service or infrastructure requests are already logged on a GIS database called "Cityworks," and the City is now developing one now for the *Adopt a Spot* program. The City already keeps track of hours of all individuals and what is being accomplished, (on a google form), but not geo-spatially.

5) *How do you receive project proposals (written/verbal/email)?*

Project proposals and other forms are faxed, delivered, and emailed. The City would like to go toward use of the Adopt a Drain model which is automated and thus more efficient and allows staff to avoid the substantial effort involved in evaluating, filing and scanning forms.

6) *What standards do you apply for helping to ensure public safety; how do you mollify/accommodate the City's legal counsel in terms of liability issues?*

The *Volunteer Waiver form* (Attachment 2) was vetted by Oakland 's legal counsel and it sets forth 3 parameters for volunteers to concur with: 1) acknowledges risk associated with a project; 2) they won't hold the City responsible for injury; and 3) they have read and agree with volunteer

guidelines. Program has been in operation for almost 30 years, but there are few if any lawsuits arising from it.

7) *What incentives do you provide volunteer workers and by what means do you promote Adopt a Spot to attract more community members to participate?*

Incentives: Volunteer appreciation party once a year – as forum for them to get together. Oakland doesn't provide much more but relies on citizens' desire to do good for community and motivation to rectify problems or to get access to City resources and tools. Past incentives: the City of Oakland is thinking of resuming signage to acknowledge volunteers; T-shirts; Mike Perlmutter would also like to see a training program to learn skills.

Oakland sponsors two clean-ups per year: Creek to Bay Day (in September– on the same day as Coastal Cleanup); and Earth Day (April), both of which they promote extensively throughout the city. The websites for these City-sponsored events are, respectively, www.oaklandcreektobay.org and www.oaklandearthday.org.

Public Outreach: The City of Oakland does very little targeted outreach, except for its two annual cleanups. Keep Oakland Beautiful and the Oakland Parks Coalition actively promote and support volunteer efforts in Oakland's parks, creeks, streets and other public places. Materials and forms are also being translated into Spanish and Chinese. The City has an MOU with Keep Oakland Beautiful, which establishes the roles and responsibilities of each organization, e.g., in relation to promotion of the Program, specific projects and the volunteer appreciation party. They also provide financial resources/grants to groups who want to do projects. Oakland Parks Coalition functions as a watchdog and advocacy group for the parks, which provides a source of projects and advocacy for greater capacity.

8) *How do you communicate with and monitor the work of Adopt a Spot groups and projects?*

Projects are divided between 3 subject areas: 1) parks; 2) creeks/storm drains; and 3) streets and there are staff identified with each these subjects; staff that are tasked to the subjects get to know volunteers and the projects within their respective subject areas. They meet with volunteers in certain neighborhoods or creeks to facilitate alliances and greater understanding of the context of the individual projects.

The City's PWD also sponsors the annual Oakland "Earth Expo" which is an annual environmental fair that highlights nature, community, transportation, environmental, health, and urban design theme. It provides an excellent forum for businesses and environmental and community groups to network and to develop partnerships. This year's expo was held on April 8.

9) *What is the annual budget for the Program? What are the roles of the 6 staff members (4 FTE; 2 PT) who work with you to administer/implement it? Does the City receive grant funding to help administer or promote it?*

Annual O&M Budget: $100,000;
Labor Budget: 4 FTE; 2 PT (to the PWD) ; Program Analyst 3: $80-85,000 (Mike's position) Analyst 2: $65,000 (other FTEs); trainee - $15-25/hour (PT staff).

The City does receive several hundred thousand dollars in grants annually to help support the Program's implementation.

10) What do you feel are the essential ingredients and requirements needed by any municipality to set up their own Adopt a Spot Program?

(He responded with the following summary of requirements)

- Willingness by municipality to work with volunteers and role of volunteers vs. that of staff (union concerns for example).
- Need to have staff in place to support and coordinate the volunteers and to track their projects.
- Good tracking, training and communication system
- Documentation for project parameters, how to report, how to get questions answered; Maintain record of hours and tasks accomplished
- Vision and priorities that are communicated to volunteers

11) How long has the Program been in effect? Are there any administrative procedures and parameters you would change if you were to start it over again?

It has been in operation for about 30 years. We would change several things if I were to start over again. These include:

- Better signage and recognition and training.
- Better communication through list-serves (events; training/jobs, developments)
- Having an outreach plan to communities
- Seeking to automate more of the forms that are currently filled out.
- More informational resources (where to get paint, compost, mosaic artists, etc. Oakland Parks Coalition has a good model for resources.)

It is recommended that the City of Berkley formally adopt an "Adopt a Spot" Program and incorporate the preceding guidance in developing its own version.

Available exhibits: *From City of Oakland*

1. Adopt a Spot Agreement
2. Volunteer Waiver and Release of Liability
3. Volunteer Guidelines
4. Volunteer Tool Request
5. One Time Cleanup Proposal
6. Graffiti Abatement Authorization

City of Berkeley Traffic Circle Policy Task Force
Operation and Maintenance Subcommittee
Draft "Best Practices" Guidelines, August 9, 2019

Traffic Circle Operation and Maintenance Guidelines and Best Practices

1. **Traffic Circle Adoption Agreement**

The Community Common Space Stewardship Program (Stewardship Program), established by Council resolution will develop an on-line application and simple stewardship volunteer job description for use in recruiting community volunteers to adopt and maintain neighborhood traffic circles. Good examples of volunteer agreements can be found on websites of the City of Vancouver, British Columbia; Missoula, Montana; and Oakland, CA. Most volunteer agreements have information about what a volunteer is agreeing to, a disclaimer, and/or a volunteer release and waiver, and an application form to gather volunteer contact and location information. The City Attorney will need to determine if a disclaimer and volunteer release and waiver are necessary for the City's Program.

A few examples of Stewardship Program handouts and forms:

"Understand your Responsibility as a Traffic Circle Volunteer
By applying, a volunteer agrees to:

- Care year-round for the traffic circle vegetation including weeding, pruning, and other routine maintenance.
- Be cautious and visible to traffic while in or near the traffic circle.
- Follow the Operation and Maintenance Guidelines and Best Practices and ensure your traffic circle vegetation honors the sightline requirements.
- Adopt a traffic circle for at least a one-year term."

"Read Disclaimer and Sign Volunteer Release and Waiver
Every individual participating in the City of Berkeley Stewardship Program shall sign a copy of the agreement form and fill out a volunteer release and waiver prior to any work in the public right of way.

Disclaimer:
By signing, I acknowledge that the City of Berkeley is not responsible for any loss, damage, or injury that may result to me from caring for the traffic circle.

Release and Waiver:
As a Community Common Space Stewardship Volunteer, I indemnify and hold harmless the City of Berkeley, its officers, employees, agents and elected officials from and against any and all claims, suits, actions or liabilities of any nature, including but not limited to injury or death of any person, loss or damage to property, or any other basis whatsoever, arising out of the use of city property or participation in this Stewardship Program resulting from any act or omission, or thing done, permitted, or suffered to be done, by

the organization/individual, except claims, suits or actions occasioned by the sole negligence of the City of Berkeley.

Date: _____
By_____

City Indemnification for Volunteers:
For its part, the City of Berkeley agrees to indemnify and defend any traffic circle volunteer who is in good standing with the program against legal or other challenges arising from their volunteer activities. This section will apply if a third party legally challenges or otherwise threatens a circle volunteer for undertaking work in conformance with these policies and the stewardship program.

Date: _____
By_____"

Traffic Circle Adoption Sign
A "best practice" is to install signs in each traffic circle noting if the traffic circle has been adopted or is available for adoption and who to contact for more information.

2. **Safe Gardening on City Streets**

Traffic circles are located in the middle of neighborhood intersections. Many are very busy with vehicular, bicycle and pedestrian traffic. It is critical that all volunteers keep themselves safe while they are tending to their traffic circle.

Some tips:

Be Visible
- Garden during daylight hours and when the weather provides clear visibility.
- Garden when traffic is light rather than during peak traffic hours.
- The program does not require volunteers to dress in any specific manner or clothing when working in a traffic circle. The following suggestions are made for attire: wear protective clothing, including work gloves and sturdy shoes.
- You may wear a safety vest or other bright clothing when working in the traffic circle

Be Alert
- Pay special attention for passing bicycles and motor vehicles, especially when working in traffic.
- Avoid standing in the street. Stand in the traffic circle or along the curb edge at all times.

Be Responsible
- Don't overexert yourself. Take breaks.

- Do not wear headsets or engage in conduct which could divert your attention from hazards such as traffic or other dangerous situations.
- It is not recommended that children help with traffic circle gardens.
- Keep tools and gardening supplies off of the street.
- When using a hose for watering, make sure it lies flat on the pavement. Use of small traffic cones at curbside and the edge of the traffic circle is suggested to alert cyclists and drivers that a hose is present. It is best to water with a hose at times of the day/days of the week when the least passing traffic is expected.

3. Managing Sightlines and Vegetation

Per the City of Berkeley Traffic Circle Policy ("Policy"), all vegetation in traffic circles should be planted with consideration of vegetation and tree's mature shape and size and sightline requirements to provide an unobstructed view by a typical driver entering and exiting the traffic circle intersection. Visual sightlines, as described in the Policy, guide plant selection and maintenance. "Unobstructed view" is defined, and does not preclude trees. Low vegetation is to be maintained at a maximum height of 2.5 feet from the top of the traffic circle curb. Mature tree canopies must be pruned and trimmed up to and maintained at 7-8 feet height above the traffic circle planter curb. Limbs that extend beyond the curb should be trimmed to 14 feet above the adjacent road surface within the road right-of-way. Single tree trunks that are less than 20" in width, as measured 4 feet above the ground, do not require any additional traffic calming devices. Low branches on young trees and/or flower stalks extending above the 2.5 feet maximum height shall be permitted as long as the total visual obstruction above 2.5 feet is no more than 20" across the circle.

The Stewardship Program can provide planting palettes that will help volunteers select from a variety of suggested plant lists for native oaks and compatible understory plants for bees and pollinators, butterfly habitat, and native wildflowers. These planting palettes have suggested plants whose growth patterns will more naturally conform to the sightline guidelines and will require less pruning, watering and use of pesticides.

4. Traffic Circle Maintenance Guide

Landscaped neighborhood traffic circles in Berkeley add beauty and help slow down traffic to make Berkeley a safer place to live. In order to maintain their function and beauty, the traffic circles do have to be cared for. Maintenance of the vegetation can be simple and just takes a little time and effort. Each traffic circle has different plant material, but the maintenance practices remain relatively the same. Here is a basic guide to help with the maintenance of plantings and trees that are found in your neighborhood traffic circles throughout the city. Remember, all traffic circle vegetation and maintenance should allow motorists to easily see pedestrians in the crosswalk.

The planting and maintenance approach for each circle can be guided by your vision, if it meets the policy sightline requirements. For example, if a primary goal is to provide habitat for birds and insects, such as butterflies and native bees, ongoing maintenance should be adjusted away from traditional, more disruptive methods towards more natural, less invasive ones, as many insects need undisturbed ground to reproduce and thrive. For those who wish to garden with a focus on habitat, the following general guidelines are offered:

- Use mostly native, regionally appropriate, drought-tolerant plants
- Garden by hand – avoid pesticides and herbicides as well as the use of mechanical trimmers ("weed whackers"), blowers and mowers
- Tend circle vegetation regularly – it's especially useful to remove unwanted plants before they go to seed
- Cluster plants in masses of 3-5 or more, as space allows – pollinators prefer to feed from a mass of the same flower species; similarly, if a goal is to support butterflies and their reproduction, include clusters of larval (caterpillar) host plants
- Minimize raking of leaves – some insects spend the winter ("overwinter") in leaf litter and could be harmed if raked and thrown out; moreover, leaves left on the ground can help suppress weed growth, retain moisture, and supply valuable nutrients to the soil
- Minimize wood chip mulch and do not use black plastic sheeting or any synthetic pellets or mulch – most native bees are solitary and many nest in the ground. Wood chip mulch and other barriers can inadvertently keep these bees from accessing the soil
- Allow some dry stalks to remain – some native bees are cavity nesters and lay their eggs in the stems of dead stalks
- Allow some seed heads to remain – avoid "dead heading" all spent flowers, leave some in place as they can be an important source of food for birds during the fall and winter
- Water as needed in early years, less as time goes on – many drought-tolerant native plants will require regular watering the first year or two while they establish. After that, water is typically less needed. Consult gardening manuals for the specific needs of your plants.
- The presence of chewed or damaged leaves is often a sign of success for the habitat gardener. Butterfly caterpillars must eat enough of their specific host plant before going into chrysalis, to later emerge as a butterfly. Some butterfly caterpillars even roll themselves up in a protective leaf while they feed and prepare to pupate. Gentle native leafcutter bees can make near-circular cuts in nearby leaves to then use when constructing individual protective "cocoons" for each egg laid.

Bay Area Gardening

In the Bay Area's Mediterranean climate, the planting season begins in late autumn, rather than spring, as it does in many other parts of the country. The primary growing

season of our locally adapted plants is during the rainy season of winter and spring. Many plants slow or stop growth in the dry summer months.

Periodic Maintenance Guidelines

- When you remove dead growth do not leave debris in the street.
- Prune perennials and deciduous shrubs as needed. Shrubs that go dormant can be pruned before buds turn green in the spring.
- Traffic circle volunteers can decide to use mulch or not. If using mulch, replenish it to a depth of at least 2-3 inches. This will help keep the soil moist and help prevent weeds from germinating. The City of Berkeley Maintenance Yard routinely provides free mulch for residents to help themselves. Another alternative is to simply allow leaf litter to accumulate.
- Pruning trees – remove larger dead or broken branches that can safely be reached from the ground. If possible, it is best to prune before the tree leafs out. Prune sucker growth from the base or trunk of the tree. Tree branches should be pruned at the branch collar in order for the tree to seal off the wound correctly.
- Watering – The amount of water needed by each plant is dependent upon the type of plant and the weather (i.e. temperature and rainfall). In Berkeley, from June through October, you may periodically water deeply (the soil should be moist to 6 inches or greater for most plants and deeper for trees). Continue watering throughout the fall as needed until the winter rains begin.
- Frequent removal of unwanted plants will result in less effort later in the season. Prevent unwanted plants from going to seed to reduce or avoid next year's crop
- Natural composting methods, mulching and top-dressing your soil with compost or natural fertilizer is the best way to develop strong, vigorous plants. Fall is a good time to do this.
- For serious pest issues, consult the Stewardship Program Community Engagement Coordinator and/or your local nursery for advice.

5. Garbage and Debris Removal

- Routine "housekeeping" of your traffic circle will show neighbors that the circle is being cared for.
- As appropriate, notify your neighbors that you are the city-sponsored person who has adopted the traffic circle. Ask them to let you know if they see any problems or hazards.
- For any ongoing serious garbage and debris dumping issues, consult the Stewardship Program Community Engagement Coordinator who can work with you and other City departments to find a solution.

6. Decoration, boulders, bird feeders, miscellaneous

- Temporary structures and ornaments are allowed if they:
  - Meet visual sightline clearances;
  - Can be easily removed;

  - Don’t interfere with access or visibility;
  - Are generally non-sectarian (e.g. holiday lights but no overt religious symbol).
- Solar lights or lights powered by small battery packs are allowed if they are low wattage and do not create glare.
- Bird feeders are not encouraged in traffic circles due to rodents and other pest attraction.
- Small basins or sumps may be used to provide water for birds and insects if they are shallow and meet sight guidelines.

7. Coordinating with Public Works and the Community Common Space Stewardship Program

The Stewardship Program Community Engagement Coordinator will report to Public Works and be responsible for coordinating with all existing traffic circle volunteers, recruiting new volunteers, act as a liaison between community volunteers and City staff, coordinate between Public Works, Parks and Recreation and Planning Departments as well as third party utilities, develop and maintain an on-line tool for tracking circle compliance, and administer the Stewardship Program.

The Coordinator is also responsible for developing an annual budget, hosting annual work days, and providing assistance with technical issues, a plant discount program, free mulch delivery, tool and safety equipment lending library coordination, and a green infrastructure mini-grants program with matching funds and/or in-kind support.

The Coordinator and City leaders should explore consolidating all resources and responsibilities for traffic calming measures (traffic circles, bulb-outs, traffic diverter replacement/conversions and parklets) as well as supporting the Berkeley Bicycle and Pedestrian Plans under the Community Common space Stewardship Program.

01b
Special Meeting Item

Public Works - Transportation

ACTION CALENDAR
November 12, 2019

To: Traffic Circle Task Force

From: Farid Javandel, Transportation Manager, Public Works

Subject: Technical Memo on Traffic Circle Planting Policies

INTRODUCTION

The purpose of this technical memorandum is not to take a position on what to do with existing trees in traffic circles, but to summarize from a traffic engineering and safety perspective, some of the considerations associated with vegetation in traffic circles. The Council appointed Traffic Circle Task Force has done substantial research and documentation on the important environmental and biodiversity benefits of trees and other vegetation in the City of Berkeley. Since that information has been thoroughly covered in the Task Force report and is outside the professional expertise of Traffic Engineering, it is not addressed in this technical memorandum, which instead focuses on the following:

1. Summarize existing City policies regarding traffic circles;
2. Provide a definition of sight lines in the context of traffic circles;
3. Briefly summarize traffic circle design and vegetation policies from other cities and agencies;
4. Identify additional traffic calming treatments with potential for significant vegetation that does not impact critical sight lines, or which enhances effectiveness of existing traffic circles. These represent options available to the City for future traffic calming projects or modifications to existing traffic circles if requested by the City Council.

1) EXISTING POLICY ON TRAFFIC CIRCLES

Neighborhood traffic circles are traffic calming devices installed in existing intersections to reduce speeds on streets without stop signs and reduce the number of potential traffic flow conflicts within the intersection regardless of other traffic controls at the intersection. A traffic circle controls speed primarily by changing the straight-line path of travel through an intersection into a curved path of travel that can only be followed at a lower speed. Secondarily the presence of a circle and any vegetation or signs in an intersection may break up the perception of a long open and uninterrupted stretch of roadway that might seem inviting to faster driving.

There are many factors that must be balanced in order for a traffic circle to slow traffic but still allow passage of larger vehicles like fire engines and refuse collection trucks while leaving safe setbacks between the circle and crosswalks. Existing City policies are intended to provide general guidelines for traffic circle designs that will meet these needs but may need to be refined based on needs of a specific location. City of Berkeley policies on traffic circles include the standard plans for design of the circle as shown in Attachment 1; the 2012 policy on appropriate vegetation in traffic circles and maintenance by neighborhood volunteers as documented in Attachment 2; and an unwritten policy on appropriate dimensions for trees in circles to minimize the potential for inappropriate visibility obstructions based on the Traffic Engineering industry standards of practice for sight lines at intersections.

Berkeley's standard plans for Traffic circles in Attachment 1 are based on similar plans from other Cities such as Seattle. Key elements include mountable curbs to accommodate large vehicles while controlling speed of smaller vehicles, reflectors and signs for visibility, minimum desired setback distances to crosswalks and curbs, and low-cost curb and pavement markings on approach roadways.

The Traffic Circle Planting Policy (attachment 2) established in 2012, documented and clarified existing practices with respect to visibility and maintenance associated with neighborhood installed ground cover vegetation in traffic circles. Specifically, it specified that "to preserve adequate visibility, there shall be no vegetation that exceeds two feet in height as measured from the top of the curb on the island. Any vegetation exceeding this height shall be removed or cut back below two feet within two weeks of notice by the City." The policy further recommended a list of plants identified by Landscape Maintenance staff as not expected to exceed the two-foot height limit. However, this is not intended to be an exhaustive nor exclusive list and can be amended as other appropriate plants are identified. Accordingly, exceptions have been made when requested to allow additional plants that can comply with the height limits. Residents making these requests have been reminded that while exceptions to the plant list can be made, the vegetation must still comply with the height limit or be removed either by residents or the City.

Some residents maintaining traffic circles have also requested to be allowed to plant trees in new traffic circles. These residents have been told that although the written Traffic Circle Planting Policy does not address trees, it may be acceptable to plant trees with slender trunks and with a canopy that does not extend below seven feet high. One neighborhood asked if they were permitted to plant a tree similar to the one at the intersection of Ordway and Posen in Albany, and were told that such a tree could be compliant with the visibility requirements if well maintained.

Figure 1 Tree in traffic Circle at Ordway/Posen

2) DEFFINITION OF SIGHT LINES AT A TRAFFIC CIRCLE

There are two types of sight lines to be considered at a traffic circle. The first is a vertical sight line, which can be considered the ability of a driver to see over an obstacle in order to observe an object or person in the road. In the context of a traffic circle, this means the ability of a driver to see over ground cover vegetation in a circle and observe an object, animal, or person who may have fallen on the far side of the circle. For the purposes of determining the appropriate vegetation height, it is assumed that the driver eye height is approximately four feet above the pavement and that the object they need to see is no more than two feet high, representing a two-foot difference in height. If the object to be seen is 60' from the driver and the far side of the circle is 45' from the driver (three quarters of the distance), then the ground cover must be at least three quarters of the height difference lower than the drivers eye height. This means the vegetation would have to be one and a half feet lower than the driver's eye, which equates to two and a half feet above the pavement or two feet above the top of a six-inch curb, as specified in the City's existing Traffic Circle Planting Policy.

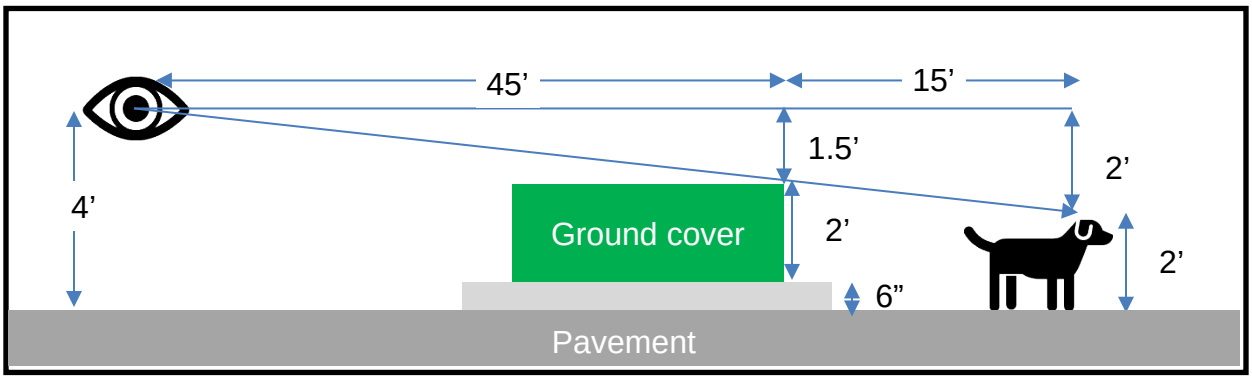


Figure 2 Vertical sight line measurement

The horizontal sight line at a traffic circle is the one that relates to trees. Because a tree trunk is a continuous vertical obstruction, it creates a vertical blind spot on the far side of the intersection from a driver. The width of the blind spot is proportional to the width of the tree and the distance from the driver to the tree and to the far crosswalk where a person may be walking. The image below illustrates the view from above and typical dimensions in order to calculate that a tree trunk over six inches wide has the potential to obscure the ten-inch width of an adult standing in profile in the far crosswalk.

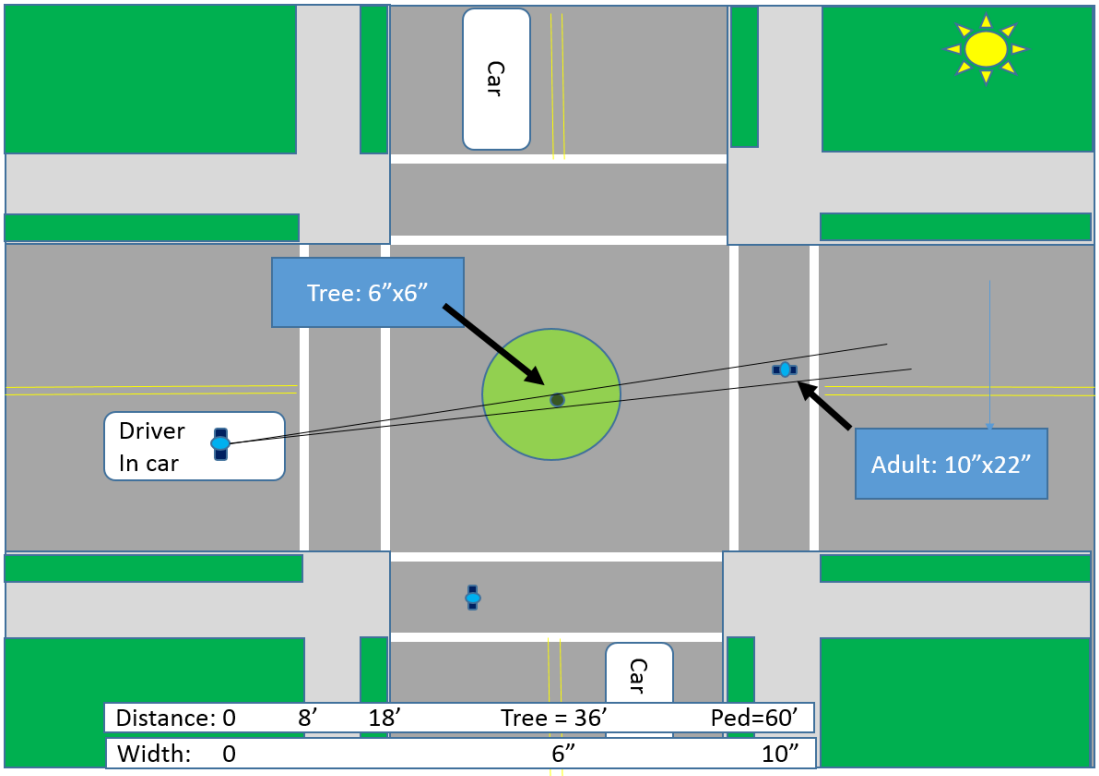


Figure 3 Horizontal sight line measurement

The preceding image illustrates not only the relative position of the driver and pedestrian, but the fact that there may be other cars and pedestrians present at the intersection, and that there may also be lighting or glare issues related to location of the sun relative to the driver. As a result of these factors, a driver glancing across the intersection and not seeing a pedestrian behind the tree, may then turn their full attention to the cross traffic that may or may not enter the intersection before them and another pedestrian who may be close to their path of travel as they go around the circle. The angle of the sun may also make it harder to notice the pedestrian who may have walked forward into the potential point of conflict. To ensure safety one should not assume that a driver will continuously scan the entire intersection or that they would even try once their quick glance that did not reveal a pedestrian has convinced them that there is no pedestrian and they need not look any more.

To establish the maximum size of an object that obstructs horizontal sight lines, a traffic engineer or other decision maker must decide how big a blind spot is acceptable given that a driver dealing with other distractions at the intersection may only look in the direction of the blind spot once. Traffic Engineering staff does not recommend creating any new blind spots large enough to hide a pedestrian, so any new trees over six to eight inches in diameter should be planted somewhere other than in a traffic circle.

3) TRAFFIC CIRCLE POLICIES OF OTHER AGENCIES

There are many and varied sources of information and complex criteria on when to use traffic circles, how to design them, and the role of vegetation in the circles. City Traffic Engineering staff have based our policies and designs on professional training, existing policies from other cities and agencies, decades of professional traffic engineering experience both in Berkeley and other cities, consultation with engineers, planners, landscape architects, and other experts, and specific conditions at each traffic circle location. Some of what Berkeley does with traffic circles is very similar to other Cities and some is different. In order to provide some continuity with the research done by the Traffic Circle Task Force, Traffic Engineering staff has reviewed the traffic circle examples shown in the source materials listed by the Task Force and provides some observations on those examples from the perspective of a professional traffic engineer. To avoid selection bias, we have tried to show all photos of traffic circles from the reports or web sites referenced by the Task Force along with a brief commentary on each.

Reference 1: Lupfer, Patrick. “Neighborhood Traffic Circles - Intersection of South Street and Intervale Road in Brookline, MA” (Calm Streets Boston, April 24, 2012)

Figure 4 Neighborhood Traffic Circle with Landscaping in Vancouver, Canada (http://www.cstreetne.blogspot.com)

Notes: This circle at an uncontrolled intersection (no stop signs) features a mountable concrete apron, simple directional signs, low ground cover, a slender tree with minimal visual impact, no reflectors, and no crosswalks.

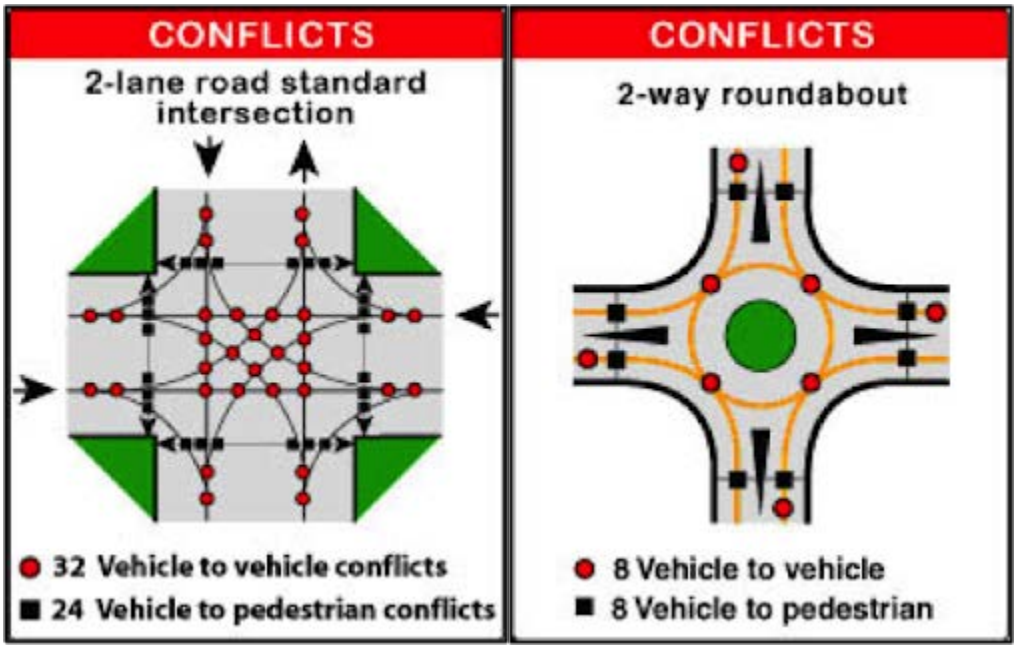


Figure 5 Traditional Intersection Conflict Points compared to Modern Day Roundabout Conflict Points (http://www.wcroads.com)

Notes: Figure 5 shows a roundabout, not a traffic circle. There are no true roundabouts in Berkeley. A roundabout features raised islands on the approach to the intersection that serve to slow traffic before the intersection and provide a pedestrian refuge in the middle of each crosswalk so that pedestrians only need to cross one direction of traffic at a time. Additionally, crosswalks at a roundabout are set back at least one car length from the intersection so that motorists' attention at the crosswalk can be exclusively on pedestrians, and when entering the roundabout their attention can be exclusively on vehicles in the roundabout because of the significant separation of these conflict points. At traffic circles the crosswalk is immediately adjacent to the traffic circulating in the circle, so there is no effective separation of conflict points, and with no splitter island there is no pedestrian refuge. These are significant differences between roundabouts and traffic circles, which in turn change how visibility considerations are incorporated into the design. Proper roundabouts are much larger than traffic circles in order to create adequate space and travel time at controlled speeds between conflict points so that only the immediate conflict point needs good visibility. The article from which this image was taken does go on to describe the basic difference between a Neighborhood Traffic Circle and a Modern Day Roundabout but does not elaborate on the different sight distance considerations.

Figure 6 Traffic Circle with Scraped Curb from Heavy Vehicle Traffic

Notes: This image is used to illustrate curbs scraped by large vehicles. It features a single sign post with reflectors facing all four directions, no stop signs, no crosswalks or curb ramps, low ground cover, no trees, and has curb extensions on the far corner of the intersection to significantly reduce vehicle speed and pedestrian crossing distance.

Figure 7 Neighborhood Traffic Circle at South Street and Intervale Road, Brookline, MA

Notes: This Circle features directional and reflector signs in all directions, a mountable curb with reflective markers, a painted edge line, low ground cover, no trees, well marked crosswalks, curb extensions to narrow traffic lanes and slow traffic, no parking on all approaches to improve visibility, stop signs with advance stop bars on two approaches and yield signs on two approaches. Videos on the web site illustrate that cars slow down significantly on the approaches and pedestrians across the intersection are easily visible the entire time they are crossing.

Reference 2: Marek, John. “Neighborhood Mini Traffic Circles: Seattle Washington” a case study of Countermeasures on the webpages BIKESAFE (pedbikesafe.org)

Figure 8 This traffic circle in a Seattle neighborhood also incorporates stamped concrete.

Notes: This Circle features a single post with reflector signs in all directions, a two-foot wide stamped concrete curb with reflective markers, low ground cover, a single slender tree, no crosswalks or curb ramps, and no stop signs. This is one of 1,200 traffic circles in Seattle and was chosen by their Neighborhood Traffic Control Program Engineer to illustrate their traffic circle program.

Seattle uses traffic circles primarily in uncontrolled intersections with yield signs, not stop signs. Berkeley and Seattle use almost identical traffic circle construction details as do many cities.

Reference 3: Neighborhood Traffic Management Plan (City of Madison WI, 2004)

Figure 9 Traffic Circle - South Shore at Emerald, Madison WI

Notes: This circle features a mountable concrete curb, a single post with reflective signs in all directions, relatively low ground cover, and no trees.

Figure 10 Madison's first neighborhood traffic circle was installed in 1997 at Kendall and Grand Avenues.

Notes: This circle features a mountable concrete curb, a single post with reflective signs in all directions, 2-way stop, two crosswalks, low ground cover, and no trees.

Figure 11 testing of traffic circles for large vehicles

Notes: In these images, two proposed circle layouts are being tested with cones. The other shows a school bus just able to slowly pass an existing circle with mountable concrete curb, a single post with reflective signs in all directions, low ground cover, and no trees.

Reference 4: Traffic Calming ePrimer – Module 3 section 3.7 (U.S. Department of Transportation/Federal Highway Administration)

Notes: This document says that "A traffic circle can simply be a painted area, but it is most effective when it is defined by a raised curb and landscaped to further reduce the open feel of a street. A traffic circle can be landscaped with ground cover, flowers, and street trees. **Figures 3.7.1 and 3.7.2 illustrate two extremes in the amount of traffic circle landscaping**." (emphasis added)

Figure 12 Landscaped Traffic Circle (Figure 3.7.1 of the Traffic Calming ePrimer)

Note: This figure (3.7.1) is one of the two figures which the US Department of Transportation Federal Highway Administration Traffic Calming ePrimer describes as illustrating "two extremes in the amount of traffic circle landscaping." Since the other figure (3.7.2) depicts a circle with no landscaping, the above image represents that maximum extreme for the amount of landscaping in a traffic circle. This circle features a mountable concrete apron, guide signs facing all approaches, reflective markers on the apron and surrounding pavement, low ground cover, and a slender tree with the canopy pruned up to above driver eye height.

Figure 13 Traffic Circle without Landscaping

Note: This figure (3.7.2) is the second of two figures which the US Department of Transportation Federal Highway Administration Traffic Calming ePrimer describes as illustrating “two extremes in the amount of traffic circle landscaping.” This circle with no landscaping represents that minimum extreme for the amount of landscaping in a traffic circle. This circle features a mountable concrete apron, guide signs facing all approaches, reflective markers around the apron, no stop signs or painted crosswalks, no visible vegetation, and no tree.

Figure 14 Traffic Circle in commercial setting. Brick pavers, stop signs, and curb extensions serve to slow traffic, reduce pedestrian exposure to vehicles, and maintain visibility. There are no plants on the circle, and no crosswalks. ADA ramps are directly into the path of circulating vehicles, so this may not be an optimal design.

Figure 15 Traffic circle in residential setting, with wide mountable curb, guide signs, yield control on approaches

Figure 16 Potential Pedestrian-Vehicle conflict at traffic circle because the circle is too close to the crosswalk

Figure 17 Bicyclist passing through traffic circle with mountable curb, low ground cover, low directional signs, tall and slender trees, painted splitter islands, no stop signs, and one visible crosswalk set back from the circle.

Reference 5: SFBetter Streets: A guide to making street improvements in San Francisco (City and County of San Francisco 2015)

Figure 18 Traffic Circle images from SF Better Streets web page

Notes: Both traffic circle images on the SF Better Streets web page show circles with simple curbs, reflective pavement markers, graphic guide signs facing each approach, marked crosswalks, low groundcover, and small trees that offer little visual obstruction. We requested additional city tree planting guidelines for traffic circles from the City of Madison, WI, the City of Seattle, WA; and the City of Brookline, MA, but have not heard back from these cities yet. So far only one staff member from San Francisco emailed to say the City and County of San Francisco, *generally, does not allow any plantings higher than low shrubbery and vines in order to maintain visibility through intersections.*

Reference 6: Urban Street Design Guide (National Association of City Transportation Officials 2013)

Figure 19 Conceptual rendering of a neighborhood traffic circle in NACTO's Urban Street Design Guide.

Figure 20 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring low ground cover and no trees. This image was also used in Reference 1.

Figure 21 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring low ground cover and no trees. This image was also used in Reference 1.

Figure 22 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring low ground cover and no trees.

Figure 23 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring mostly low ground cover and a small tree

Figure 24 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring low ground cover and no trees.

Figure 25 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring an oval shape, low ground cover, and no trees.

Figure 26 Image of a neighborhood traffic circle in the NACTO Urban Street Design Guide featuring painted splitter islands, low ground cover, and no trees.

Figure 27 This is more of a roundabout than a neighborhood traffic circle. It features a mountable apron, directional signs, low ground cover, and a small tree.

Figure 28 A fully mountable traffic circle in Baltimore, MD, with no signs or planting in the intersection.

The NACTO Design Guide indicates that shrubs or trees in the roundabout further the traffic calming effect and beautify the street, but need to be properly maintained so they do not hinder visibility.

4) OTHER TRAFFIC CALMING DEVICES WITH OPPORTUNITY FOR TREES

Other traffic calming treatments such as midblock curb extensions to create chokers and chicanes offer an opportunity to plant larger trees and taller ground cover without compromising intersection sight lines.

Figure 29 NACTO recommends planting trees on curb extensions aligned to the parking lane to narrow the overall profile of the roadway and reduce traffic speed

Figure 30 Commercial street with midblock curb extensions featuring trees

s

Figure 31 Midblock vegetated pinchpoint on residential street in Portland Oregon

Figure 32 Chicanes with Trees on Milvia Bike Boulevard

ENVIRONMENTAL SUSTAINABILITY

Safer roads encourage more walking and biking which are the cleanest and healthiest modes of transportation, even compared to electric vehicles and transit. The City of Berkeley Bicycle Plan determined that 71 percent of Berkeley residents are interested but concerned with respect to using bikes as a means of transportation. This means they have an inclination towards bicycling, but are held back by concern over sharing the road with cars and prefer separated pathways or low traffic neighborhood streets with traffic calming. Minimizing visibility obstruction is an important element of safe and comfortable streets for people on bikes who are less visible and less protected than people in cars. Thus, traffic circles with good visibility can both slow traffic and minimize potential blind spots where drivers may lose sight of bikes or pedestrians. This supports walking and biking, which are necessary to meet our Climate Action Plan goal of reducing greenhouse gas emissions from transportation sources.

CONCLUSION

The decision on keeping or removing any existing trees in traffic circles is up to the City Council. Staff is not offering a position on the recommendations of the Traffic Circle Task Force, and we agree that trees in general offer many benefits to the community and environment. Staff review of the reference documents cited in the Task Force report finds the following:

- Many cities have traffic circle design standards similar or identical to those used in Berkeley with respect to construction of the circle. Planting policies vary in specificity, but generally allow for ground cover and trees provided that visibility is taken into consideration;

- NACTO states that “Shrubs or trees in the roundabout further the traffic calming effect and beautify the street, but need to be properly maintained so they do not hinder visibility”[1];

- The majority of traffic circles used as illustrations or examples in the reference documents include low ground cover and good visibility, but few include trees. The few examples with trees generally include small or slender trees with little impact on sight lines; and

- The US Department of Transportation Federal Highway Administration Traffic Calming ePrimer[2] provides two photographs described as illustrating “two extremes in the amount of traffic circle landscaping.” One features no visible vegetation, and the other, shown below, features low ground cover and a slender tree with the canopy above a driver’s sight line.

[1] Urban Street Design Guide (National Association of City Transportation Officials 2013)
[2] Traffic Calming ePrimer – Module 3 section 3.7 (U.S. Department of Transportation/Federal Highway Administration)

Figure 33 Photo from US DOT FHWA Traffic Calming ePrimer

Vision Zero is a Strategic Plan Priority Project to eliminate all fatal and sever traffic injuries in Berkeley by 2028, advancing our goal to create a resilient, safe, connected, and prepared city. Additionally, supporting active transportation through safe and comfortable roadways for cyclists and pedestrians helps Berkeley to be a global leader in addressing climate change, advancing environmental justice, and protecting the environment. Vision Zero principles require us to acknowledge that people make mistakes, and that our roads should be designed so that the consequence of such mistakes is not death or life altering injury.

Traffic Engineering staff recommend that to achieve reasonable visibility related safety for roadway users:

- The Traffic Circle Planting Policy be updated to explicitly state that plants other than those on the approved list may be used as ground cover in traffic circles so long as they grow or can regularly be maintained to not exceed the identified height limit of two feet above the top of curb of the circle;

- The Traffic Circle Standard Details should be updated to reflect the new shorter signs that have been installed in existing traffic circles in response to the Traffic Circle Task Force concern that taller signs might contribute to reduced sight lines;

- Any future trees planted for traffic calming purposes should be located in midblock curb extensions like chokers or chicanes rather than in traffic circles, so that they provide all the environmental benefits of trees without impacting sight lines at intersections. Note that this does not impact any existing trees;

- Whenever feasible trees in traffic circles should be maintained so that there are no branches below seven feet high; and

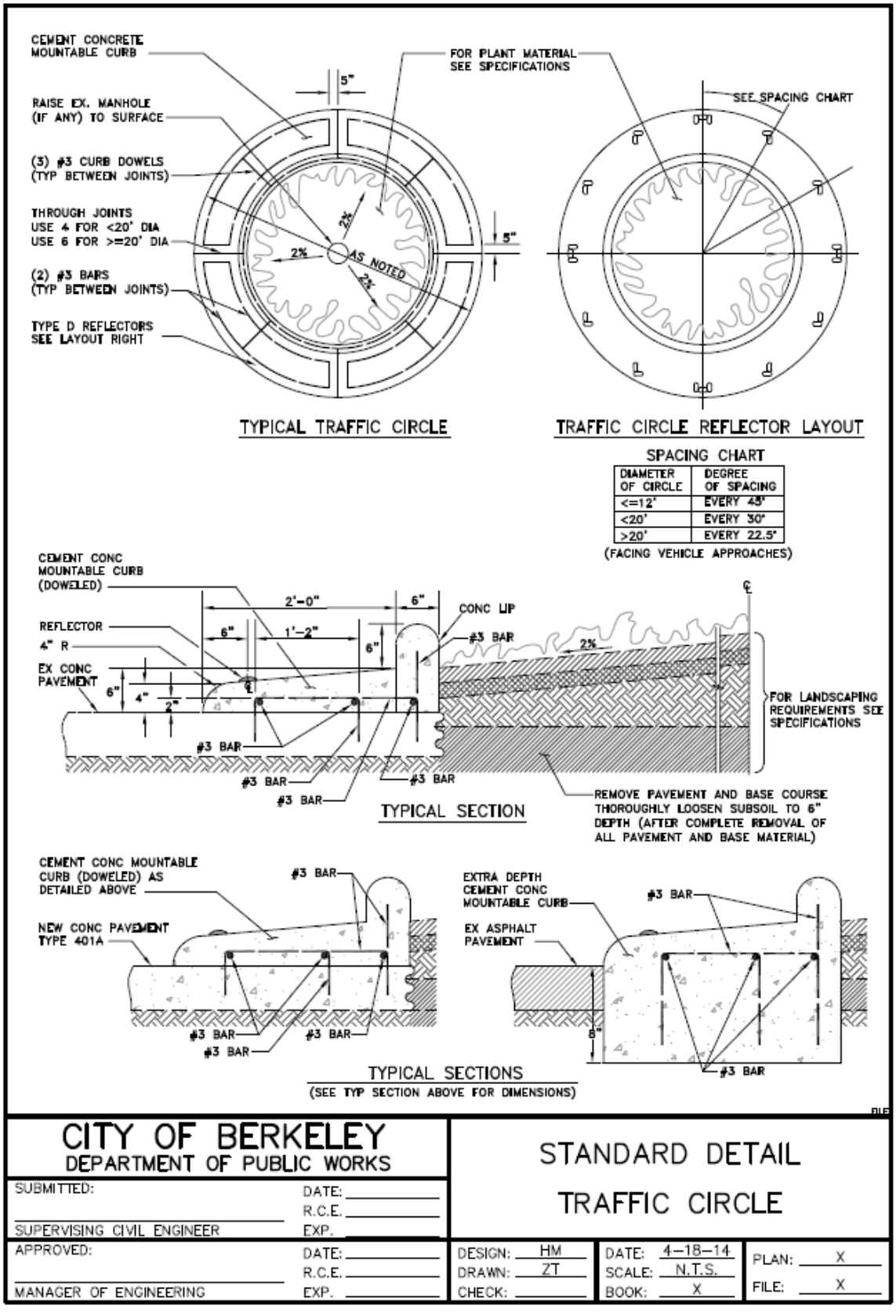
- No new trees should be planted in traffic circles until there is a way to ensure that the trunks or low branches will not grow wide enough to create a blind spot in which a pedestrian can be lost from sight.

Traffic Engineering staff notes that vegetated midblock curb extensions can be an appropriate place to plant multiple trees and taller ground cover or bushes without visibility restrictions, and that being in line with the existing roadway gutters, such vegetated curb extensions may also serve as bioswales for stormwater detention and filtration. Planting of trees in midblock curb extensions can be done any time that a neighborhood requests new traffic calming in conjunction with trees or tall plants that might impede visibility if placed at an intersection or as part of a three-to-one tree replacement mitigation if the City Council wishes to remove an existing tree from a traffic circle in the future. Other than updating the standard details with respect to signs, and clarifying flexibility of the plant palette in the Traffic Circle Planting Policy, staff is not proposing any policy change as part of this technical memorandum.

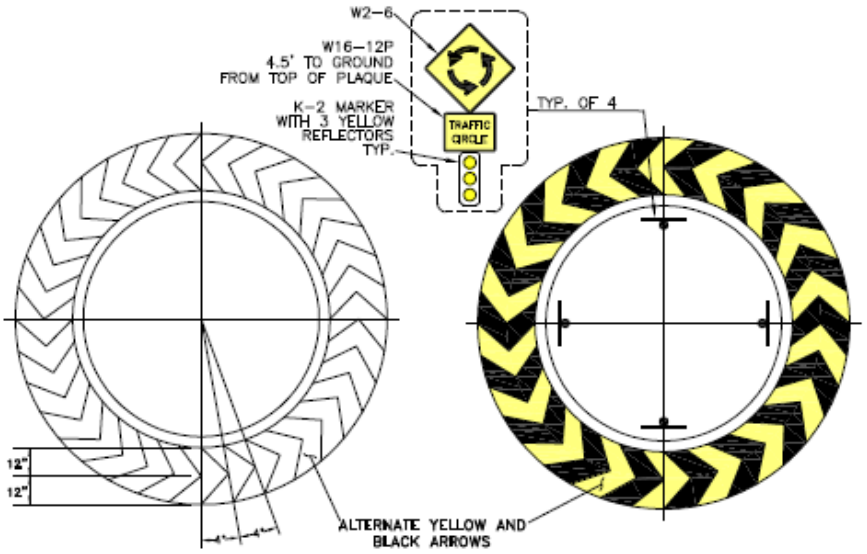
CONTACT PERSON
Farid Javandel, Transportation Manager, Public Works, 510-981-7061
Phillip L. Harrington, Director, Public Works, 510-981-6302

Attachments:
1: Existing Standard Plans for Traffic Circle Design
2: Existing (October 2012) Traffic Circle Planting Policy

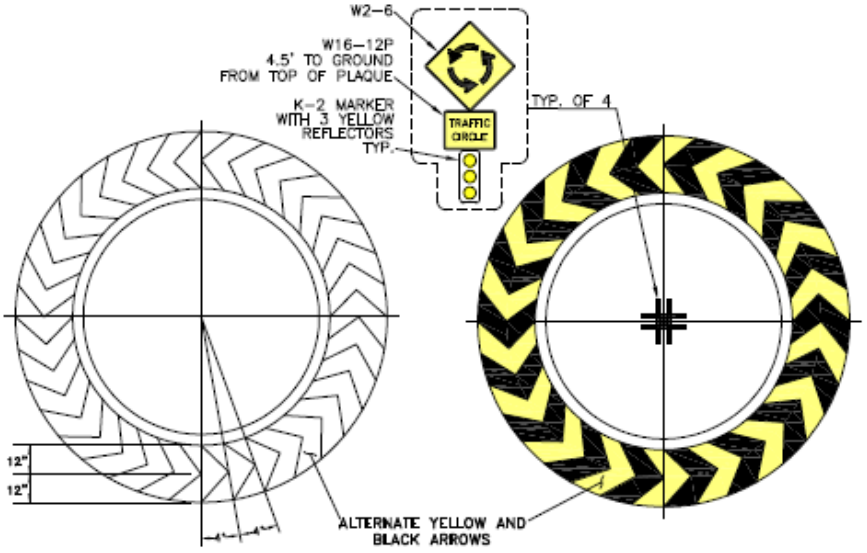
Attachment 1 - Existing Standard plans for Traffic Circle Design



Error! No text of specified style in document.



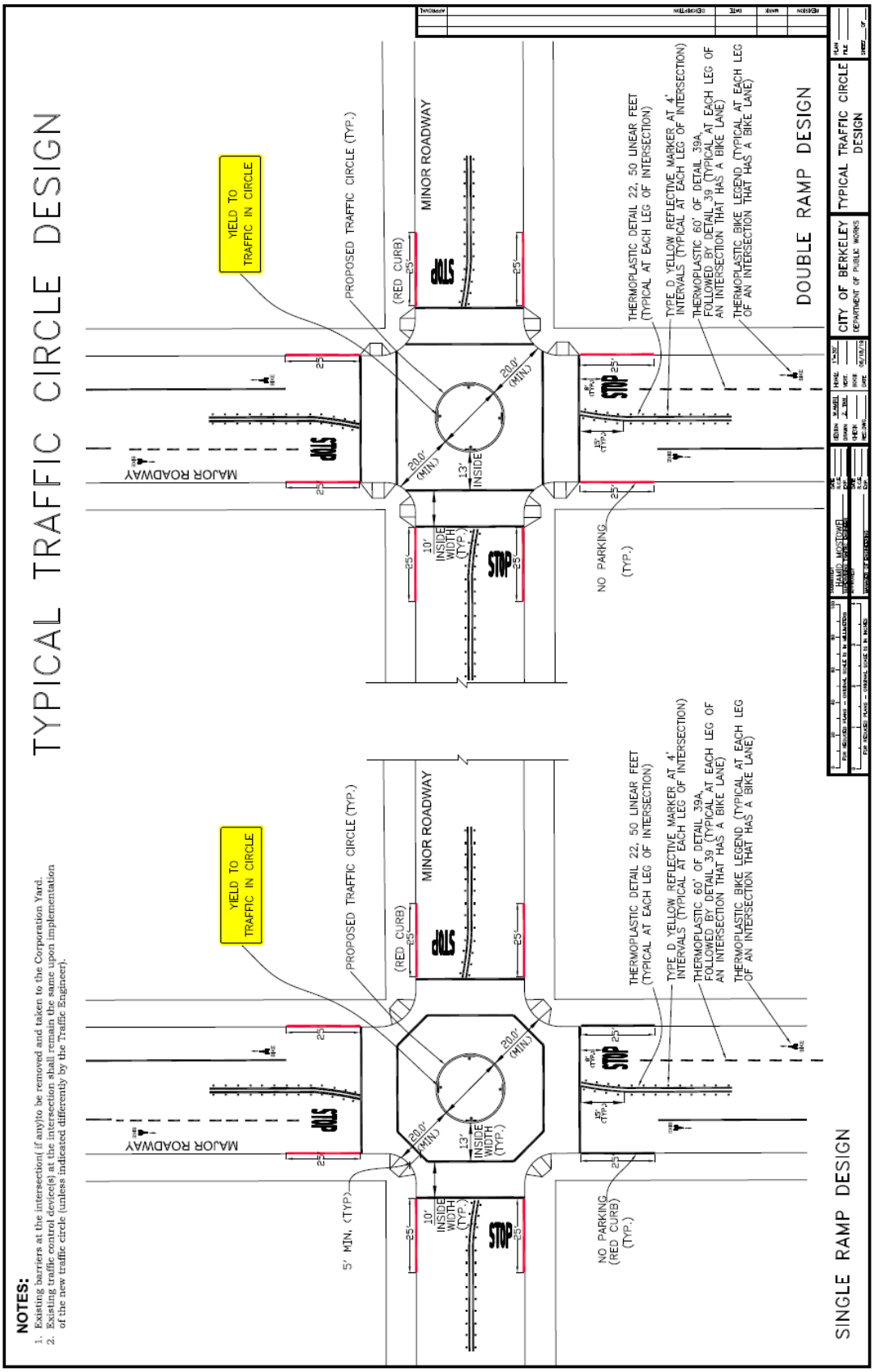
TRAFFIC CIRCLE SIGNING AND MARKING LAYOUT
(OPTION 1)



TRAFFIC CIRCLE SIGNING AND MARKING LAYOUT
(OPTION 2)

CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS					STANDARD DETAIL TRAFFIC CIRCLE
SUBMITTED: SUPERVISING CIVIL ENGINEER	DATE: R.C.E. EXP.				
APPROVED: MANAGER OF ENGINEERING	DATE: R.C.E. EXP.	DESIGN: HM DRAWN: ZT CHECK:	DATE: 2-28-14 SCALE: N.T.S. BOOK: X	PLAN: X FILE: X	

Error! No text of specified style in document.



Public Works - Transportation Division
Oct 2012

Traffic Circle – Planting Policy

There are two main criteria used as the basis for what landscaping is permitted in traffic circles in the City of Berkeley. Foremost, the circles are and must continue to serve as a device to appropriately guide traffic. The planting and maintenance of traffic circles and traffic islands will be handled by neighborhood volunteers with oversight by Public Works Engineering and Traffic Divisions. Volunteer landscaping will be allowed based on the premise that it would not impact the limited resources for City staff. It is important to recognize that the primary purpose of traffic islands remains traffic control, and any beautification is incidental to and should not interfere with that purpose.

To serve as an appropriate device for guiding traffic the circles must not contain anything that would impede line of sight for and between vehicles and/or pedestrians, nor anything that would likely cause unnecessary harm to the occupants of a vehicle that might leave the road at these locations. The following criteria are to be used:

A. To preserve adequate visibility, there shall be no vegetation that exceeds two feet in height as measured from the top of the curb on the island. Any vegetation exceeding this height shall be removed or cut back below two feet within two weeks of notice by the City.

B. There shall be no boulders or other large/fixed object(s) with the intent or potential to abruptly stop the motion of a vehicle leaving the road and entering the traffic island.

C. Objects to gradually slow the motion of a vehicle or absorb and dissipate the energy of a crash are acceptable, but only if specifically approved in advance by Traffic engineering staff and installed according to applicable standards and specifications. Such objects include crash barrels or guard rails with breakaway posts.

Volunteer installed and maintained landscaping will be allowed as follows:

1. Only plants from the approved list below may be planted or allowed to remain in traffic circles. The following plants were selected by Landscape Maintenance staff as appropriate for traffic circles and islands as they are not expected to exceed two feet in height:

   a. #5 Ceanothus variety Anchor bay (height 18”, 6’ spread)

   b. #8 Cotoneaster variety Adpressus praecox (height 18”, 6’ spread)

Error! No text of specified style in document.

c. #18 Trailing lantana (height 24", 2-3' spread)

d. #25 Creeping rosemary (height 8 – 18", 4' spread)

e. #27 Black sage (height 12 – 24", 4 – 6' spread)

f. #28 Creeping sage (height 8 – 12", 3 -4' spread)

2. Planting and watering are the sole responsibility and expense of the neighborhood volunteers.

a. The City has no budget to purchase plants for traffic circles. Neighborhood volunteers may purchase plants at their own expense from the list above.

b. There is no irrigation within the circles. Water may be delivered or supplied by hoses run from private properties. Any hoses may not cross traffic lanes and must be attended at all times.

3. Prior to any landscaping being installed a member of the public involved in that activity must be designated as the responsible contact person and added to the list maintained by Engineering Division staff. Contact information shall include name, address, phone number, and e-mail address (if available). An alternate contact person may also be provided.

a. The designated contact person shall sign a document acknowledging the criteria under which the landscaping is being allowed and the rules for maintaining it.

b. Any noncompliance with the landscape maintenance policies established herein will be communicated to the designated contact person and/or their designated alternate if any.

c. Repeated failure to maintain landscaping according to the visibility requirements after proper notice to the designated contact person(s) may result in removal of the vegetation and replacement of the soil with hardscape materials at the discretion of the Public Works Department.

****

Communications

All communications submitted to the City Council are public record. Communications are not published directly to the City's website. Copies of individual communications are available for viewing at the City Clerk Department and through Records Online.

City Clerk Department
2180 Milvia Street
Berkeley, CA 94704
(510) 981-6900

Records Online
http://www.cityofberkeley.info/recordsonline

To search for communications associated with a particular City Council meeting using Records Online:

1. Select Search Type = “Public – Communication Query (Keywords)”
2. From Date: Enter the date of the Council meeting
3. To Date: Enter the date of the Council meeting (this may match the From Date field)
4. Click the “Search” button
5. Communication packets matching the entered criteria will be returned
6. Click the desired file in the Results column to view the document as a PDF