

City of Arvin, CA / La ciudad de Arvin, CA

# Complete Streets *and* Safe Routes to School Plan

PLAN DE CALLES COMPLETAS Y  
RUTAS SEGURAS A LA ESCUELA



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# 1

EXECUTIVE  
SUMMARY

RESUMEN  
EJECUTIVO



## PLAN PURPOSE + VISION

The purpose of this Plan is to deliver a Complete Streets and Safe Routes to School Plan for the City of Arvin that builds upon the recommendations of the Kern County Active Transportation Plan to deliver a set of infrastructure projects and design tools that can be applied throughout the city to improve safety; encourage the use of non-motorized transportation, public transportation, rideshare, and other emerging modes; balance modes to improve the comfort of the street for all users; and improve the quality of life for students and residents of Arvin.

## PLAN + VISIÓN

El objetivo de este Plan es entregar un Plan de calles completas y rutas seguras a la escuela para la ciudad de Arvin. En parte, el plan se basa en las recomendaciones del Plan de Transporte Activo del Condado de Kern para entregar un conjunto de proyectos de infraestructura y herramientas de diseño que se puedan aplicar en toda la ciudad para mejorar la seguridad; alentar el uso de transporte no motorizado, transporte público, viajes compartidos y otros modos de circular; equilibrar los diferentes modos de transporte para mejorar la comodidad de transitar la calle para todos los usuarios; y mejorar la calidad de vida de los estudiantes y residentes de Arvin.

## WHAT IS A COMPLETE STREET?

There is no one-size-fits-all definition of a Complete Street; rather, it is a design approach that integrates people and place in the planning, design, construction, operation, and maintenance of our transportation networks. When applied at the city scale, a wide range of tools are used to create a connected network where certain streets prioritize different modes of travel. See the Appendix of the document for a Design Toolkit that includes a menu of design treatments that Arvin may apply throughout the city.

This design approach helps to create streets that are accessible for people of all ages and abilities; balances the needs of different modes; and supports local land uses, economies, cultures, and natural environments. Complete Streets and the tools they employ have been proven to yield positive economic, environmental, and public health and safety benefits. They celebrate community character, increase access to businesses and community destinations like schools, improve transportation options, increase opportunity for physical activity, and create space for new plantings and street trees to strengthen our urban ecologies.



Complete Streets consider a street's function and experience for all users

## WHAT ARE SAFE ROUTES TO SCHOOL?

Safe Routes to School (SRTS) is an integrated program that encourages students to walk and bike to school through a variety of educational programs, enforcement strategies, and infrastructure improvements and tools. SRTS benefits students by promoting safety and increasing levels of physical activity. A variety of agencies or organizations can implement SRTS programs, such as the

department of transportation, school districts, and even individual schools, along with community-based partners such as parent volunteers and community groups. There are many common SRTS resources available, such as parent and student surveys, and strategies, such as walking school bus programs, which can be used to encourage walking and biking to school.

## ¿QUÉ ES UNA CALLE COMPLETA?

No existe una definición única para una calle completa, más bien, es un enfoque de diseño que integra a las personas dentro del proceso de planeación, diseño, construcción, operación y mantenimiento de nuestras redes de transporte. Cuando se aplica a la escala de la ciudad, se utiliza una amplia gama de herramientas para crear una red conectada donde ciertas calles priorizan diferentes modos de viaje. Consulte el apéndice del documento para obtener una serie de herramientas de diseño que incluye un menú con diversos diseños que Arvin puede aplicar en toda la ciudad.

Este enfoque de diseño ayuda a crear calles accesibles para personas de todas las edades y habilidades; equilibra las necesidades de diferentes modos, y apoya los usos locales de la zona, las economías, las culturas y los entornos naturales. Se ha demostrado que las calles completas y las herramientas que se usan producen beneficios positivos para la economía, el medio ambiente y la salud y seguridad pública. Las calles completas celebran el carácter comunitario, aumentan el acceso a negocios y a destinos comunitarios como las escuelas. Además, mejoran las opciones de transporte, aumentan las oportunidades para la actividad física y crean espacios para crear áreas verdes nuevas en las calles para fortalecer nuestra ecología urbana.



Una calle completa considera la función y experiencia de la calle para todos los usuarios

## ¿QUÉ SON LAS RUTAS SEGURAS A LA ESCUELA?

Las Rutas Seguras a la Escuela es un programa integrado que alienta a los estudiantes a caminar y andar en bicicleta a la escuela a través de una variedad de programas educativos, estrategias de aplicación de la ley y mejoras de la infraestructura. Las Rutas Seguras a la Escuela benefician a los estudiantes al promover la seguridad y aumentar los niveles de actividad física. Distintas agencias u organizaciones pueden implementar programas de Rutas Seguras a la Escuela. Por ejemplo, el departamento

de transporte, el distrito escolar e incluso una escuela por su cuenta, junto con padres y madres de familia y grupos de la comunidad pueden iniciar un programa. Hay muchos recursos disponibles para implementar un programa de Rutas Seguras a la Escuela incluyendo encuestas a padres y estudiantes, y estrategias, como programas para caminar juntos a la escuela conocidos como el camión escolar a pie o "walking school bus", que se pueden usar para alentar a los jóvenes a caminar y andar en bicicleta al la escuela.

## WHAT IS THE RELATIONSHIP BETWEEN COMPLETE STREETS AND SAFE ROUTES TO SCHOOL?

Complete Streets and Safe Routes to School (SRTS) are complementary strategies that share the core goals of making walking and biking easier and safer. Many of the infrastructure improvement types that are core to Complete Streets, such as traffic calming measures, crossing improvements, and right-sizing roadways, are also key components of SRTS plans. SRTS plans, as a sub-set of Complete Streets plans, provide an additional level of detail that is laser-focused on design treatments, and programmatic recommendations that are specifically tailored to the needs of students and families getting to and from school.

### PROCESS + APPROACH

This year-long project is the result of an iterative and collaborative process that is rooted in community and stakeholder engagement. The project team conducted a detailed analysis of the City's transportation networks to identify deficiencies and gaps, and synthesized findings with community-identified opportunities and constraints to develop a robust set of recommendations. This chapter of the document provides a high-level overview of each of the project phases: existing conditions analysis, community feedback, recommendations, and next steps. Additional detail on each project phase is provided in Chapters 2-6 and in the Appendix of this document.

### EXISTING CONDITIONS

The project team conducted a detailed planning and site analysis of the City of Arvin. This process included:

- » A review of existing City and local planning documents that might inform recommendations
- » A desktop review and analysis of street conditions (reviewing digital data)
- » Traffic counts and collision analysis
- » Site visits conducted at the Community Design Charrette

The team synthesized these layers of information to identify opportunities and constraints that identify specific barriers (e.g. constrained right-of-way widths, missing sidewalks) and opportunities (such as overly wide streets) that ultimately informed the design recommendations.

Major takeaways from the existing conditions analysis include:

- » The lack of existing pedestrian and bike infrastructure in Arvin discourages people from walking and biking.
- » Many of Arvin's streets lack sidewalks and ADA-compliant crossings, of particular concern near parks and schools. To close sidewalk gaps in some areas, property acquisition may be required to address constrained rights-of-way.
- » Paving conditions (roadway and sidewalk) are generally poor throughout the City. This is due in part to high volumes of truck traffic and lack of funds for re-paving.

## ¿CUÁL ES LA RELACIÓN ENTRE CALLES COMPLETAS Y RUTAS SEGURAS A LA ESCUELA?

Las calles completas y las rutas seguras a la escuela son estrategias complementarias que comparten objetivos centrales para que caminar y andar en bicicleta sea más fácil y seguro. Muchos de los tipos de mejoras de infraestructura que son fundamentales para las calles completas, como las medidas para calmar el tráfico, las mejoras en los cruces y la reconfiguración de las calles, también son componentes clave de los planes para Rutas Seguras a la Escuela. Usted puede pensar en Rutas Seguras a la Escuela como un subconjunto de calles completas que proporciona un nivel adicional de detalle centrado en los tratamientos del diseño y recomendaciones programáticas que se adaptan específicamente a las necesidades de los estudiantes y las familias que van y vienen de la escuela.

### PROCESO + ENFOQUE

Este proyecto de un año de duración es el resultado de un proceso iterativo y colaborativo basado en la participación de la comunidad y las partes interesadas. El equipo del proyecto realizó un análisis detallado de las redes de transporte de la ciudad para identificar deficiencias y brechas, y sintetizó los hallazgos con oportunidades y limitaciones identificadas por la comunidad para desarrollar un conjunto de recomendaciones. Este capítulo del documento proporciona una visión general de alto nivel de cada una de las fases del proyecto: análisis de las condiciones existentes, comentarios de la comunidad, recomendaciones y próximos pasos. Se proporcionan detalles adicionales sobre cada fase del proyecto en los Capítulos del 2 al 6 y en el apéndice de este documento.

### CONDICIONES EXISTENTES

El equipo del proyecto realizó una planificación detallada y un análisis de la Ciudad de Arvin. Este proceso incluyó:

- » Una revisión de los planes existentes a nivel local y de toda la ciudad que podrían contener recomendaciones
- » Una revisión en oficina y análisis de las condiciones de la calle (revisión de datos digitales)
- » Conteos de tráfico y análisis de choques
- » Visitas al sitio realizadas en un taller de diseño participativo

El equipo sintetizó esta información para identificar oportunidades y limitaciones que identifican barreras específicas (por ejemplo, derechos restringidos de ancho de vía, aceras faltantes) y oportunidades (como calles demasiado anchas) que finalmente informaron las recomendaciones de diseño.

Las principales conclusiones del análisis sobre las condiciones existentes incluyen:

- » La falta de infraestructura para peatones y ciclistas desalienta a las personas a caminar y andar en bicicleta en Arvin

- » Drainage concerns were documented in site visits along several corridors, where pools of water were observed collecting at intersections and failing to flow properly to storm drains.
- » The highest concentration of collisions involving those walking and biking are concentrated on Bear Mountain Boulevard, as well as Walnut Street and Haven Drive.
- » Bear Mountain Boulevard has two different speed limits, 45 mph westbound and 30 mph eastbound. This makes it difficult for people crossing Bear Mountain Boulevard to consistently gauge how fast cars are going.
- » Arvin has relatively low volumes of vehicular traffic, meaning some of the City's streets have potential to be right-sized to better accommodate a wider range of travel modes, notably improved provision for walking and biking.
- » Arvin is a relatively small city, measuring approximately 3 miles north-south, and 1.5 miles east-west. Its small size makes it a very easy to get from one end to the other via walking and biking, if the appropriate infrastructure is in place.
- » Heat is another barrier to walking, biking, and taking transit in Arvin. Temperatures in the summer months are high, and a lack of transit shelters and shade trees within the public right-of-way make being outside uncomfortable, and a health risk, without shade.
- » Poor air quality in Arvin—due to agriculture, industry, rail freight and road traffic—also acts as a deterrent to walking and biking. Poor air quality can contribute to health issues such as asthma, heart disease, cancer, and more.
- » During the fall and spring, tule fog often forms, which limits visibility and can cause collisions.
- » In many locations throughout Arvin, residential landscaping encroaches onto sidewalks, a barrier to people walking in the city.
- » Community members who participated in outreach reported that unleashed dogs in the city are a deterrent to walking, and discourage parents from allowing their children to walk to school.



Parents picking up children from Sierra Vista Elementary School. Many people use umbrellas to create shade in the absence of street trees. The existing mid-block crossing presents barriers for people in wheelchairs or walking with strollers; it is not ADA-compliant and it lacks high-visibility crosswalk striping or signage.

- » Muchas de las calles de Arvin carecen de aceras y cruces que cumplan con las normas de la Ley de Americanos con Discapacidad (ADA por sus siglas en inglés), esto es especialmente preocupante cerca de parques y escuelas. Para cerrar las brechas en las aceras en algunas áreas, se puede requerir la adquisición de propiedades para abordar los derechos de paso restringidos
- » Las condiciones del pavimento (calzadas y aceras) son generalmente pobres en toda la ciudad. Esto se debe en parte a los altos volúmenes de tráfico de camiones y la falta de fondos para mantener el pavimento
- » Las preocupaciones por el drenaje se documentaron en visitas al sitio a lo largo de varios corredores, donde se observaron charcos de agua que se acumulaban en los cruces y no fluían adecuadamente a los desagües pluviales
- » La mayor concentración de choques que involucran a los que caminan y andan en bicicleta se concentra en Bear Mountain Boulevard, así como en Walnut Street y Haven Drive
- » Bear Mountain Boulevard tiene dos límites de velocidad diferentes, 45 mph en dirección oeste y 30 mph en dirección este. Esto hace que sea difícil para las personas que cruzan Bear Mountain Boulevard medir consistentemente la velocidad de los autos.
- » Arvin tiene volúmenes relativamente bajos de tráfico vehicular, lo que significa que algunas de las calles de la ciudad tienen el tamaño adecuado para acomodar mejor una gama más amplia de modos de viaje, notablemente una mejor disposición para caminar y andar en bicicleta
- » Arvin es una ciudad relativamente pequeña, que mide aproximadamente 3 millas de norte a sur y 1,5 millas de este a oeste. Su pequeño tamaño hace que sea muy fácil llegar de un extremo al otro a pie y en bicicleta, si existe la infraestructura apropiada
- » El calor es otra barrera para caminar, andar en bicicleta y tomar el transporte público en Arvin. Las temperaturas en los meses de verano son altas, y la falta de parabuses con sombra y árboles en las aceras hacen que estar afuera sea incómodo y un riesgo para la salud
- » La mala calidad del aire en Arvin, debido a la agricultura, la industria, el transporte de mercancías por ferrocarril y el tráfico en las calles, también actúa como un elemento disuasorio para caminar y andar en bicicleta. La mala calidad del aire puede contribuir a problemas de salud como asma, enfermedades cardíacas, cáncer y más
- » Durante el otoño y la primavera, a menudo se forma niebla tule que limita la visibilidad y puede causar colisiones
- » En muchos lugares de Arvin, la falta de mantenimiento de jardines en propiedad privada resulta en plantas y árboles que invaden las aceras, creando una barrera para las personas que caminan por la ciudad
- » Los miembros de la comunidad que participaron en las reuniones informaron que los perros de la calle y sin correa hacen difícil el caminar, y desalienta a los padres de dar permiso para que sus hijos caminen a la escuela



Padres recogiendo a sus niños en la escuela primaria Sierra Vista. Muchas personas usan paraguas para darse sombra en ausencia de árboles en la calle. El cruce existente a mitad de cuadra presenta barreras para las personas en sillas de ruedas o para caminar con carritos; no cumple con las normas de la ADA y le falta un cruce de alta visibilidad con letrero.

## OUTREACH SUMMARY

Community and stakeholder feedback was gathered in a variety of ways. At the start of the project, an Advisory Group was formed comprised of City of Arvin, Caltrans, Bike Bakersfield, Dolores Huerta Foundation, Committee for a Better Arvin, California Walks, Kern Health Systems, Kern County Public Works, Kern Council of Governments, and Arvin Union School District. The group met three times over the course of the project: the first meeting on March 7th, 2019 confirms project goals, identified top community issues and verified existing conditions; the second, on April 2nd, 2019, focused on preparations for the Community Design Charrette; and the third on June 12th, 2019, confirmed direction received at the Charrette and the outline for this Plan document.

The project team hosted a four-day-long Community Design Charrette between April 29th and May 2nd, 2019. This charrette allowed the consultant team to take up temporary residence at City Hall to fully immerse in the project for the full duration of the event. They conducted field visits to ground-truth existing conditions data collected and analyzed digitally; gained valuable insight and feedback from community members, city staff, and stakeholders at small meetings and two large community-facing events; and developed a set of preliminary infrastructure improvement recommendations that were presented at the closing community event of the charrette. In total, approximately 160 community members attended events.

The most critical outcome of the charrette was the confirmation of specific areas of concern within the City that built upon findings from the existing conditions analysis. This laid the groundwork for the recommendations of the plan. Themes that came up throughout conversations with community members and stakeholders included:



Community members vote for preferred design treatments (left), and map challenges in Arvin (right)

## RESUMEN DEL PROCESO PARTICIPATIVO

Los comentarios de la comunidad y de las partes interesadas se recopilaron de diversas maneras. Al comienzo del proyecto, se formó un Grupo Asesor compuesto por la Ciudad de Arvin, Caltrans, Bike Bakersfield, la Fundación Dolores Huerta, el Comité para un Mejor Arvin, California Walks, Kern Health Systems, Kern County Public Works, Kern Council of Governments, y Arvin Union School District. El grupo se reunió tres veces en el transcurso del proyecto: la primera reunión fue el 7 de marzo de 2019 para confirmar los objetivos del proyecto e identificar los principales problemas de la comunidad y las condiciones existentes; el segundo encuentro fue el 2 de abril de 2019 para prepararse para el taller de diseño participativo; y el tercero encuentro fue el 12 de junio de 2019, después del taller para confirmar la dirección recibida en el taller de diseño participativo y el esquema de este documento del Plan.

El equipo del proyecto organizó una serie de talleres de diseño participativo durante cuatro días entre el 29 de abril y el 2 de mayo de 2019. Estos talleres permitieron que el equipo de consultores estableciera su residencia temporal en la ciudad para sumergirse completamente en el proyecto durante toda la duración del evento. Realizaron visitas de campo para identificar las condiciones existentes sobre la base de datos recolectados y para analizarlos de forma digital; se obtuvo información

valiosa y comentarios de los miembros de la comunidad, del personal de la ciudad y de las partes interesadas en pequeñas reuniones y dos grandes eventos orientados a la comunidad; y se desarrolló un conjunto de recomendaciones preliminares sobre cómo mejorar la infraestructura que se presentó en el evento de clausura del taller de diseño participativo. En total, aproximadamente 160 miembros de la comunidad asistieron a los eventos.

El resultado más relevante del taller fue la confirmación de las áreas específicas en donde hay mayor preocupación dentro de la ciudad que los cual ayudo a ampliar en los resultados del análisis de las condiciones existentes. Esto sentó las bases para las recomendaciones del Plan. Los temas que surgieron durante las conversaciones con los miembros de la comunidad y las partes interesadas incluyen:

» **Preocupaciones de seguridad a lo largo del Bear Mountain Boulevard:**

esta arteria principal tiene las tasas de colisión más altas de cualquier corredor dentro de la ciudad. Son pocos los cruces marcados, las velocidades son excesivas y los volúmenes vehiculares son altos. Todo esto hace que las mejoras en los cruces peatonales sean una alta prioridad. La intersección en Walnut Street es de preocupación especial, dada su proximidad a la escuela preparatoria y la Academia Grimmway



Los miembros de la comunidad votan por los diseños preferidos de calle (izquierda) e identifican los desafíos en Arvin (derecha)

» **Safety concerns along Bear**

**Mountain Boulevard:** this major arterial has the highest collision rates of any corridor within the city. Few marked crossings and higher vehicular speeds and volumes make pedestrian crossing improvements a high community priority. The intersection at Walnut Street is of particular concern, given its proximity to the high school and Grimmway Academy.

» **Overly-wide roads and speeding:**

many of Arvin's streets are designed for higher vehicular capacity than they actually carry. Exploring traffic calming solutions for corridors including Haven Drive, Meyer Street/Campus Drive, and Varsity Avenue, as well as ways to improve crossings, were top requests.

» **Paving conditions and ADA:**

community members expressed concern for a lack of curb ramps, numerous sidewalk gaps, and the poor material conditions of both roadways and sidewalks.

## RECOMMENDATIONS

The recommendations that follow, which are guided by Complete Streets design and Safe Routes to School (SRTS) principles, represent a refinement of the recommendations developed at the charrette as well as national best practices. Recommendations are tailored to be appropriate for Arvin's context, and mindful of ongoing maintenance costs and available funding sources the City may pursue to secure funding for design and implementation.

Several universal infrastructure improvements throughout the City would enable more community members to access a convenient pedestrian network:

» **Crossings:**

- Bi-directional curb ramps with tactile domes
- High-visibility crosswalks
- Curb extensions, where feasible, to shorten crossing distances and calm traffic

- Advanced yield markings and rectangular rapid flashing beacons (at unsignalized locations)
  - Signals updated to include a Leading Pedestrian Interval (a headstart for people crossing the street) at intersections near major destinations and commercial areas
- » **Shade and Green Infrastructure:**
- Bus stops should have a shade structure and bench to maximize comfort while waiting for the bus
  - Street trees should be planted wherever feasible to maximize shade and encourage walking and biking
  - Where curb extensions and planted center medians are installed, consider stormwater-capturing designs to improve water quality and manage stormwater flows

» **Carreteras demasiado anchas y exceso de velocidad:** muchas de las calles de Arvin están diseñadas para una mayor capacidad vehicular de lo que realmente transportan. Una de las principales solicitudes fue explorar las soluciones para calmar el tráfico en Haven Drive, Meyer Street/ Campus Drive y Varsity Avenue, así como las formas de mejorar los cruces peatonales

» **Condiciones de pavimentación y ADA:** los miembros de la comunidad expresaron su preocupación por la falta de rampas en las aceras, falta de aceras y las malas condiciones materiales de las calles y aceras

## RECOMENDACIONES

Las recomendaciones a continuación se guían por el diseño de calles completas y los principios de Rutas Seguras a la Escuela. Representan un refinamiento de las recomendaciones desarrolladas en los talleres de diseño participativo, así como las mejores prácticas nacionales. Las recomendaciones se adaptan para que sean apropiadas para el contexto de Arvin, y toman en cuenta los costos de mantenimiento continuos y las fuentes de fondos disponibles que la ciudad puede buscar para asegurar el financiamiento para el diseño y la implementación.

Varias mejoras de infraestructura en toda la ciudad permitirían a más miembros de la comunidad acceder a una conveniente red peatonal:

» Cruces:

- Rampas bidireccionales en las aceras con guías táctiles
- Cruces peatonales de alta visibilidad
- Extensión de las aceras, donde sea posible, para acortar las distancias de cruce y calmar el tráfico
- Marcas avanzadas para ceder el paso y luces de advertencia intermitentes (en ubicaciones sin semáforos)
- Semaforización actualizada para incluir un intervalo al peatón de varios segundos de ventaja para empezar a cruzar antes de que los carros reciban la luz verde en las intersecciones cerca de los principales destinos y áreas comerciales

» Safe Routes to School Improvements:

- School Zone signs should be placed within school zones to indicate to drivers there may be children present. They should be combined with 15 to 25 mile per hour speed limit signs
- Crosswalks in school zones should be marked in yellow and accompanied by pavement markings, and at minimum should include advance warning signs (e.g., SCHOOL, SLOW SCHOOL X-ING)
- Curb paint and signs should be used to communicate and enforce parking restrictions in school loading zones
- Speed feedback signs should be placed strategically to deter drivers from speeding in and near school zones
- Install pedestrian-scale lighting through Arvin, but with priority given to corridors that connect to our schools

The recommendations, summarized in the map on the following page, include pedestrian improvement crossings and improvement of the bicycle network throughout the city, in particular on Varsity Avenue, Walnut Street/Drive, El Camino Real, Franklin Street, A Street, Campus Drive/Meyer Street, and Haen Drive. These recommendations help develop a comprehensive bicycle and pedestrian networks that provide safe and comfortable access to parks, schools, retail, transit, and other destinations throughout the City of Arvin.

Bear Mountain Boulevard, a Caltrans-controlled corridor, was a major topic of concern for the community at the charrette. This corridor has the highest history of collisions within Arvin. It is also the widest road within the city, and therefore pedestrians are exposed to traffic for long periods of time while crossing. Additionally, in some locations along Bear Mountain Boulevard, there are distances of as much as 1/4-mile between marked crosswalks. It is a major barrier for pedestrians to cross, particularly students getting to and from schools on the north side of Arvin. Specific areas for concern and requests for improvement on Bear Mountain Boulevard came up repeatedly during the charrette:

- » Vehicles tend to speed on this road, and with few marked crossings this makes it feel unsafe for many to cross the street
- » Requests for a signal with marked crosswalks at Walnut Street, which many students cross to access Arvin High School
- » Crosswalks located at intersections or mid-block locations without signals or stop signs are faded and difficult to see. As a result, drivers often do not stop for those trying to cross. This was a particular concern at Stockton Avenue and North Acala Street

» Sombra e infraestructura verde:

- Las paradas de autobús deben tener una estructura de sombra y una banca para que sea más cómodo esperar el autobús
- Los árboles de la calle deben plantarse donde sea posible para maximizar la sombra y alentar caminar y andar en bicicleta
- Cuando se instalen extensiones de aceras y los camellones centrales con arbolado se considerarán los diseños de captura de aguas pluviales para mejorar la calidad del agua y gestionar los flujos de aguas pluviales

» Mejoras al programa Rutas Seguras a la Escuela:

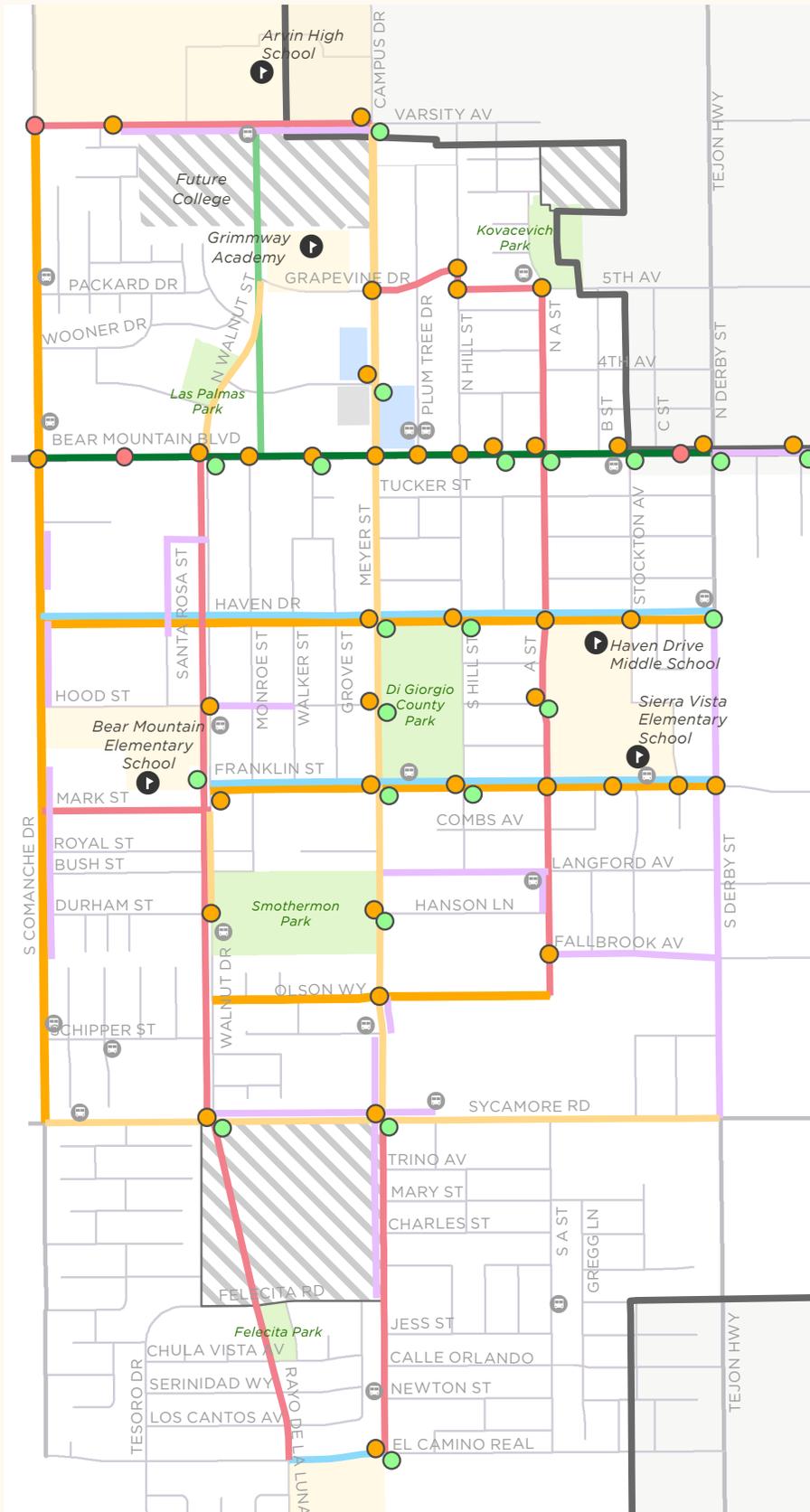
- Los señalamientos de la zona escolar deben colocarse para indicar a los conductores que puede haber niños presentes. Deben combinarse con letreros de límite de velocidad de 15 a 25 millas por hora
- Los cruces peatonales en las zonas escolares deben estar marcados de amarillo y, como mínimo, deben incluir señales de advertencia anticipadas (por ejemplo, ESCUELA, BAJE LA VELOCIDAD, CRUCE ESCOLAR)

- La pintura al borde de la calle y los letreros deben usarse para comunicar y hacer cumplir las restricciones de estacionamiento en las zonas de carga de la escuela
- Los señalamientos para bajar la velocidad deben colocarse estratégicamente para disuadir a los conductores de acelerar dentro y cerca de las zonas escolares
- Instalar iluminación a escala peatonal por todo Arvin, pero con prioridad dado a los corredores que se conectan a nuestras escuelas

Las recomendaciones, resumidas en el mapa de la página siguiente, incluyen mejoras a los cruces peatonales y mejora de la red para bicicletas en toda la ciudad, en particular en Varsity Avenue, Walnut Street/Drive, El Camino Real, Franklin Street, A Street, Campus Drive/Meyer Street, y Haen Drive. Estas recomendaciones ayudarán a desarrollar una red integral para ciclistas y peatones que brinde un acceso seguro y cómodo a parques, escuelas, tiendas, transporte público y otros destinos en toda la ciudad de Arvin.

Bear Mountain Boulevard, un corredor controlado por Caltrans, fue un tema importante para la comunidad cuando se llevaron a cabo los talleres de diseño participativo. Este corredor tiene el mayor número de choques viales dentro de Arvin. También es el camino más ancho dentro de la ciudad y, por lo tanto, los peatones están expuestos al tráfico durante más tiempo mientras cruzan. Además, las distancias entre los cruces marcados en Bear Mountain Boulevard son muy largas, pueden llegar a ser 1/4 de una

Figure 1: Recommendations Map



## RECOMMENDATIONS RECOMENDACIONES

COMPLETE STREETS AND  
SAFE ROUTES TO SCHOOL PLAN  
PLAN DE CALLES COMPLETAS Y  
RUTAS SEGURAS A LA ESCUELA

### Recommendations Recomendaciones

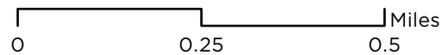
-  *Crossing Improvement*  
Mejora de Cruce
-  *Signals or Beacons*  
Semáforos o Luces  
de Advertencia
-  *Traffic Calming*  
Calmar el Tráfico
-  *Shared Use Path*  
Ruta de Uso Compartido
-  *Bicycle Lane*  
Carril de Ciclismo
-  *Bicycle Boulevard*  
Boulevard de Bicicletas
-  *Separated Bikeway*  
Carril Separado  
para Bicicletas
-  *Traffic Calming*  
Calmar el Tráfico
-  *Sidewalk Gap Closure*  
Cerrar Brecha en Red  
de Aceras

### Existing Bikeways Ciclovías Existentes

-  *Bicycle Lane*  
Carril de Ciclismo

### Boundaries & Destinations Límites y Destinos

-  *Transit Stop*  
Parada de Tránsito
-  *Library / Biblioteca*
-  *School / Escuela*
-  *Government Building*  
Edificio del Gobierno
-  *Park / Parque*
-  *Parcel Under Development*  
Parcela en Desarrollo
-  *Arvin Boundary*  
Limite de Arvin



Data provided by Kern County,  
Esri, Caltrans.  
Map produced October 2019





Recommended improvements to Bear Mountain Boulevard include marked crosswalks at all intersections and pedestrian-activated flashing beacons.

- » A lack of pedestrian-scaled lighting along Bear Mountain Boulevard amplifies the low-visibility issues for those crossing the street at night, making those crossing feel even more vulnerable

Any improvements to the Bear Mountain Boulevard corridor will require coordination and approval from Caltrans. A traffic study needs to be conducted for the Bear Mountain Boulevard corridor to determine appropriate speeds, crossing improvements, and bike facility type(s).

At signalized intersections, high-visibility crosswalks, curb extensions, and leading pedestrian intervals are advised to shorten the crossing distance for pedestrians, allow more time to cross, and increase visibility to drivers. At unsignalized intersections, rectangular rapid flashing beacons and advanced yield markings may be installed to improve visibility of

pedestrians to drivers, and curb extensions may be installed where feasible (and are a green infrastructure opportunity that can address help address drainage and stormwater management issues). Additionally, automated pedestrian detection technology, such as infrared, can be installed to sense when someone is waiting to cross the street and send a signal to switch to a pedestrian walk phase. In addition to these pedestrian improvements, a separated bikeway is called for on Bear Mountain Boulevard. This has the potential to further calm traffic and provide east-west connectivity across the city.

The image above, at Stockton Avenue, illustrates how these improvements to an unsignalized intersection might be applied along Bear Mountain Boulevard and what this corridor could look with these infrastructure improvements installed.



Las mejoras propuestas para Bear Mountain Boulevard incluyen cruces peatonales marcados en todas las intersecciones y luces de advertencia intermitentes activados por los peatones

milla. Es una barrera importante para aquellos que caminan y andan en bicicleta, particularmente los estudiantes que van y vienen de las escuelas en el lado norte de Arvin. Áreas específicas de preocupación y solicitudes de mejora en Bear Mountain Boulevard surgieron repetidamente durante los talleres de diseño participativo:

- » Los vehículos tienden a acelerar en este corredor y son pocos los cruces peatonales marcados, esto hace que sea inseguro para muchos cruzar la calle
- » Se solicitó una semaforización y señalización adecuada en Walnut Street, en donde muchos estudiantes cruzan para acceder a Arvin High School
- » Los cruces peatonales ubicados en intersecciones o ubicaciones a mitad de cuadra sin señales o señales de alto se desvanecen y son difíciles de ver. Como resultado, los conductores a menudo no se detienen para aquellos que intentan cruzar. Esta fue una preocupación particular en Stockton Avenue y North Acala Street
- » La falta de iluminación a escala peatonal a lo largo de Bear Mountain Boulevard amplifica los problemas de baja visibilidad para aquellos que cruzan la calle por la noche, haciendo que en los cruces los caminantes se sientan aún más vulnerables

Cualquier mejora en este corredor requerirá coordinación y aprobación de Caltrans. Se recomienda que Caltrans haga un estudio formal de la circulación en Bear Mountain Boulevard para determinar el límite de velocidad apropiado y las mejoras

que se deben hacer en cada cruce de calle, y el tipo de instalación de bicicleta adecuada.

En las intersecciones con semáforos, se recomienda la instalación de cruces peatonales de alta visibilidad, extensiones de banqueta e los intervalos de avance peatonal para acortar la distancia de cruce para los peatones, dar más tiempo para cruzar y aumentar la visibilidad. En intersecciones sin semáforos, se pueden instalar cruces peatonales de alta visibilidad acompañados de luces de advertencia intermitentes y marcas de ceder el paso avanzadas para mejorar la visibilidad de los peatones. También, donde sea posible, se pueden instalar extensiones de acera que proporcionan una oportunidad de infraestructura verde que puede ayudar al manejo del drenaje y la gestión de aguas pluviales. Además, se puede instalar tecnología automatizada de detección de peatones para detectar cuando alguien está esperando cruzar la calle y enviar una señal para cambiar a una fase de paso peatonal. In addition to these pedestrian improvements, a separated bikeway is called for on Bear Mountain Boulevard. Además de estas mejoras para peatones, se requiere un carril bici separado en Bear Mountain Boulevard. Esto tiene el potencial de calmar aún más el tráfico y proporcionar conectividad este-oeste en toda la ciudad.

La imagen a continuación, en la Avenida Stockton, ilustra cómo se podrían aplicar estas mejoras a una intersección sin semáforo en este corredor.

A variety of different bike facility types are recommended throughout the city. These include standard and buffered bike lanes (Class II facilities), as well as bicycle boulevards (Class III facilities). Locations for recommended bike facilities were selected by considering how to best connect destinations such as schools, parks, civic buildings, and shopping areas; identifying high-collision corridors; and by examining roadway widths to determine which streets were wider than vehicular capacity demands. The majority of bike facility types recommended in Arvin are either Class II or Class III facilities. These types of facilities can be easily installed with simple paint and signage and are low-maintenance, and therefore easier for the City to upkeep.

In the example below, buffered bike lanes are installed along Franklin Street, an example of right-sizing a roadway to better

balance travel modes. A mid-block crossing with pedestrian-activated flashing beacons and curb extensions to help reinforce school zone speed limits will improve safety for students at Sierra Vista Elementary School, and a planted center median adds shade and an opportunity to capture stormwater. Improvements like these can make it more appealing for students to walk and bike to school and can be applied throughout the City to improve its Safe Routes to School network.

On lower-traffic streets, such as Haven Drive, bicycle boulevards (Class III facilities) can be installed with pavement markings that indicate cyclists share the road with vehicles. Traffic calming elements, such as speed humps, or "chicanes," pictured in the photosimulation on the next page, can also be installed to reinforce speed limits and encourage drivers to comply

Recommended conditions on Franklin Street make walking and biking to school more accessible. Existing parking is preserved, and where parking is prohibited, planted curb extensions may be added.



Se recomienda una variedad de diferentes tipos de instalaciones para bicicletas en toda la ciudad. Estos incluyen ciclocarriles estándar y con separación tipo Clase II), así como bulevares para bicicletas (tipo Clase III). Las ubicaciones para la infraestructura ciclista propuestas se seleccionaron considerando la mejor manera de conectar destinos, como escuelas, parques, edificios cívicos y áreas de compras; identificación de corredores de alta colisión; y al examinar lo ancho de las calles para determinar qué calles eran más anchas de lo necesario. La mayoría de los tipos de instalaciones para bicicletas recomendadas en Arvin son infraestructura de Clase II o Clase III. Esto se debe a que este tipo de infraestructura se puede instalar fácilmente con pintura y letreros simples y son de bajo mantenimiento y, por lo tanto, más fáciles de mantener para la ciudad.

En el ejemplo en la página anterior, se instalan ciclocarriles con separación a lo largo de Franklin Street, un ejemplo de dimensionamiento correcto de una calle para equilibrar mejor los modos de viaje. Un cruce a mitad de cuadra con luces de advertencia intermitentes activadas por los peatones y extensiones de acera para ayudar a reforzar los límites de velocidad de la zona escolar mejorará la seguridad de los estudiantes en la Escuela Primaria Sierra Vista. Además se contempla un camellón con arbolado para agregar sombra y la oportunidad de capturar aguas pluviales. Mejoras como estas pueden hacer que sea más atractivo para los estudiantes caminar y andar en bicicleta a la escuela y pueden aplicarse en toda la ciudad para mejorar su red de rutas seguras a la escuela.

En las calles de poco tráfico, como Haven Drive, se pueden instalar bulevares para bicicletas (tipo Clase III) con marcas en el pavimento que indican que los ciclistas comparten la carretera con los vehículos. También se pueden instalar elementos para calmar el tráfico, como los topes o las extensiones de acera, que se muestran en la imagen en la próxima página, para reducir la velocidad de los carros. Las extensiones de acera a media cuadra actúan para calmar el tráfico al reducir el campo visual para los conductores, lo que requiere movimientos de giro cuidadosos para seguir los carriles. Estas áreas también son oportunidades para integrar árboles y plantas, y para capturar y filtrar aguas pluviales. Mejoras como estas pueden aumentar la seguridad y el acceso a los parques de Arvin.

El Capítulo 5 de este documento incluye una lista completa de proyectos recomendados en toda la ciudad y detalles adicionales sobre las recomendaciones de diseño. Para obtener información adicional sobre la gama completa de diseño de calles completas y estrategias de Rutas Seguras a la Escuela, que pueden emplearse en toda la ciudad, consulte la serie de herramientas de diseño en el Apéndice de este documento.



Las condiciones propuestas en la calle Franklin hacen que caminar y andar en bicicleta a la escuela sean experiencias más accesibles. El estacionamiento existente se conserva y donde se encuentra el bordillo rojo, se pueden agregar extensiones de las aceras



A bicycle boulevard and chicanes may be installed along Haven Drive

with the posted speed. Chicanes act as traffic calming by reducing the visual field for drivers, requiring minor turning movements to follow the lanes. These areas are also opportunities to integrate trees and plantings, and to capture and filter stormwater. Improvements like these can increase safety and access to Arvin's parks.

Chapter 5 of this document includes a full list of recommended projects and details about design recommendations. For additional information on the full range of Complete Streets design treatments and Safe Routes to School strategies that can be employed throughout the city, please refer to the Design Toolkit in the Appendix of this document.

## NEXT STEPS

This Plan represents the first in a series of steps needed to implement these recommendations, which will address the core goal of improving Arvin's transportation network for all users (those walking, biking, taking public transit, and driving) with a strong focus on providing Safe Routes to School. This Plan provides the city with the preliminary planning information needed to seek grant funding to design and construct the

recommendations. The process of seeking funding and completing the design work needed to construct these projects varies, and typically takes several years per project. In Chapter 6 of this document, details are provided about competitive funding sources the City may pursue to implement these projects, as well as policies and maintenance strategies the City has identified to increase the effectiveness and longevity of projects and programs once funding is secured.



Se puede instalar un bulevar de bicicletas con extensiones de acera a lo largo de Haven Drive

## PRÓXIMOS PASOS

Este Plan representa el primero de una serie de pasos necesarios para implementar estas recomendaciones, que abordarán el objetivo central de mejorar la red de transporte de Arvin para todos los usuarios (aquellos que caminan, andan en bicicleta, toman el transporte público y conducen) con un fuerte enfoque en proporcionar Rutas Seguras a la Escuela. Este Plan proporciona a la ciudad la información de planificación preliminar necesaria para buscar fondos de subvención para diseñar y construir las recomendaciones. El proceso de

buscar financiación y completar el trabajo de diseño necesario para construir estos proyectos varía, y generalmente toma varios años por proyecto. En el Capítulo 6 de este documento usted encontrará detalles sobre las fuentes de financiamiento competitivas que la ciudad puede seguir para implementar estos proyectos, así como las políticas y estrategias de mantenimiento que la ciudad ha identificado para aumentar la efectividad y la longevidad de los proyectos y programas una vez que se asegure la financiación.



# 2

## EXISTING CONDITIONS

The project team conducted a detailed planning and site analysis of the City of Arvin. This process included:

- A review of existing City and local planning documents that might inform recommendations
- A desktop review and analysis of street conditions (reviewing digital data)
- Traffic counts and collision analysis
- Heat and shade analysis
- Site visits conducted at the Community Design Charrette

The team synthesized these layers of information to identify opportunities and constraints that identify specific barriers (e.g., constrained right-of-way widths, missing sidewalks) and opportunities (such as overly wide streets). These, augmented by the community feedback described in Chapter 3, ultimately informed the recommendations in Chapter 5.

## PLAN REVIEW

For local context, the project team reviewed relevant local, regional, and state plans. Key plans that informed this effort include the [Kern Region Active Transportation Plan](#), which guides the Kern Council of Governments in its efforts to enhance walking, bicycling, and transit throughout Kern County, including within the City of Arvin. The Kern Plan recommends over 17 miles of new bikeways and over 12 miles of pedestrian improvements, such as sidewalk gap closures, traffic calming, and crossing improvements. The Plan also makes recommendations for end-of-trip facilities, such as the number and location of long-term and short-term bicycle parking.

The review also included [Recommendations to Improve Pedestrian and Bicycle Safety for the City of Arvin](#), a report developed via collaboration between Bike Arvin, California Walks, the University of California at Berkeley's Safe Transportation Research and Education Center (SafeTREC), and the City of Arvin Planning Committee. Through stakeholder engagement, a review of plans and policies, and analysis and mapping of pedestrian and bicycle injury data, this report identifies existing conditions and challenges and makes recommendations to improve safety of walking and bicycling in Arvin.

The complete details of plans reviewed can be found in the Appendix of this plan and are listed in Table 1.

**Table 1: List of Relevant Local, Regional, and State Plans**

Plan Name	Year
Local	
Recommendations to Improve Pedestrian and Bicycle Safety for the City of Arvin	2018
Arvin General Plan Update	2012
Street Story	N/A
Regional	
Kern Region Active Transportation Plan	2018
State	
Toward an Active California: Statewide Bicycle and Pedestrian Plan	2017
California Transportation Plan 2040	2015
Main Street California: A Guide for Improving Community and Transportation Vitality	2013
Caltrans Strategic Management Plan	2010
California Complete Streets Deputy Directive 64	2010
Smart Mobility 2010: A Call to Action for the New Decade	2010
Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians	2010

## EXISTING BICYCLING AND WALKING NETWORK

### BICYCLE FACILITIES

The California Department of Transportation (Caltrans) defines four classes of bicycle facilities. See the Appendix of this document for additional information in the Design Toolkit pertaining to bicycle facility types. The map in Figure 2 shows where bike facilities exist today in Arvin:

- » **Class II Bicycle Lanes** are striped preferential lanes on the roadway for one-way bicycle travel that include pavement stencils and signs. Class II bicycle lanes exist on Campus Drive/ Meyer Street from Varsity Avenue to Olson Way, Sycamore Road from Comanche Drive to Derby Street, and Walnut Street north of Bear Mountain Boulevard.
- » **Class III Bicycle Routes** are signed routes where bicyclists share a travel lane with people driving. Because they are shared facilities, bike routes are typically only appropriate either on quiet, low-speed streets with relatively low traffic volumes or on higher-speed roadways that include a wide outside lane or shoulder to accommodate safe passing. Some Class III bicycle routes include shared lane markings, or "sharrows", that encourage proper bicyclist positioning in the center of a travel lane and alert drivers that bicyclists may be present. Class III bike routes have been designated along several east-west corridors, one cross-town north-south corridor, and one neighborhood north-south corridor.

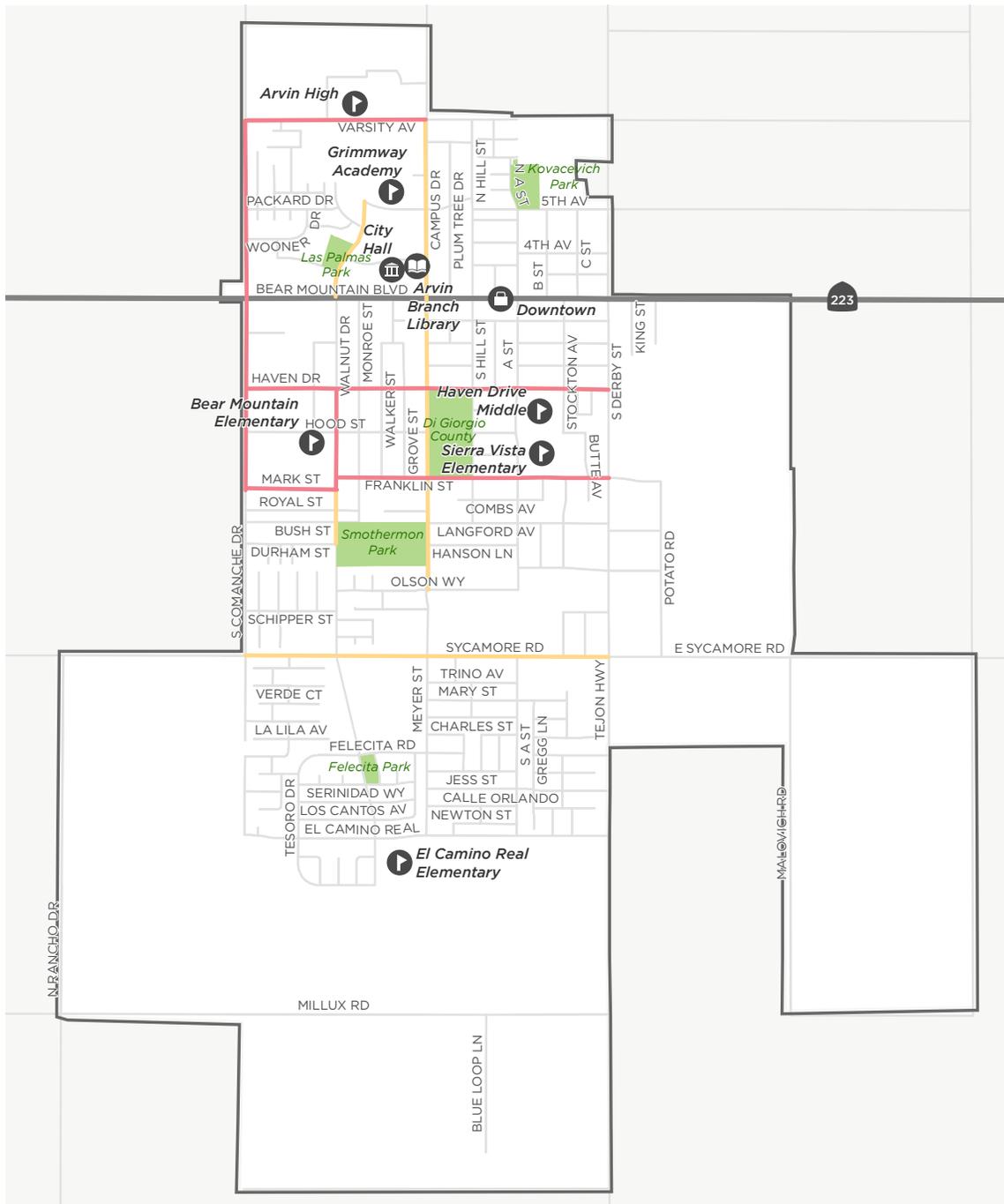
Two additional classes of bike facilities are defined by Caltrans, neither of which currently exist in Arvin:

- » **Class I Shared Use Paths** are exclusively for the shared use of bicycles and pedestrians and are not located in a roadway.
- » **Class IV Separated Bikeways** are on-street bicycle facilities that are physically separated from motor vehicle traffic by a vertical element or barrier such as a curb, bollards, or parking aisle. They can allow for one- or two-way bicycle travel on one or both sides of the roadway.



Currently, the City of Arvin's Municipal Code limits riding bicycles on sidewalks. Implementation of additional bikeways, as recommended in Chapter 5, would give people safer, more comfortable options for riding in the street rather than on the sidewalk.

Figure 2: Existing Bicycle Facilities



**Existing Bikeways**

- Class II Bicycle Lane
- Class III Bicycle Route

**Destinations + Boundaries**

- K-12 School
- Library
- Shopping
- Government Building
- Parks



**alta** Data provided by Kern County, Esri, Caltrans.  
 PLANNING + DESIGN Map produced February 2019

## WALKING FACILITIES

An inventory of sidewalks was not available for review, but a desktop review of aerial imagery showed that many of Arvin's residential neighborhoods have existing sidewalks. The sidewalks can generally be categorized as standard width, mostly back of curb without a planting strip separating it from the roadway. However, many of these existing sidewalks are in poor condition, with cracks and holes, creating barriers for people walking or using mobility devices. Further, in many locations, residential landscaping encroaches onto sidewalks, leaving little or no space for people to walk on the sidewalk.

Though much of the community has access to sidewalks, some street segments do not currently have sidewalks. One of the City's goals with this Plan is to close sidewalk gaps where possible. It is important to note that in some locations where sidewalks do not exist, property acquisition may be required to build new sidewalks.

### Crossing Amenities

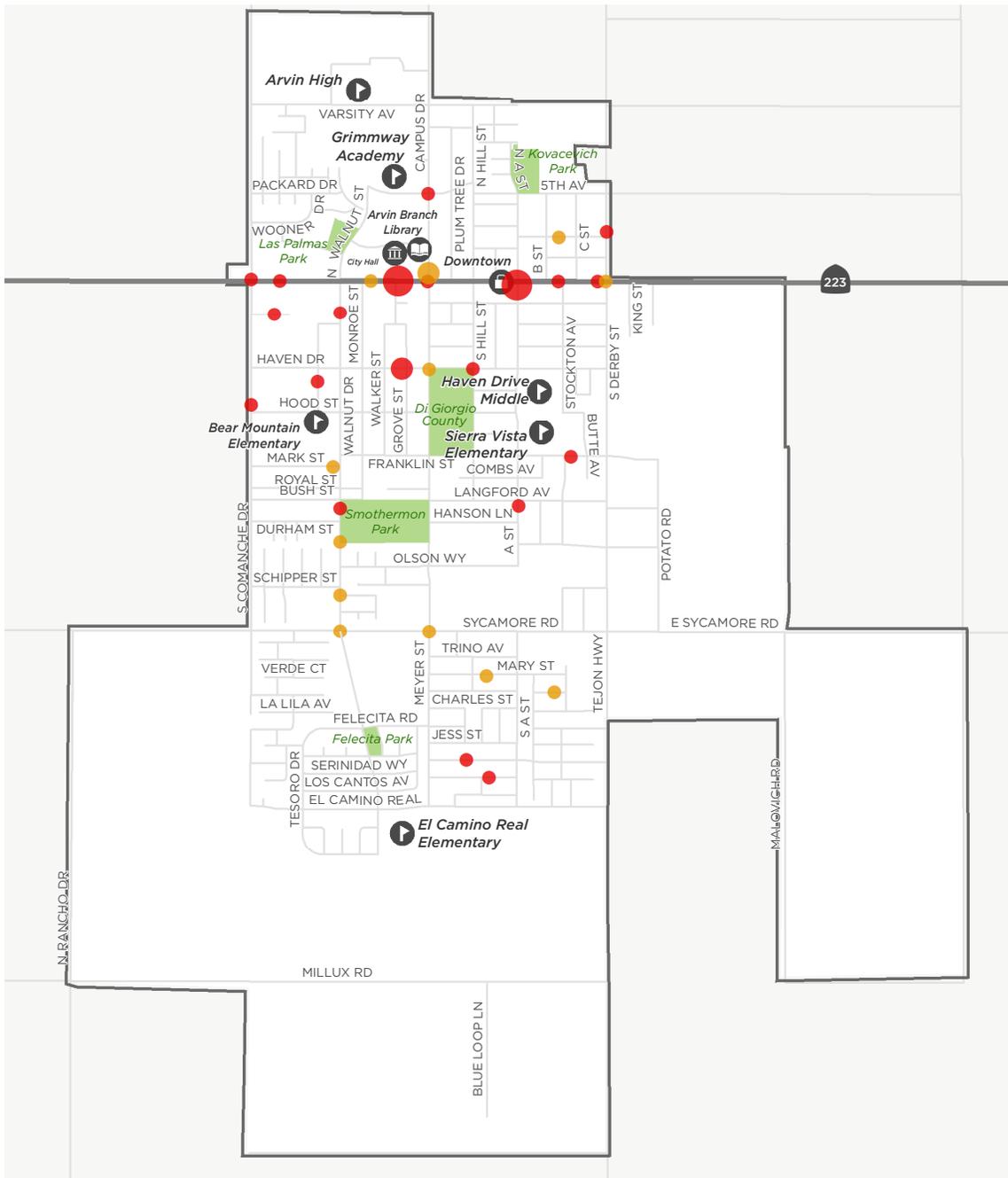
Within residential neighborhoods, marked crossings are uncommon, though some marked crosswalks exist near schools. Many existing crosswalks are faded and require maintenance to be high-visibility. The desktop review showed wide curb radii and noted no enhanced crossing treatments such as curb extensions or median islands.

## COLLISION ANALYSIS

Data on motor vehicle collisions with bicyclists and pedestrians can provide insight into locations or roadway features that tend to have higher collision rates, as well as behaviors and other factors that contribute to collisions. Collision data involving people walking and bicycling was acquired from the UC Berkeley Transportation Injury Mapping System (TIMS), which includes only reported fatal or injury collisions. Five years of data were evaluated, from 2013 through 2017. Additional collision analysis can be found in the Appendix of this document. Highlighted in this chapter are major takeaways that informed design recommendations.

A total of 167 collisions were reported in Arvin during the study period, 13 of which involved a person riding a bicycle (7.8 percent) and 26 of which involved pedestrians (15.6 percent). Of the 167 collisions, two were fatal: one pedestrian crash and one motor vehicle crash.

Figure 3: Bicycle and Pedestrian Collisions that resulted in Injury or Death – Location and Frequency



**Pedestrian Collisions within 100 feet**

- 1
- 2
- 3 - 4

**Bicycle Collisions within 100 feet**

- 1
- 2

**Destinations + Boundaries**

- K-12 School
- Library
- Shopping
- Government Building
- Parks



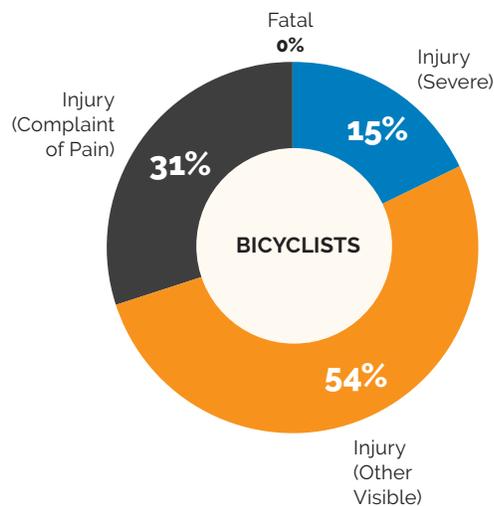
**alta** Data provided by Kern County, Esri, Caltrans.  
 PLANNING + DESIGN Map produced February 2019

## COLLISION SEVERITY

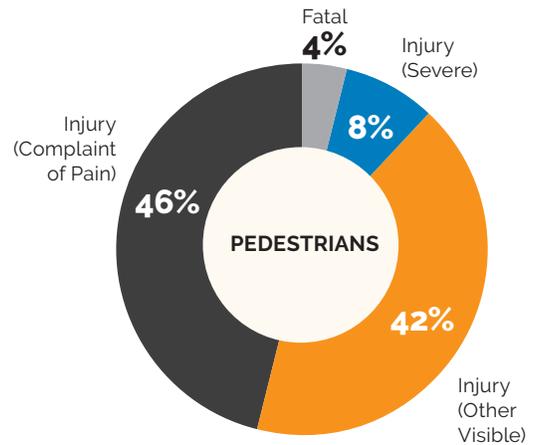
### Bicyclist-Involved Collisions

There were two collisions that resulted in severe injury to the bicyclist, and no collisions where a bicyclist was killed. The severe injury collisions did not occur at intersections.

- » The collision on Walnut Drive south of Durham Street was caused by a speeding driver who fled the scene of the collision. It was night time and street lights were functioning. There are no bicycle facilities on Walnut Drive south of Durham Street.
- » The collision on Bear Mountain Boulevard west of Monroe Street was caused by a bicyclist making an unsafe lane change. The collision occurred during the daytime. There are no bicycle facilities on Bear Mountain Boulevard.



**Figure 4: Bicyclist-Involved Collision Severity, % Out of 167 Collisions in a 5-year period**



**Figure 5: Pedestrian-Involved Collision Severity, % Out of 167 Collisions in a 5-year period**

### Pedestrian-Involved Collisions

One pedestrian-involved collision was fatal, and two resulted in severe injuries.

- » The single fatal pedestrian-involved collision occurred on Derby Street, just north of 4th Avenue. The victim was a 78-year-old man who was walking in the northbound travel lane of Derby Street, where he was hit by a driver traveling north. There is no sidewalk on that side of Derby Street. It was night time, and street lights were functioning. The road surface was dry and under good condition. The collision was attributed to the actions of the pedestrian.
- » Both severe injury collisions occurred on Bear Mountain Boulevard, and in both cases the driver of the vehicle was determined to be at fault.

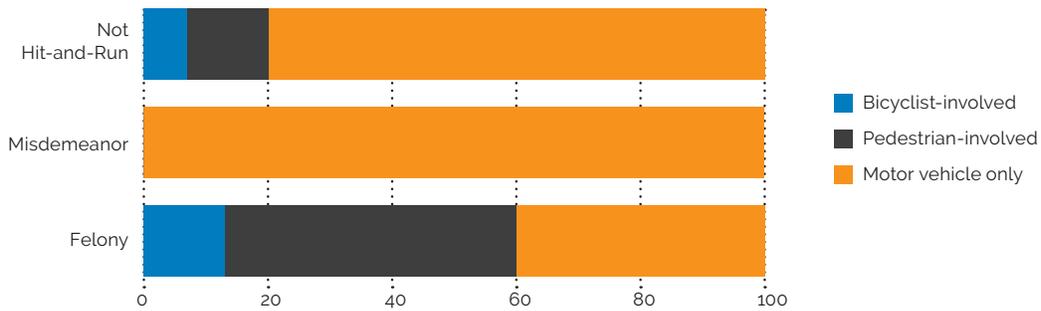
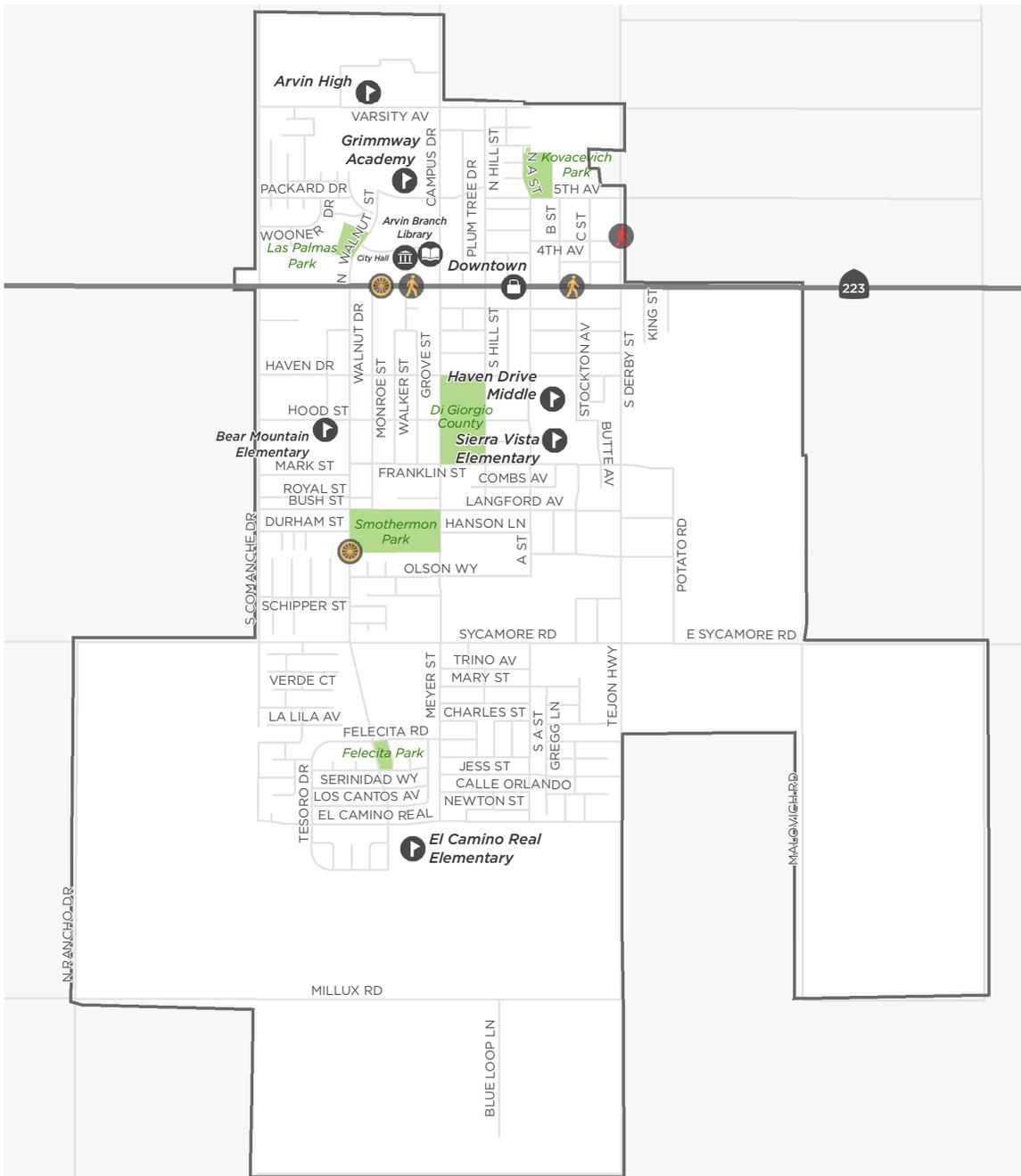


Figure 6: Percent of Hit-and-Run Collisions by Mode

### Hit and Run Collisions

There were 15 felony hit-and-run collisions during the study period. Bicycle- and pedestrian-involved collisions comprise a disproportionately large share of hit-and-runs: 60 percent of hit-and-run collisions in Arvin left a bicyclist or pedestrian killed or severely injured.

Figure 7: Collisions in which cyclists or pedestrians were killed or severely injured

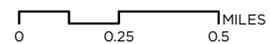


**Collision Severity**

-  Pedestrian Killed
-  Pedestrian Severely Injured
-  Bicyclist Severely Injured

**Destinations + Boundaries**

-  K-12 School
-  Library
-  Shopping
-  Government Building
-  Parks



**alta** Data provided by Kern County,  
Esri, Caltrans.  
Map produced February 2019

## TRAFFIC VOLUMES

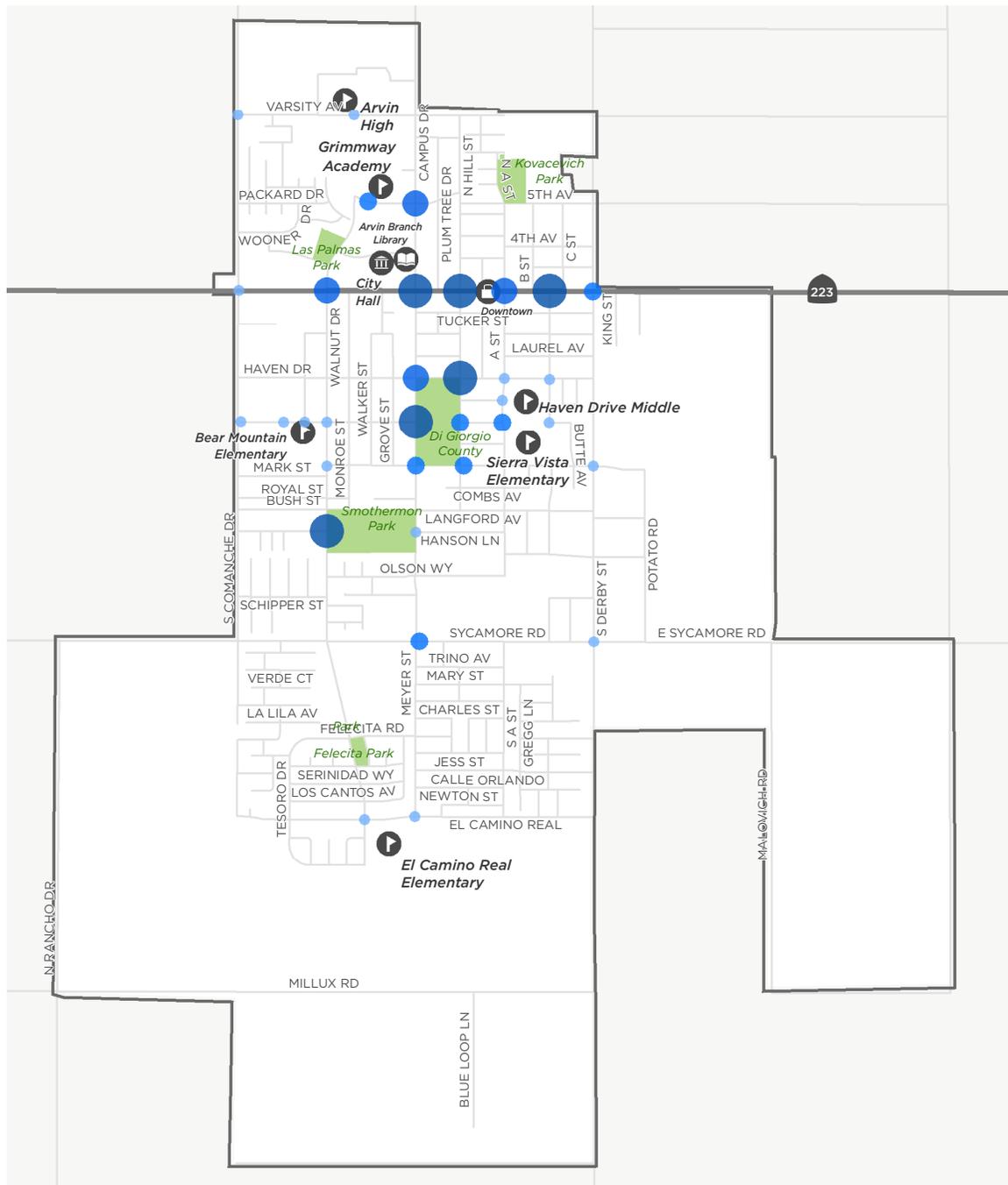
### ACTIVE TRANSPORTATION AND VEHICULAR VOLUMES

The Kern County Council of Governments provided bicycle and pedestrian volume data compiled in 2017 and 2018. The highest volumes of both bikes and pedestrians were found clustered around parks and schools, as well as along Bear Mountain Boulevard. This underscores the need for infrastructure that supports active walking and biking environments in these locations.

Additionally, vehicular volumes were mapped based upon data from Kern County Council of Governments compiled

in 2018. Traffic volumes were not available on all corridors, but where data was available, traffic volumes were all less than 10,000 vehicles per day. As several of Arvin's streets carry two lanes of travel in each direction, this assessment indicates the potential to rebalance the roadway and reallocate space to bikes, pedestrians, and landscape where vehicular volumes can be accommodated with fewer lanes. The Federal Highway Administration (FHWA) advises roadways with ADT volumes of 20,000 or less, such as the segment of Sycamore Road between Comanche Drive and Tejon Highway, make good candidates for road re-balancing studies. Additional research and case studies can be found at [https://safety.fhwa.dot.gov/road\\_diets/guidance/info\\_guide/](https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/).

Figure 8: Bicycle counts per day at specified locations



**Total Bicyclists per Day**

- 1-5
- 6 - 10
- 11 - 30
- 31 - 60

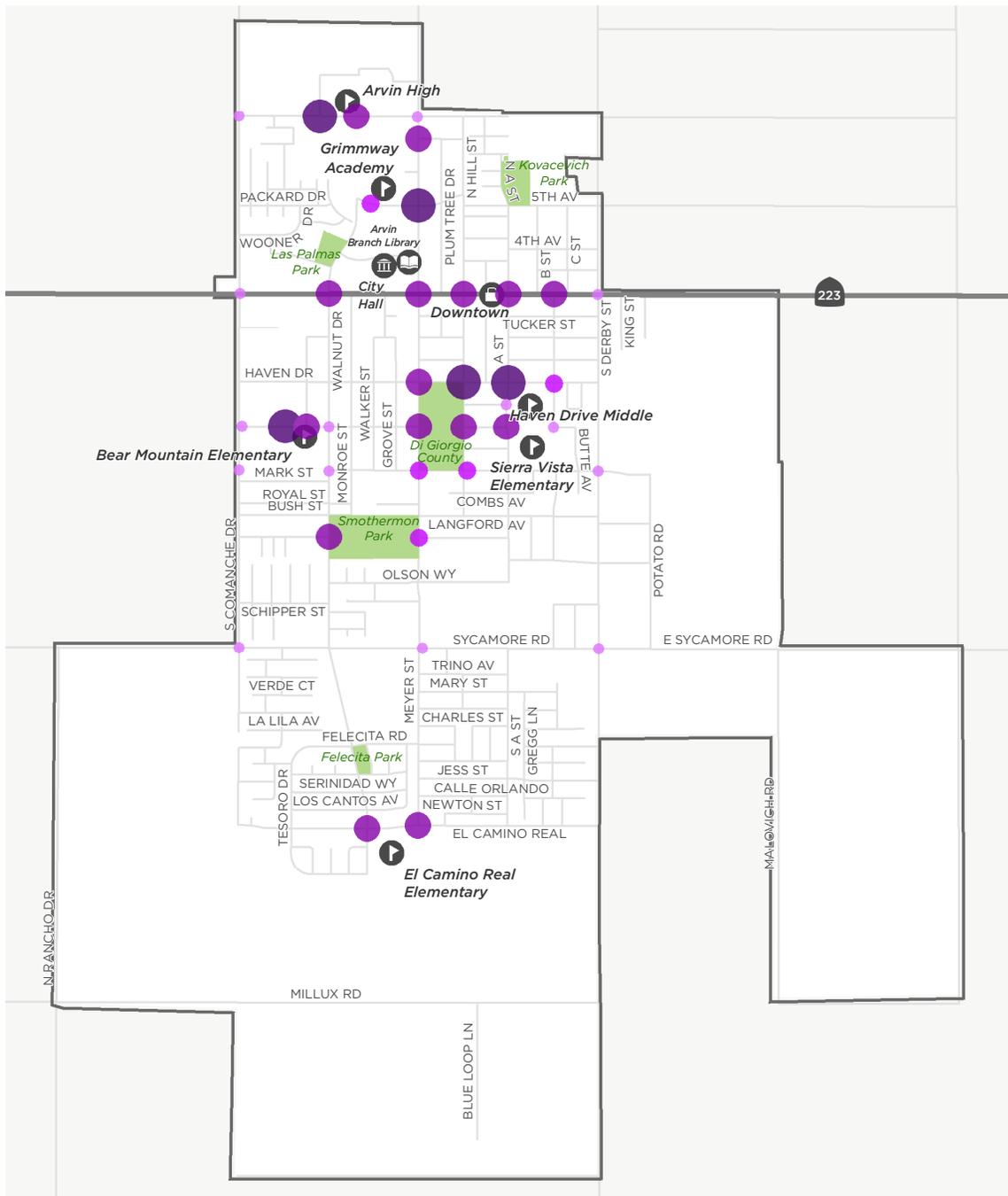
**Destinations + Boundaries**

- K-12 School
- Library
- Shopping
- Government Building
- Parks



**alta** Data provided by Kern County, Esri, Caltrans.  
 PLANNING + DESIGN Map produced February 2019

Figure 9: Pedestrian counts per day at specified locations

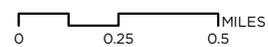


**Total Pedestrians per Day**

- 5 - 50
- 51 - 100
- 101 - 300
- 301 - 600

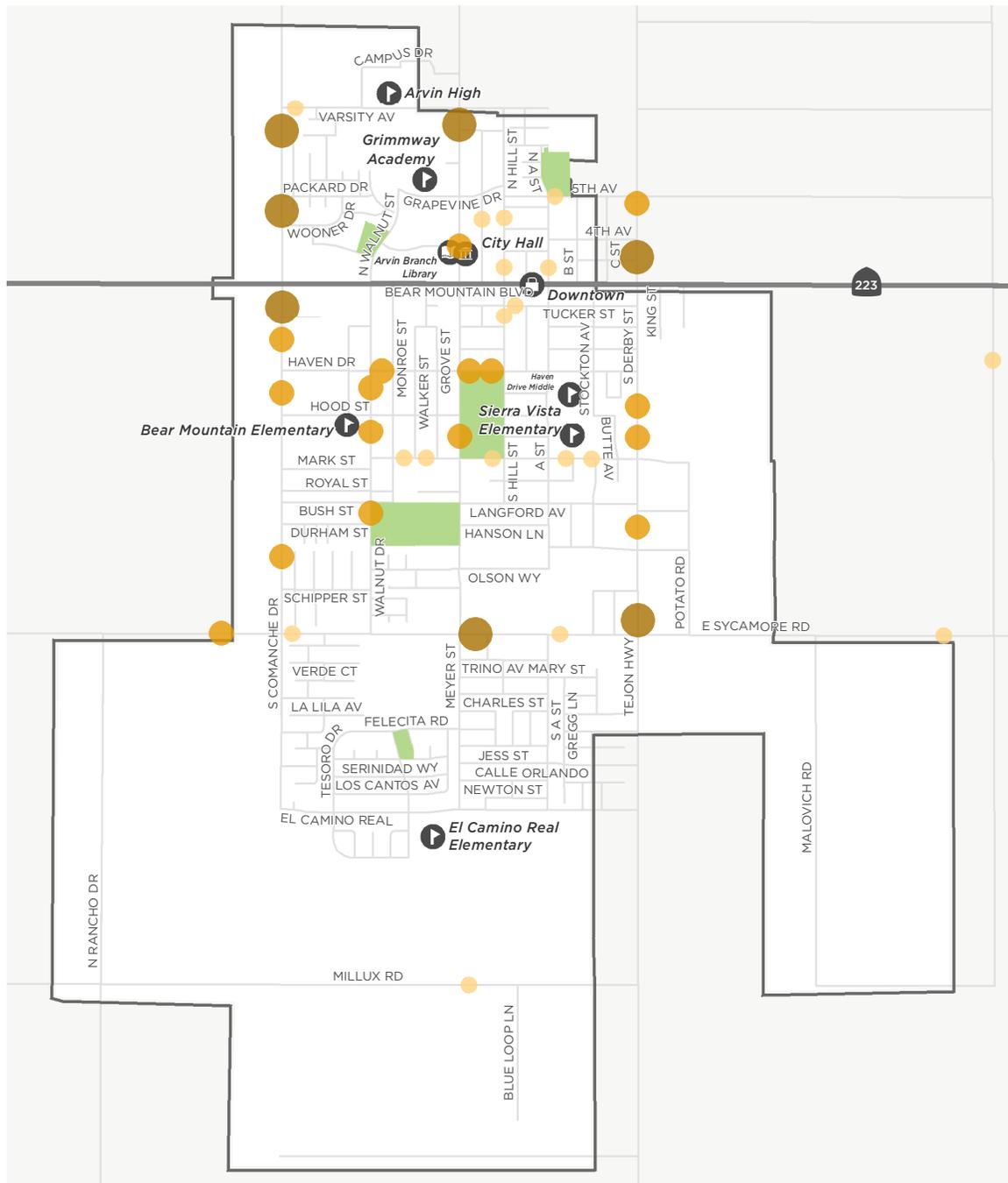
**Destinations + Boundaries**

- ▶ K-12 School
- 📖 Library
- 🛒 Shopping
- 🏛️ Government Building
- Parks



**alta** Data provided by Kern County, Esri, Caltrans.  
 PLANNING + DESIGN Map produced February 2019

Figure 10: Vehicle counts per day at specified locations

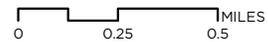


Vehicles per Day

- Less than 2,000
- 2,000 - 4,000
- More than 4,000

Destinations + Boundaries

- K-12 School
- Library
- Shopping
- Government Building
- Parks



**alta** Data provided by Kern County, Esri, Caltrans.  
 PLANNING + DESIGN Map produced February 2019

## EXISTING CONDITIONS TAKEAWAYS

Major takeaways from the existing conditions analyses include:

- » The lack of existing pedestrian and bike infrastructure in Arvin discourages people from walking and biking.



- » Many of Arvin's streets lack sidewalks and ADA-compliant crossings, of particular concern near parks and schools. To close sidewalk gaps in some areas, property acquisition may be required to address constrained rights-of-way.
- » Paving conditions (roadway and sidewalk) are generally poor throughout the City. This is due in part to high volumes of truck traffic and lack of funds for re-paving.



- » Drainage concerns were documented in site visits along several corridors, where pools of water were observed collecting at intersections and failing to flow properly to storm drains.
- » The highest concentration of collisions involving those walking and biking are concentrated on Bear Mountain Boulevard, as well as Walnut Street and Haven Drive.
- » Bear Mountain Boulevard has two different speed limits, 45 mph westbound and 30 mph eastbound. This makes it difficult for people crossing Bear Mountain Boulevard to consistently gauge how fast cars are going.



- » The intersection of Bear Mountain Boulevard and Walnut Street is a major barrier to those walking and biking to access Arvin High School, Las Palmas Park, and Grimmway Academy. As the photo above shows, children frequently cross at this location, which is unsignalized and lacks a marked crosswalk.

- » Arvin has relatively low volumes of vehicular traffic, meaning some of the City's streets have potential to be right-sized to better accommodate walking and biking facilities, and incorporate traffic calming strategies to reduce speeding.
- » Arvin is a relatively small city, measuring approximately 3 miles north-south, and 1.5 miles east-west. Its small size makes it very easy to get from one end to the other via walking and biking, if the appropriate infrastructure is in place.



- » Heat is another barrier to walking, biking, and taking transit in Arvin. Temperatures in the summer months are high, and a lack of transit shelters and shade trees within the public right-of-way make being outside uncomfortable, and a health risk, without shade.
- » Poor air quality in Arvin—due to agriculture, industry, rail freight and road traffic—also acts as a deterrent to walking and biking. Poor air quality can contribute to health issues such as asthma, heart disease, cancer, and more.

- » During the fall and spring, tule fog often forms, which limits visibility and can cause collisions. Those walking and biking are especially vulnerable during this seasonal weather condition.



- » In many locations throughout Arvin, residential landscaping encroaches onto sidewalks, creating a barrier to people walking in the city.
- » Community members who participated in outreach reported that unleashed dogs in the city are a deterrent to walking, and discourage parents from allowing their children to walk to school.



equity

97% Hispanic  
26

Porque hay muchos Latinos

La Cultura Diversidad

Community

Me gusta como en Mexico cuando hablan español

Every one is friendly here &

3

human kindness

la Diversidad

Por k conosco la Mayoria de ser

They offer help when you need it.

Sense community

Conosco casi a todos el mundo

peaceful tranquil

PUBLIC PARTICIPATION

It's very welcoming here

friendly neighbors

It's a small community

Happy / Feliz

Happy / Feliz

Everyone knows each other here

Everybody knows everybody in Avon because it is a small place

I appreciate that you can walk to most places in Avon.  
walkable

Cultura

Everyone is friendly here and

It's very welcoming here

Public participation has been a crucial part of this planning effort. A variety of methods were employed to engage students, residents, and stakeholders throughout the process, including an array of outreach modes, a multi-day community Design Charrette Workshop, and an Advisory Group that provided feedback throughout the project.

## OUTREACH MODES

Outreach to the community for this project was conducted in several ways. All written materials were provided in both English and Spanish. Outreach methods included:

- » **Posters and Flyers.** The City and Dolores Huerta Foundation disseminated flyers and posters through a variety of ways. Materials were posted in prominent locations and distributed in person throughout the City and at other community meetings. Dolores Huerta Foundation trained members of their Vicino Uidos (United Neighbors) Kern Chapter, which focuses on civic engagement education, to engage residents about the project.
- » **Media Releases and Social Media.** Media releases were distributed by the City to local outlets in English and Spanish. Information about the charrette was also posted on the City's website and social media channels, and to local TV stations.
- » **Outreach at Schools.** The team engaged the Arvin Union School District, distributing flyers at schools and district buildings such as the Family Resource Center. Arvin High School and Grimmway Academy students and faculty were engaged by setting up special sessions with students during the charrette.

- » **Other Events.** Both the City and Dolores Huerta Foundation made use of existing events to engage residents about the project. A booth was set up at the Wildflower Festival in Arvin. Dolores Huerta Foundation also directly engaged members of their Vicino Uidos about the project.

### Community Design Charrette

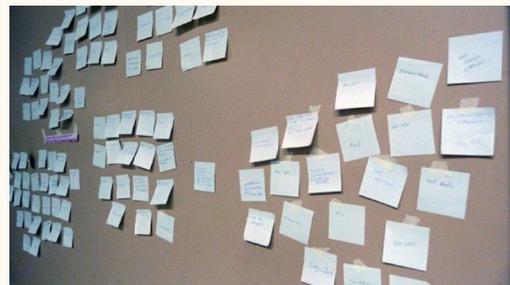
The primary method for engaging the community was a multi-day design charrette held from April 29–May 2, 2019. This method engaged residents and stakeholders in an intensive and highly community-based design exercise to assess and document conditions for all travel modes (walking, bicycling, transit, and driving) and users (youth, seniors, people with disabilities, residents, diverse groups, visitors, and businesses); identify shared values and concerns; and identify and prioritize enhancements in Arvin. The project team leading outreach efforts included staff from the City of Arvin, City Council, Alta Planning + Design, outreach consultant Local Government Commission, and the Dolores Huerta Foundation, a key partner whose role in the project was critical to securing such broad participation and trust with the community.

To meet the needs of Arvin's community, outreach materials and events were available in both English and Spanish, and Spanish was the primary language of delivery of verbal remarks.



Opening design charrette workshop.

The opening community workshop for the design charrette took place on the evening of April 30, 2019 at Veteran's Hall. At the beginning of the workshop, participants were asked to write down 1) five things they value most about Arvin, and 2) their community vision for Arvin in the next 10-20 years. Some participants shared their responses aloud with the group, and all responses were collected and reviewed by the consultant team to inform the design process and understand the community vision. The consultant team provided background on the Complete Streets and Safe Routes to School Plan project and highlighted examples from other communities of the various tools for street design available to make communities more walkable and improve routes to schools.



Participant 20-year visions for Arvin.

**Values Identified in the Opening Community Workshop:**

- » Diversity/Community/Culture
- » Calm, Small
- » Work
- » Schools
- » Family
- » Places to walk to
- » Parks/Trees

After the presentation, the design team asked participants to break up into smaller groups for a design exercise. Participants were asked to use large aerial maps to identify problematic locations that they felt should be addressed in the plan, as well as sharing their own ideas for street design solutions. Participants were provided with colored dot stickers to vote on preferred Complete Streets treatments and Safe Routes to Schools programs. Top comments from community members included safety concerns along Bear Mountain Boulevard, the need for traffic calming and right-sizing roads, and addressing poor paving conditions and lack of ADA-compliant curb ramps in many areas of the city.

## Stakeholder Meetings

During the first several days of the charrette, the project team also held various focus group sessions for different groups of stakeholders. This offered an opportunity to have smaller sessions to discuss issues they felt the consultant team should address in the plan. These meetings included:

- » **Arvin Union School District** A meeting was held with principals and other district staff such as bus drivers.
- » **Emergency Responders** This included the Arvin Police Department, Fire Department and ambulance services.
- » **Pop-Up Tables at Haven Drive Middle School and Sierra Vista Elementary School** The pop-up tables provided an opportunity to engage students walking or biking home, as well as engage parents.



Mapping exercises at the Opening Workshop.



Stakeholder meeting with School District staff.



Talking with the Arvin Police Department and Kern County Fire Department.



Engaging students outside Haven Drive Middle and Sierra Vista Elementary Schools.



High school students participate in a mapping exercise.



Students at Grimmway Academy.

## Student Mapping Sessions

The project team held small working sessions at two local schools during the charrette. During these sessions, the project team engaged several students in a mapping activity similar to the one at the opening workshop.

## Closing Workshop

After engaging the community during the previous activities of the charrette, the consultant team refined the initial community input to develop some preliminary concepts for recommended improvements. The consultant team then presented those preliminary draft recommendations to the community at a closing workshop on May 2, 2019.

The closing presentation included a summary of charrette activities and some of the key findings from the community discussions. A draft recommendations map of city-wide improvements, photosimulations, and suggested tools for improving walkability and creating safer routes to schools in Arvin were also shared. At the end of the workshop, the community members asked questions and offered comments to the consultant team.

After this workshop, the consultant team began using the input gathered from the community during this process to form the basis for the recommendations in this plan.

## Advisory Group Meetings

A Project Advisory Group was formed to help guide the project team with outreach and plan development. Advisory Group members included stakeholders and community representatives from the City of Arvin, Caltrans, Arvin Union School District, California Walks, Dolores Huerta Foundation, Kern County Department of Public Works, Kern Council of Governments, Kern Health Systems and ADA advocates.

The Project Advisory Group convened for three meetings over the course of this plan's development. The Advisory Group helped the project team refine its outreach approach and plan for the design charrette. After the charrette, the Advisory Group helped refine the plan outline and reviewed the recommended concepts.

### Charrette Themes (Closing Workshop)

- » More lighting is needed
- » Fix the poor conditions of the streets
- » Improve sidewalks and fill in missing sections
- » Provide ramps for people with disabilities at all crossings
- » Improve bicycle lanes and paths
- » Add missing stop signs or traffic signals (especially around schools)
- » Fix Comanche Drive and add sidewalks
- » Improve the pedestrian crossings along Bear Mountain Boulevard, particularly at Walnut Street, and add more crossings
- » Speeds too high around schools
- » More benches and trash cans
- » Improve parks for children



# 4

## SAFE ROUTES TO SCHOOL TOOLKIT

Safe Routes to School (SRTS) is a movement to increase the number of students using active modes of transportation to get to and from school and improve pedestrian and bicycle travel around schools. Various stakeholders such as parents/guardians, city staff, school district, and police department staff can use these strategies to understand conditions and identify ways to support infrastructure improvements.

## THE SIX E'S OF SRTS

The SRTS program best practice strategies are commonly referred to as the "6 Es." The "6 Es" are Education, Encouragement, Enforcement, Engineering, Evaluation, and Equity. Each "E" is meant to remove barriers that prevent students from walking and bicycling to school, and they work in coordination to promote active, healthy lifestyles for school families.



### Education

Giving people of all ages and abilities the skills and confidence to ride or walk



### Encouragement

Creating a strong culture that welcomes and celebrates biking and walking



### Enforcement

Ensuring safe roads for all users



### Engineering

Creating safe and convenient places to ride and walk



### Evaluation and Planning

Planning for bicycling and walking as safe and viable transportation options



### Equity

Ensuring that all residents have access to and can take advantage of resources

## EDUCATION

Education involves outreach and activities that teach students, families, and the community about traffic safety and the benefits of active transportation. Education is an important element of SRTS because it helps build the skills users need to choose active modes of transportation. Even students who live too far or are otherwise unable to walk or bike benefit from SRTS education, as they learn to walk safely around their homes, to bus stops, and for other trips.

Some examples of educational activities include:

- » **School-Based Educational Materials** School materials can include bookmarks, backpack flyers, and brochures with safety tips or information about the SRTS program.
- » **Parent/Guardian Workshops** Training volunteers and interested stakeholders helps inform the school community of the planning process and obtains feedback, and it can solicit the SRTS champions who can implement activities.
- » **School Safety Workshops** These presentations can educate students on pedestrian and bicycle safety. Students learn about the importance of wearing a helmet and how to cross the street safely.
- » **School Pedestrian and Bike Rodeos** Rodeos provide students with the opportunity to learn and practice good pedestrian and bicyclist skills in a safe and fun environment. Lessons are age- and grade-appropriate and progressively challenge older students. Rodeos can be conducted at schools and/or community events.
- » **Street-Shops** Informal pop-up workshops are a great way to engage with parents, guardians, students, school staff, and other stakeholders, allowing participants the opportunity to review infrastructure recommendations.
- » **Train the Trainer Workshops** Workshops build staff capacity and local leadership for community members to lead youth in learning safe bicycling skills.
- » **Program Webpage** Parents, students, school staff, residents, and other stakeholders can use the webpage to access additional resources and information about the program and transportation safety.

## ENCOURAGEMENT

Encouragement events and activities celebrate active modes of travel to school and make them more fun and interesting. They build excitement for walking and bicycling while guiding participants to choose active modes of transportation. When budget or donations are available, promote interest by rewarding participating students with backpacks, reflective slap bands, pencils, and suggested routes to school maps. Other strategies that Arvin may consider include:

- » **Walk/Bike to School Days** These events encourage students and families to choose walking and bicycling to school on specific days. International Walk to School Day is the first Wednesday in October, while Bike to School Day is the first Wednesday in May. Some schools celebrate Winter Walk to School Day, Earth Day, or other events throughout the year.
- » **Walking School Bus** Families organize a communal walk to school with their neighbors, including one or more adults. Students, parents, and community leaders gather at designated Walking School Bus "Bus Stops." Each Walking School Bus can be led by a "Bus Driver" who walks the participants into school.

Parents who drive partway to school should be encouraged to park in a designated location near the school, which could be a park, mall, or church parking lot (with a shared-use agreement). This will help mitigate congestion and pollution within the immediate school area.

- » **SRTS Video or Art Challenge** Students create an infomercial video, outreach posters, or other artwork that promotes walking and biking as fun ways to get to school and includes information on how to do it safely.
- » **Golden Sneaker.** Walk Across America, or punch cards are all one- or two-week competitions for students to walk or bike to school as frequently as possible. Classrooms compete with each other and can win trophies such as a sneaker painted gold.
- » **Tactical Urbanism** Demonstration projects involve piloting temporary recommended infrastructure improvements, such as temporarily transforming existing crosswalks into continental crosswalks.

## ENFORCEMENT

Enforcement strategies aim to deter unsafe behaviors of drivers, pedestrians, and bicyclists by encouraging all road users to obey traffic laws and share the road safely. Increasing safety surrounding schools may include enforcing traffic laws, particularly speed limits. The City, school district, police enforcement, and other stakeholders must work together to influence safer behaviors within school zones. Enforcement strategies to consider include the following:

- » **Driver Safety Education** Police enforcement and school districts should partner to promote driver safety education. This can include flyers sent home to parents/guardians that provide educational information on safety, or a back-to-school letter from the chief of police reminding families about traffic safety near school.
- » **Public Outreach Campaign** Banners or yard signs posted near and around schools can remind drivers to slow down and watch for students. These can include messages such as "Drive like your kids walk here" or "Drive 25."
- » **School District and School Partners** Crossing guards are important to help enforce safe crossing behaviors at key intersections and facilitate safe crossing during peak hours.
- » **Speed Monitoring Devices** Strategic use of devices such as Driver Speed Feedback Signs and Mobile Radar Speed Feedback Units help in locations with a high frequency of speeding. Mobile units are most effective when the trailer flashes SLOW DOWN or flashes a bright white light that mimics a photo speed camera or a blue and red light that mimics a police vehicle when drivers are moving too fast. Some speed trailers have the capability to collect traffic count data and speed data throughout the day, which can be used to identify times when more enforcement is needed. Funding of these devices can be secured through grant opportunities.
- » **Staggering Drop-off and Pick-up** Staggered drop-off and pick-up times can help disperse peak traffic around schools and can be done by grouping grade levels. The start times of these groups should be at least 15 minutes apart. This allows the vehicles from the first group to leave the school or be completely out of the area by the time the second group arrives.

» **Pick-up/Drop-off Supervision**

Develop a rotational schedule so that all school sites are regularly monitored during pick-up/drop-off periods. Trained staff or volunteers can facilitate pick-up/drop-off supervision through designated periods. Older students can provide a 'valet' service to help younger students leave and return to their cars quickly, so parents can stay in their vehicles.

» **Neighborhood Speed Watch Program**

School-area residents can provide continuous "eyes on the street" surveillance that can benefit identification of offenders of unsafe vehicular operation. A Neighborhood Speed Watch Program would enlist local residents to document speeding vehicles and their license plate numbers within their school neighborhoods.

» **Vision Zero Program**

The City of Arvin should consider adopting Vision Zero to promote pedestrian and bicyclist safety. Vision Zero is a policy commitment to reduce fatal and severe collision to zero by a certain date.

## ENGINEERING

Engineering considers the physical built environment that make active modes of travel safe and convenient. Engineering also allows communities to design and build sidewalks, paths, crossings, and streets that are safer for all users using active modes of transportation.

Arvin may consider developing some of the following:

» **Develop a site-specific circulation plan for each school.**

This would establish known pick-up/drop-off locations for parents and guardians. The Plan should include vehicular, pedestrian, and bicycle accessibility, bike parking locations, and potential conflict areas. Collaboration between the City of Arvin and Arvin Union School District, Kern High School District, and Grimmway Academy, as well as an SRTS team, is recommended to coordinate and establish a circulation plan for each of the six schools in the City.

» **Bike storage facilities**

Enhance campus bicycle, scooter, and skateboard storage facilities to encourage students to use active transportation. Designated primary bicycle parking locations is an important way of legitimizing bicycling to school. Bike parking should be on a firm, stable surface, bike racks should support bicycles from two points of contact, and a fence should protect bikes from theft during the school day.



Student pick-up and drop-off supervision can be scheduled to increase safety.

Additional infrastructure recommendations are detailed in the Recommendations chapter of this document, as well as the Design Toolkit Appendix. These include crossing improvements, such as high-visibility crosswalks, crossing signs reinforced with push-button activated flashing lights, and curb extensions to narrow crossing distances; traffic calming measures, such as speed bumps or

humps, curb extensions either at crossings or where an existing red curb is located, and lane narrowing; ADA upgrades, such as bi-directional curb ramps and the installation of new sidewalks where gaps exist in the network; and expanding the City's bike network and connecting it to key destinations including schools.

## EVALUATION

Evaluation consists of tracking progress of program goals and assessing successes. It also provides a framework to determine if SRTS strategies and the program itself are having the desired outcomes of increased safety and active mode share. It is important to recognize that behavior change takes time, so incremental change such as improving perceptions of walking and biking can be considered as success.

The National Center for SRTS provides free online tools for evaluating SRTS programs, and other data collected by partners can be used to better understand the impacts of the program.

- » **Student Travel Tallies** These hand-raising tallies measure how students get to school. The classroom teacher or a volunteer asks students to raise their hands to indicate which mode they used to get to school over multiple days in a single week.
- » **Parent/Guardian Surveys** Surveys can collect the transportation decision-maker's opinions about walking and biking, as well as factors that affect why they allow or don't allow their children to walk or bike to school.
- » **Public Health Data** Statistics about transportation-related crashes, emergency room visits, helmet use, obesity and asthma rates, and even student truancy rates can all indicate the impact of a SRTS program.

- » **Success Stories** It is important to celebrate the community organizing and coming together around SRTS. Cities can publish a SRTS newsletter, a column in a larger City newsletter, a report card, or a blog post to communicate about the SRTS program with the school communities and the general public.

The City may also use UC Berkeley Safe TREC's Street Story platform as a tool for gathering and evaluating crash, near-miss, and other data that is often not reported to the police.

## EQUITY

Safe and affordable transportation options are not always available to those who need them the most. Equity includes efforts to ensure that all students, families, and community members have equal access to SRTS activities. Equity efforts create awareness of the need to understand and address obstacles, create access, and ensure safe and equitable outcomes for all. Vulnerable populations, such as children, older adults, people of color, people with limited English proficiency, and low-income families, rely heavily on affordable transportation options – specifically walking, biking, and transit. A lack of high-quality walking, biking, and transit facilities can result in unsafe travel and long travel times. Active transportation facilities help reduce the disproportionate economic and health burdens of vulnerable communities.

Strategies the City may consider to increase equity in the Safe Routes to School program include:

- » **Perform an equity analysis** that looks at the needs specific to Arvin's schools. This can consider questions like: are schools structuring programs so bus riders can participate in punch card competitions (such as by walking around the school campus)? Are students with disabilities able to participate in on-bike education? Are materials provided in the languages spoken by families? This will help ensure equitable distribution of SRTS resources.
- » **Provide materials in Spanish** to reach school with students and parents whose first language might be Spanish
- » **Train Spanish-speaking people** to present at schools or at parent meetings
- » **Provide free helmets** to students, perhaps prioritizing schools with high populations of low-income students

## DEVELOPING AND SUSTAINING PROGRAMS

In addition to the strategies and programming ideas provided in this chapter, it is important to combine a mix of various strategies to maximize benefits and lead to long-lasting impact. Stakeholders play an important role in developing programs that can be sustained through education and promotion of the SRTS program. Local partners include school families, school and district staff, police,

after-school providers, local libraries, bike shops, advocates, and others. These partners can together create and sustain a robust SRTS program.

Funding also plays an important role to sustain SRTS programs, additional funding sources are detailed in the Implementation chapter of this plan.



5

**RECOMMENDED  
INFRASTRUCTURE  
PROJECTS**

For many projects across the United States, transportation engineers prioritized the fast movement of motor vehicles over all other roadway users, including the most vulnerable: those walking, biking, and taking transit. Complete Streets reverses that approach and works to create streets that are welcoming and pleasant for everyone and, most importantly, safe for everyone. This includes people with accessibility or mobility needs, children, and seniors.

## DESIGN APPROACH

A complete street is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truck drivers, and motorists, appropriate to the street's function and context. Every complete street looks different, according to its context, community preferences, the types of road users, and their needs.

There is no one-size-fits-all definition of a complete street; rather, it is a design approach that integrates people and place in the planning, design, construction, operation, and maintenance of transportation networks. When applied at the city scale, a wide range of tools are applied to create a connected network where certain streets prioritize different modes of travel. This chapter highlights different design strategies that can be used to enhance the safety and experience of the street for all users and can be applied to create Safe Routes to School.

Like any citywide project, the recommended improvements in this chapter are made up of a combination of smaller design elements that work together to achieve the desired change (e.g. traffic calming). These elements are founded on local and national guidelines, and apply standard traffic engineering tools and designs. For more specific details about the tools, facilities and design elements cited below, refer to Caltrans Complete Streets Resources and Complete Streets Elements Toolbox, the 2012 AASHTO Guide for the Development of Bicycle Facilities, the 2004 AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, the 2012 NACTO Urban Bikeway Design Guide, and the 2017 FHWA Small Town and Rural Design Guide.

## UNIVERSAL IMPROVEMENTS

This plan includes both site-specific infrastructure improvements and universal infrastructure improvements. These universal improvements represent best-practice design standards and should be used whenever designing new infrastructure or upgrading existing infrastructure. These universal improvements can be applied throughout the City and should occur as funding is available and as part of regular roadway maintenance, when feasible.

### » Crossing Improvements:

- Bi-directional curb ramps with tactile domes
- High-visibility crosswalks
- Curb extensions, where feasible, to shorten crossing distances and calm traffic
- Advanced yield markings and pedestrian-activated beacons (at unsignalized locations)
- Signals updated to include a Leading Pedestrian Interval (a head start for people crossing the street) at intersections near major destinations and commercial areas

### » Shade and Green Infrastructure Improvements:

- Bus stops should have a shade structure and bench to maximize comfort while waiting for the bus
- Street trees should be planted wherever feasible to maximize shade and encourage walking and biking
- Where curb extensions and planted center medians are installed, consider stormwater-capturing designs to improve water quality and manage stormwater flows

- » Safe Routes to School Improvements:
  - School Zone signs should be placed within school zones to indicate to drivers there may be children present. They should be combined with 15 to 25 mile per hour speed limit signs
  - Crosswalks in school zones should be marked in yellow and accompanied by pavement markings and at minimum should include advance warning signs (e.g., SCHOOL, SLOW SCHOOL X-ING)
  - Curb paint and signs should be used to communicate and enforce parking restrictions in school loading zones
  - Speed feedback signs can be placed strategically to deter drivers from speeding in or near school zones
  - Install pedestrian-scale lighting through Arvin, but with priority given to corridors that connect schools
- » Lighting: Pedestrian-scale lighting is recommended along transit corridors and safe routes to school to improve visibility and feeling of safety at night.

- » Curbs, gutters, sidewalks, and street widening on Derby Street from Haven Drive to Schipper Avenue, on Langford Avenue from A Street to Meyer Street, and on Varsity Avenue outside of the high school

## RECOMMENDED PROJECTS

### Prioritization Framework

To guide implementation, a prioritization framework was developed to evaluate recommended projects. This methodology enables the City to identify priority projects and phase the implementation of projects over several years. Some projects can also be implemented as part of routine roadway maintenance programs. Furthermore, this prioritization plan is aligned with the state's Active Transportation Program grant criteria, which is a key source of state funding the City can pursue for Safe Routes to School and Complete Streets improvements.

Recommended projects are sorted into three tiers:

### SHORT-TERM PROJECTS

These projects are lower-cost, quick first steps that can be taken to improve and expand the existing active transportation network, with a focus on making connections to schools and parks. These projects can generally be completed within five years of Plan adoption, due to lower cost and ease of implementation (i.e., the improvements can be implemented through pavement markings and signage alone and within the existing right-of-way). This tier also includes projects that have been funded through external grants, but that have not yet begun design or

## FUNDED PROJECTS

As of the adoption of this plan, the City of Arvin has secured funding for a number of projects that will contribute to a more walkable and bikable Arvin. These include:

- » Improvements to Franklin Street, including street repaving, a median, and improved crossings
- » A signal at Bear Mountain Boulevard/ Derby Street
- » \$500,000 for a shared-use path from 4th Street to Garden in the Sun Park

implementation at the time of this Plan's adoption. These projects are shown in Table 2.

### MEDIUM-TERM PROJECTS

These projects close crucial gaps in the existing and Medium-term Project networks and provide connections to major destinations such as transit stations, key employment and retail centers, and parks. Unlike Short-term Projects, Medium-term Projects are more complex to design and construct than simply re-stripping a roadway. These projects include bikeways that are physically separated (i.e., Class I shared-use paths or Class IV separated bikeways) or Class III Bicycle Boulevards with traffic calming elements that stretch across a city. These facilities typically require external grant funding to implement, since they tend to be costlier than Short-term Projects. Implementation of Medium-term projects may begin at the same time as Short-term Projects (e.g., conducting studies or design work, applying for grant funding), but can take longer to fully design and construct because they are often more complex and more likely to be dependent upon competitive grant awards for implementation. These projects are shown in Table 3.

### LONG-TERM PROJECTS

This final tier of projects is crucial to building out a complete network of active transportation facilities that connect users to local destinations and link Arvin to neighboring jurisdictions. It is comprised

of projects that do not classify as Short-term or Medium-term due to budgetary or physical limitations. However, the City can also implement these projects in the Short- or Medium-term if a favorable opportunity arises, such as roadway reconstruction or other concurrent projects. These projects are shown in Table 4.

### Prioritized Projects

Although the City has previously invested in bicycle and walking infrastructure to connect community residents to key destinations, these existing networks are incomplete and disconnected. Priority projects will help complete this network.

The following prioritized project lists and map (page 72) consider past outreach efforts where community members shared feedback, as well as the recommendations from the Kern Region Active Transportation Plan. Several key locations that stakeholders and community members identified during the design charrette include Bear Mountain Boulevard, Franklin Street, Haven Drive, Comanche Drive, Walnut Drive, and Tejon Highway/Derby Street. These corridors are emblematic of several improvement types recommended more broadly throughout the city.

More details on recommended projects on these key corridors are provided following the project map and prioritized project tables. Estimated costs were developed based on similar recent projects and only reflect unit costs. They do not account for plans, specifications, and estimates, construction, or contingency. For a breakdown of individual unit costs for each type of facility, please see Table 5 in Chapter 6: Implementation Plan.

Note that any project identified in this plan that calls for roadway reconfiguration will require additional community input and traffic analysis to finalize the design. Further, all crossing improvements recommended at uncontrolled intersections or at midblock locations will require a traffic study prior to proceeding with design and implementation. Similarly, corridors with traffic calming recommendations will require a traffic study to determine

an appropriate solution (e.g., curb extensions, speed humps, or roadway reconfigurations). Further, at locations where curb extensions are proposed, design details will be carefully considered for bicyclists to assure that they are visibly warned of the narrowing of the intersection and to assist them in maintaining proper spacing in the roadway.

**Table 2: Short-Term Project Recommendations**

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
5th Avenue	Hill Street	-	Crossing Improvement	High-Visibility Crosswalks (north and east legs)	2	\$5,000	\$7,000
				Advanced Yield Markings in north-south direction	2	\$2,000	
5th Avenue	Hill Street	N A Street	Bicycle Boulevard	Class III Bicycle Boulevard	0.1	\$38,079	\$38,079
Bear Mountain Boulevard	East of Comanche Drive	-	Traffic Calming	Speed Feedback Sign	1	\$10,000	\$10,000
Bear Mountain Boulevard	West of Derby Street	-	Traffic Calming	Speed Feedback Sign	1	\$10,000	\$10,000
Bear Mountain Boulevard	Monroe Street	-	Crossing Improvement	High-Visibility Crosswalk (south leg)	1	\$2,500	\$2,500
Bear Mountain Boulevard	Stockton Avenue	-	Signals and Beacons	Rectangular Rapid Flashing Beacons	2	\$40,000	\$44,500
			Crossing Improvement	High-Visibility Crosswalk (west leg)	1	\$2,500	
				Advanced Yield Markings in east-west direction	2	\$2,000	

**Table 2: Short-Term Project Recommendations**

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Bear Mountain Boulevard	St Thomas Street	-	Crossing Improvement	High-Visibility Crosswalk (west leg)	1	\$2,500	\$44,500
				Advance Yield Markings in east-west direction	2	\$2,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacons	2	\$40,000	
Comanche Dr	Sycamore Road	-	Crossing Improvement	High-visibility crosswalks	4	\$10,000	\$170,000
				Curb extensions	4	\$160,000	
Comanche Drive	Varsity Avenue	Sycamore Road	Bike Lane	Class II Bike Lane	1.5	\$153,609	\$153,609
Franklin Street	Walnut Drive	Derby Street	Bike Lane	Road Diet with Class II Buffered Bike Lane	0.8	\$95,341	\$95,341
Franklin Street*	A Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
Franklin Street*	Walnut Drive	-	Crossing Improvement	High-Visibility Crosswalks (north and east legs)	2	\$5,000	\$147,000
				Advanced Yield Markings in north-south direction	2	\$2,000	
				Curb Extensions (northeast and southeast corners, northwest midblock)	3	\$120,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacon	1	\$20,000	
Franklin Street	Derby Street	-	Crossing Improvement	High-Visibility Crosswalks (west and south legs)	2	\$5,000	\$7,000
				Advanced Yield Markings in north-south direction	2	\$2,000	

\*Partially funded

COMPLETE STREETS AND SAFE ROUTES TO SCHOOL PLANS

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Franklin Street	Midblock (between Strand Avenue and Stockton Avenue)	-	Crossing Improvement	High-Visibility Crosswalk	1	\$2,500	\$4,500
				Advanced Yield Markings in east-west direction	2	\$2,000	
Franklin Street	Butte Avenue	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$12,000
				Advanced Yield Markings in east-west direction	2	\$2,000	
Franklin Street*	Hill Street	-	Crossing Improvement	High-Visibility Crosswalks (north, south, east legs)	3	\$7,500	\$209,500
				Curb Extensions (all corners)	4	\$160,000	
				Advanced Yield Markings in east-west direction	2	\$2,000	
			Signals and Beacons	2	\$40,000		
Grapevine Drive	Campus Drive	Hill Street	Bicycle Boulevard	Class III Bicycle Boulevard	0.1	\$39,000	\$39,000
Grapevine Drive	Hill Street		Crossing Improvement	High-Visibility Crosswalk (west leg)	1	\$2,500	\$2,500
Haven Drive	Hill Street	-	Crossing Improvement	High-Visibility Crosswalks (north, east, and south legs)	3	\$7,500	\$49,500
				Advanced Yield Markings in east-west direction	2	\$2,000	
			Signals and Beacons	2	\$40,000		
Haven Drive	Derby Street	-	Signals and Beacons	Convert to 3-way Stop	2	\$1,000	\$1,000
Hill Street	Grapevine Drive	5th Avenue	Bike Boulevard	Class III Bicycle Route	0.03	\$4,419	\$4,419
Hood Street	Walnut Drive	-	Crossing Improvement	High-Visibility Crosswalks (north, east, and south legs)	3	\$7,500	\$7,500

Table 2: Short-Term Project Recommendations

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Hood Street	A Street	-	Crossing Improvement	High-Visibility Crosswalks (north and west legs)	2	\$5,000	\$128,000
				Advanced Yield Markings in north-south direction	2	\$2,000	
				Curb Extensions (northwest and southwest corners, northeast midblock)	3	\$120,000	
			Signals and Beacons	Convert to 3-way Stop	2	\$1,000	
Hood Street	Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (west and south legs)	2	\$5,000	\$127,000
				Advanced Yield Markings in north-south direction	2	\$2,000	
				Curb Extensions (southwest corner and southeast midblock)	2	\$80,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacons	2	\$40,000	
Mark Street	Comanche Drive	Walnut Drive	Bicycle Boulevard	Class III Bicycle Boulevard	0.3	\$76,265	\$76,265
Meyer Street	Sycamore Road	El Camino Real	Bicycle Boulevard	Class III Bicycle Boulevard	0.5	\$150,841	\$150,841
Olson Way	Walnut Drive	N A Street	Class II Bike Lane	Class II Bike Lane	0.5	\$51,917	\$51,917
Plumtree Drive	Bear Mountain Boulevard	-	Crossing Improvement	High-Visibility Crosswalk (north leg)	1	\$2,500	\$2,500
Rayo De La Luna Drive	Sycamore Drive	El Camino Real	Bicycle Boulevard	Class III Bicycle Boulevard	0.5	\$156,000	\$156,000
Tejon Highway	Bear Mountain Boulevard	Burkett Boulevard	Bike Lane	Class II Bike Lane	2.5	\$255,000	\$255,000
Varsity Avenue	Comanche Drive	Campus Drive	Bicycle Boulevard	Class III Bicycle Boulevard	0.5	\$152,324	\$152,324

**Table 3: Medium-Term Project Recommendations**

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
5th Avenue	N A Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
A Street	5th Avenue	Olson Way	Bicycle Boulevard	Class III Bicycle Boulevard	1.1	\$320,725	\$320,725
S A Street	Langford Avenue	Hanson Lane	Sidewalk Gap Closure	Sidewalk (west side of street)	0.1	\$22,391	\$22,391
Bear Mountain Boulevard	Comanche Drive	Derby Street	Separated Bikeway	Class IV Separated Bikeway	1.0	low \$220,000	\$220,000
						med \$360,000	\$360,000
						high \$1,410,000	\$1,410,000
Bear Mountain Boulevard	Derby Street	Malovich Road	Sidewalk Gap Closure	Sidewalk (south side of street)	0.5	\$268,338	\$268,338
Bear Mountain Boulevard	Comanche Drive*	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$130,000
				Curb Extensions (southwest, northwest, and northeast corners)	3	\$120,000	
Bear Mountain Boulevard	Walnut Drive*	-	Crossing Improvement	High-Visibility Crosswalk (west leg)	1	\$2,500	\$1,373,500
				Pedestrian Refuge Island	1	\$30,000	
				Slip Lane Closure	1	\$1,000	
				Square Sidewalk and Crosswalk	0.1	140000	
			Signals and Beacons	Traffic Signal	4	\$1,200,000	
Bear Mountain Boulevard	Campus Drive/ Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (north, south, and east legs)	3	\$7,500	\$171,500
				Advanced Stop Bars (all legs)	4	\$4,000	
				Curb Extensions (all corners)	4	\$160,000	

\* Recommendations must be constructed together as a single project.

Table 3: Medium-Term Project Recommendations

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Bear Mountain Boulevard	Hill Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
Bear Mountain Boulevard	Acala Street	-	Crossing Improvement	High-Visibility Crosswalks (north and west legs)	2	\$5,000	\$127,000
				Advanced Yield Markings (east-west direction)	2	\$2,000	
				Curb Extensions (northwest corner and southwest midblock)	2	\$80,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacon	2	\$40,000	
Bear Mountain Boulevard	A Street	-	Crossing Improvement	High-Visibility Crosswalks (north, south, and east legs)	3	\$7,500	\$129,500
				Advanced Yield Markings (east-west direction)	2	\$2,000	
				Curb extensions	2	\$80,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacons	2	\$40,000	
Bear Mountain Boulevard	Derby Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$1,371,000
				Curb Extensions (all corners)	4	\$160,000	
			Signals and Beacons*	W-11-2, W16-9P Pedestrian Ahead Signage	2	\$1,000	
				Traffic signal	4	\$1,200,000	

\*The recommended traffic signal at Derby Street is already funded through the State Highway Operation and Protection Program (SHOPP)

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Bear Mountain Boulevard	Morton Place	-	Crossing Improvement	High-Visibility Crosswalks (north, south, and east legs)	3	\$7,500	\$209,500
				Advanced Yield Markings (east-west direction)	2	\$2,000	
				Curb Extensions (all corners)	4	\$160,000	
			Signals and Beacons	Rectangular Rapid Flashing Beacon	2	\$40,000	
Campus Drive	Grapevine Drive	-	Crossing Improvement	Curb Extensions (all corners)	4	\$160,000	\$160,000
Campus Drive	4th Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$410,000
				Curb Extensions (all corners)	4	\$160,000	
			Signals and Beacons	High-Intensity Activated Crosswalk (HAWK) beacon	1	\$80,000	
Comanche Drive	Mark Street	Durham Street	Sidewalk Gap Closure	Sidewalk (east side of street)	0.3	\$104,122	\$104,122
Comanche Drive	Haven Drive	Hood Street	Sidewalk Gap Closure	Sidewalk (east side of street)	0.1	\$46,675	\$46,675
Comanche Drive	Shane Court	Haven Drive	Sidewalk Gap Closure	Sidewalk (east side of street)	0.1	\$32,314	\$32,314
Derby Street	Haven Drive	Sycamore Road	Sidewalk Gap Closure	Sidewalk (west side of street)	0.8	\$269,280	\$269,280
Durham Street	Walnut Drive	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
Fallbrook Avenue	A Street	-	Crossing Improvement	High-Visibility Crosswalks (north and east legs)	2	\$5,000	\$125,000
				Curb Extensions (northwest midblock, northeast and southeast corners)	3	\$120,000	

Table 3: Medium-Term Project Recommendations

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Fallbrook Avenue	A Street	Tejon Highway	Sidewalk Gap Closure	Sidewalks (both sides of street)	0.3	\$182,835	\$182,835
Haven Dr	A Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
Haven Drive	Stockton Avenue	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$170,000
				Curb Extensions (all corners)	4	\$160,000	
Hood Street	Walnut Drive	Walker Street	Sidewalk Gap Closure	Sidewalk (south side of street)	0.1	\$42,367	\$42,367
Langford Avenue	Meyer Street	S A Street	Sidewalk Gap Closure	Sidewalk (south side of street)	0.3	\$91,302	\$91,302
Meyer Street	Olson Way	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$172,000
				Advanced Yield Markings (north-south direction)	2	\$2,000	
				Curb extensions (all corners)	4	\$160,000	
Meyer Street	Olson Way	Schipper Avenue	Sidewalk Gap Closure	Add sidewalks on east side of street	0.1	\$20,106	\$20,106
Meyer Street	Schipper Avenue	Felecita Road	Sidewalk Gap Closure	Add sidewalks on west side of street	0.4	\$143,257	\$143,257
Meyer Street	Hanson Lane	-	Signals and Beacons	Rectangular Rapid Flashing Beacon	1	\$20,000	\$107,000
			Crossing Improvement	High-Visibility Crosswalks (south and east legs)	2	\$5,000	
				Advanced yield markings in north-south direction	2	\$2,000	
				Curb Extensions (southwest midblock and southeast corner)	2	\$80,000	
Santa Rosa Street	Orange Avenue	Haven Drive	Sidewalk Gap Closure	Sidewalk (both sides of street)	0.2	\$149,361	\$149,361
Sycamore Road	Walnut Drive	Payne Drive	Sidewalk Gap Closure	Sidewalk (south side of street)	0.3	\$120,054	\$120,054

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Sycamore Road	Walnut Drive	-	Signals and Beacons	Rectangular Rapid Flashing Beacon	1	\$20,000	\$147,000
			Crossing Improvement	High-Visibility Crosswalks (north and east legs)	2	\$5,000	
				Advanced Yield Markings (east-west direction)	2	\$2,000	
				Curb Extensions (northwest and northeast corners, southeast midblock)	3	\$120,000	
Varsity Avenue	805' east of Comanche Drive	Campus Drive	Sidewalk Gap Closure	Add sidewalks on south side of street	0.4	\$135,717	\$135,717
Varsity Avenue	midblock (between Comanche Drive and Campus Drive)	-	Crossing Improvement	High-Visibility Crosswalk	1	\$2,500	\$82,500
				Curb Extensions (northeast corner, southeast midblock)	2	\$80,000	
Walnut Drive	Bear Mountain Boulevard	Sycamore Drive	Bicycle Boulevard	Class III Bicycle Boulevard	1.0	\$301,272	\$301,272

Table 4: Long-Term Project Recommendations

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
Campus Drive	Varsity Avenue	Bear Mountain Blvd	Bike Lane	Road Diet with Class II Buffered Bike Lane	0.5	\$62,748	\$62,748
Campus Drive	Varsity Avenue	-	Crossing Improvement	Curb Extensions (all corners)	4	\$160,000	\$1,370,000
				High-Visibility Crosswalks (all legs)	4	\$10,000	
				Signals and Beacons	4	\$1,200,000	
Comanche Drive	Varsity Avenue	-	Traffic Calming	Roundabout	1	\$500,000	\$500,000
El Camino Real	Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (north and west legs)	2	\$5,000	\$1,325,000
				Curb Extensions (northeast, northwest, and southwest corners)	3	\$120,000	
				Signals and Beacons	4	\$1,200,000	
Franklin Street*	Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$1,210,000
				Signals and Beacons	4	\$1,200,000	
Haven Drive	Comanche Drive	Derby Street	Traffic Calming	Chicanes	1.0	\$40,649	\$40,649 to \$101,622
						\$101,622	
Haven Drive	Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (all legs)	4	\$10,000	\$1,210,000
				Signals and Beacons	4	\$1,200,000	
Haven Drive	Comanche Drive	Derby Street	Bike Lane	Class II Bike Lane	1.0	\$103,656	\$144,305
			Traffic Calming	Chicanes		\$40,649	
						\$101,623	\$205,279
Meyer Street	Bear Mountain Boulevard	Sycamore Drive	Bike Lane	Road Diet with Class II Buffered Bike Lane	1.0	\$102,468	\$102,468

\*Partially funded

Corridor	Start	End	Map Category	Project Detail	Length (miles) or # Units	Unit Cost	Total Cost
North City Path	Bear Mountain Boulevard	Varsity Avenue	Shared Use Path	Class I Shared Use Path	0.5	\$1,003,862	\$1,003,862
Sycamore Road	Meyer Street	-	Crossing Improvement	High-Visibility Crosswalks (north, east, and south leg)	3	\$7,500	\$1,327,500
				Curb Extensions (northwest, northeast, and southeast corners)	3	\$120,000	
				Signals and Beacons	Traffic Signal (all legs)	4	
Varsity Avenue	Campus Drive	-	Traffic Calming	Roundabout	1	\$500,000	\$500,000

# RECOMMENDATIONS RECOMENDACIONES

COMPLETE STREETS AND  
SAFE ROUTES TO SCHOOL PLAN  
PLAN DE CALLES COMPLETAS Y  
RUTAS SEGURAS A LA ESCUELA

## Recommendations Recomendaciones

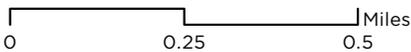
- Crossing Improvement  
Mejora de Cruce
- Signals or Beacons  
Semáforos o Luces  
de Advertencia
- Traffic Calming  
Calmar el Tráfico
- Shared Use Path  
Ruta de Uso Compartido
- Bicycle Lane  
Carril de Ciclismo
- Bicycle Boulevard  
Boulevard de Bicicletas
- Separated Bikeway  
Carril Separado  
para Bicicletas
- Traffic Calming  
Calmar el Tráfico
- Sidewalk Gap Closure  
Cerrar Brecha en Red  
de Aceras

## Existing Bikeways Ciclovías Existentes

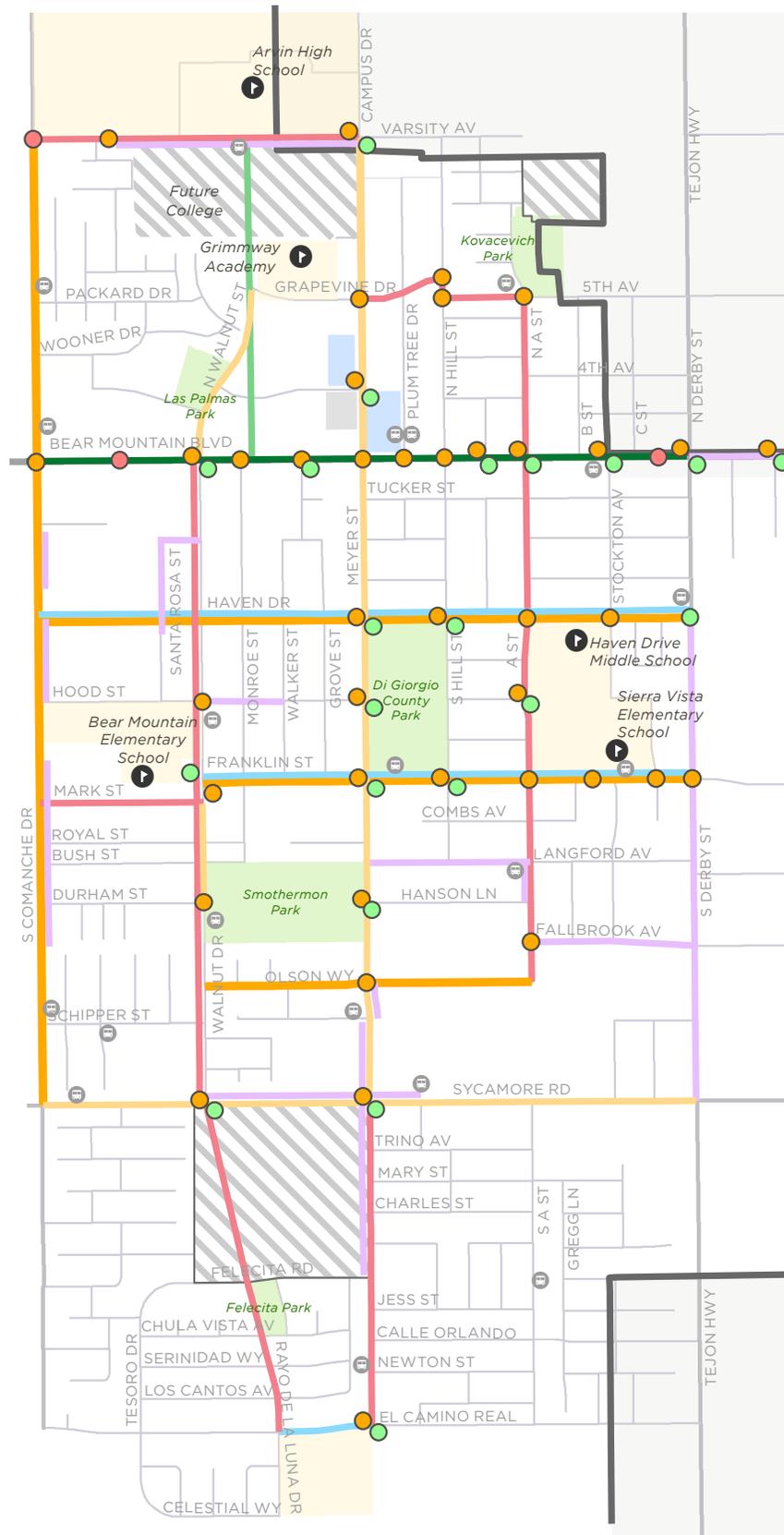
- Bicycle Lane  
Carril de Ciclismo

## Boundaries & Destinations Límites y Destinos

- Transit Stop  
Parada de Tránsito
- Library / Biblioteca
- School / Escuela
- Government Building  
Edificio del Gobierno
- Park / Parque
- Parcel Under Development  
Parcela en Desarrollo
- Arvin Boundary  
Límite de Arvin



Data provided by Kern County,  
Esri, Caltrans.  
Map produced October 2019





Recommended improvements to Bear Mountain Boulevard include marked crosswalks at all intersections and pedestrian-activated flashing beacons.

### Key Project Details

The following projects were identified in the community design charrette as top priorities for the community.

#### Bear Mountain Boulevard

Bear Mountain Boulevard, a Caltrans-controlled corridor, was a major topic of concern for the community at the charrette. This corridor has the highest history of collisions within Arvin. It is also the widest road within the city, and therefore pedestrians are exposed to traffic for the longest amount of time while crossing the street. Additionally, in some locations along Bear Mountain Boulevard, there are distances of as much as 1/4-mile between marked crosswalks. It is a major barrier for pedestrians to cross, particularly for students travelling to and from schools on the north side of Arvin.

Any improvements to Bear Mountain Boulevard will require coordination with and approval from Caltrans. Treatments along this corridor cannot be installed in phases over time – they must be installed as one project in order for it to function as designed. Further, traffic studies and engineering feasibility studies will need to be conducted in coordination with Caltrans before anything can be built.

Improving conditions at the intersection of Bear Mountain Boulevard and Walnut Street was a top priority for community members at the design charrette. Specifically, Arvin residents indicated a desire for the City to install a pedestrian crossing at this location, and commented that students of nearby schools cross Bear Mountain Boulevard here, despite a lack of



At Walnut Street, a student crosses Bear Mountain Boulevard without a marked crossing. At the same time, a bicyclist must ride through the left-turn pocket in order to get across the street.

marked crossings. A full traffic signal with high-visibility crosswalks and pedestrian refuge islands is the best practice solution to address these safety concerns at Walnut Street. Lesser treatments would not provide adequate safety.

The traffic study called for along the entirety of Bear Mountain Boulevard, conducted in coordination with Caltrans, will be required to formally document and justify the need for a signal at Walnut Street and Bear Mountain Boulevard, and should also examine whether or not the eastbound right-turn pocket at this intersection is needed. This current configuration exposes pedestrians to vehicle traffic for longer amounts of time, particularly when crossing Walnut Street, where the existing path of travel is diagonal, making the crossing distance longer and impairing visibility for both drivers and pedestrians. If a traffic study

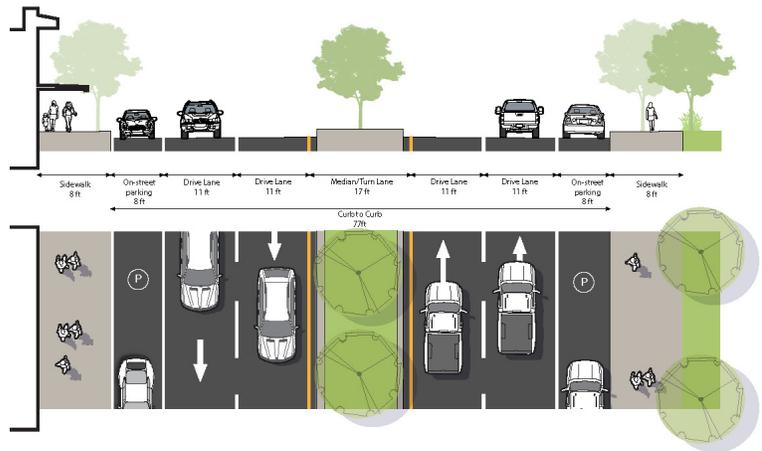
supports the addition of a signal and turn pocket removal, Caltrans will support this change.

Bear Mountain Boulevard has two different speed limits, 45 mph westbound and 30 mph eastbound. This makes it difficult for people crossing Bear Mountain Boulevard to consistently gauge how fast cars are going. The traffic study will help determine appropriate speeds and appropriate crossing improvements needed at each intersection. Generally, at signalized intersections, high-visibility crosswalks, curb extensions, and leading pedestrian intervals are advised to shorten the crossing distance for pedestrians, allow more time to cross, and increase visibility to drivers. At unsignalized intersections, advanced yield markings and rectangular rapid flashing beacons may be installed to improve visibility of pedestrians to

Existing Section, Bear Mountain Boulevard



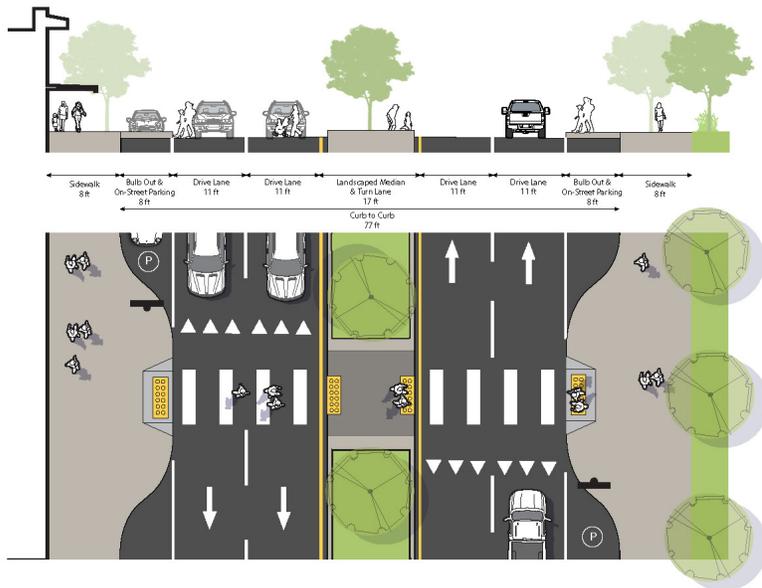
223 (Bear Mountain Blvd)



Typical un-signalized crossing improvement to Bear Mountain Boulevard adds a HAWK or RRFB



223 (Bear Mountain Blvd)



drivers, and curb extensions may be installed where feasible (and are a green infrastructure opportunity that can address help address drainage and stormwater management issues). The image on the previous page, at Stockton Avenue, illustrates improvements to an unsignalized intersection along Bear Mountain Boulevard and shows what this corridor could look with this infrastructure installed.

A variety of different bike facility types are recommended throughout the city. These include standard and buffered bike lanes (Class II facilities), as well as bicycle boulevards (Class III facilities). Locations for recommended bike facilities were selected by considering how to best connect destinations, such as schools, parks, civic buildings, and shopping areas; identifying high-collision corridors; and by examining roadway widths to determine which streets were wider than vehicular capacity demands.

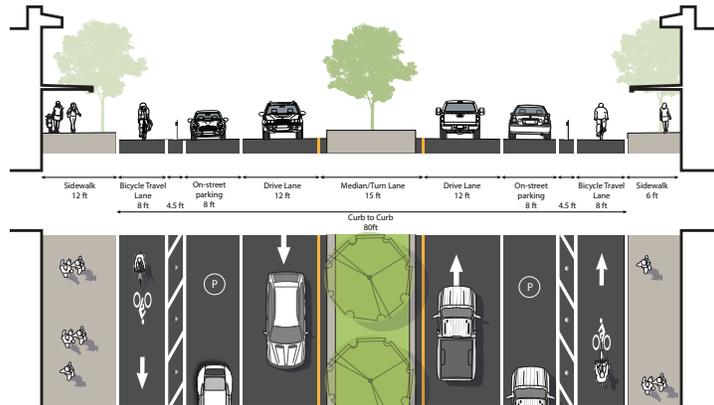
On Bear Mountain Boulevard, a Class IV separated bikeway is recommended. The design of this facility will require detailed traffic study coordination with Caltrans. Community engagement and input of the type of facility will be an important part of determining the best treatment type. Because the context along Bear Mountain Boulevard is varied, a combination of the section alternatives shown at right will likely be used.

For example, through the central business district of Arvin it will be important to preserve street parking for businesses, and in some areas it may make more sense to have east- and west-bound bike facilities on the same side of the road where community destinations are concentrated.

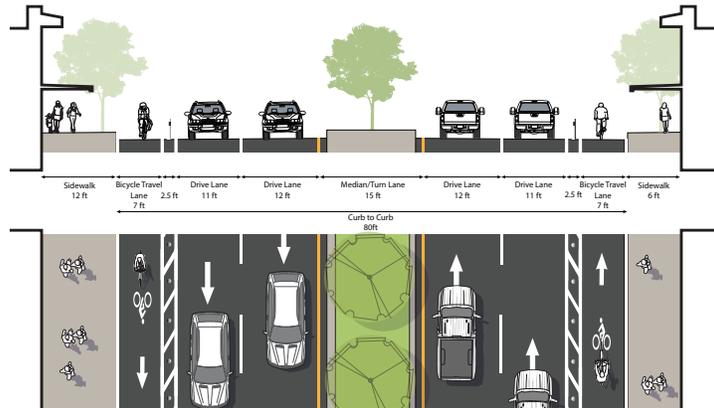
Bear Mountain Boulevard, Class IV Bikeway, Alternative A: Remove one lane of travel east-bound and west-bound. Provides greatest traffic calming benefits.



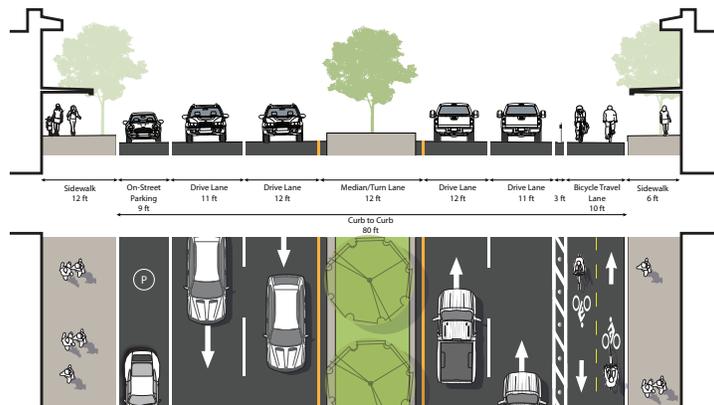
223 (Bear Mountain Blvd)



Bear Mountain Boulevard, Class IV Bikeway, Alternative B: Remove parking both sides of the street, no impact to traffic volume or flow.



Bear Mountain Boulevard, Class IV Bikeway, Alternative C: Remove parking on one side of the street and narrow the center median/turn lane to create space for a two-way bike facility on one side of the street.



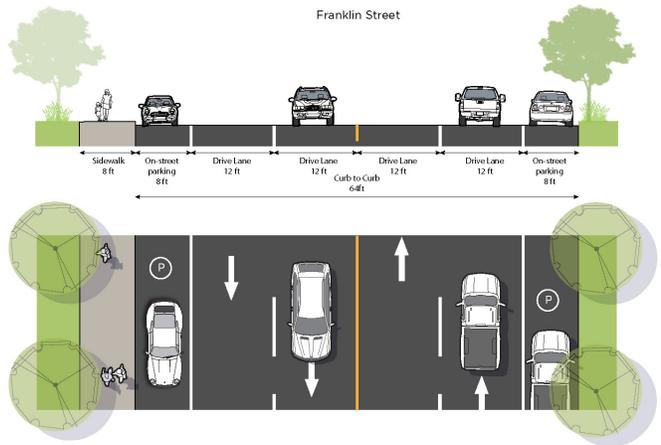


Recommended conditions on Franklin Street make walking and biking to school more accessible.

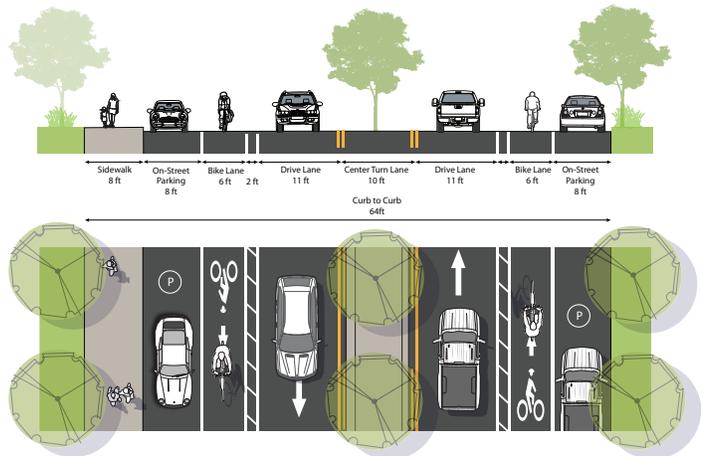
The majority of bike facility types recommended in Arvin are either Class II or Class III facilities as these types of facilities can be easily installed with simple paint and signage and are low-maintenance, and are therefore easier for the City to maintain. In the example above, buffered bike lanes are installed along Franklin Street, an example of right-sizing a roadway to better balance travel modes.

A mid-block crossing with pedestrian-activated flashing beacons and curb extensions to help reinforce school zone speed limits will improve safety for students at Sierra Vista Elementary, and a planted center median adds shade and an opportunity to capture stormwater. Improvements like these can make it more appealing for students to walk and bike to school and can be applied throughout the City to improve its Safe Routes to School network.

Existing Section, Franklin Street



Recommended Section, Franklin Street





A bicycle boulevard and chicanes may be installed along Haven Drive

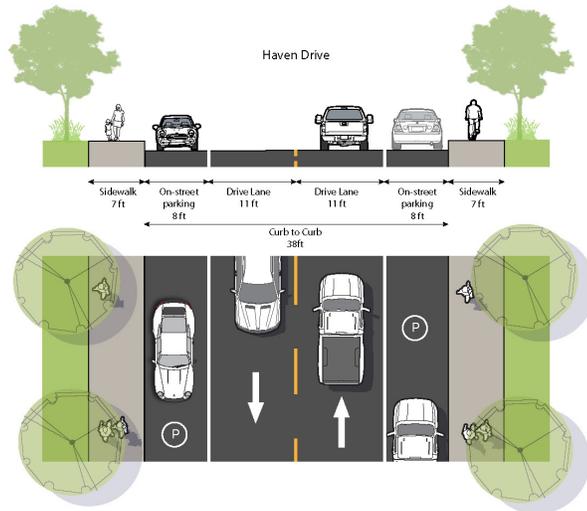
On streets such as Haven Drive, bicycle boulevards (Class III facilities) can be installed with pavement markings that indicate cyclists share the road with vehicles. Traffic calming elements, such as speed humps, or "chicanes," pictured in the photosimulation above, can also be installed to reinforce speed limits and encourage drivers to comply with the posted speed.

Chicanes act as traffic calming devices by reducing the visual field for drivers, and by requiring minor turning movements to follow the lanes. These areas are also opportunities to integrate trees and plantings, and to capture and filter stormwater. Improvements like these can increase safety and access to Arvin's parks.

Haven Drive, Existing



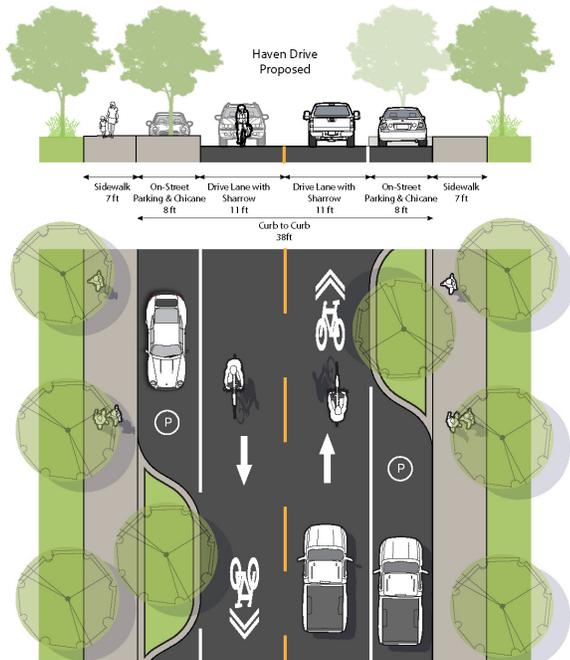
Haven Dr



Haven Drive, Recommended



Haven Dr



A photograph of a school bus stop on a sunny day with scattered clouds. A yellow school bus is visible in the background. In the foreground, a dark blue car is parked with its driver-side door open. A woman is standing next to the car. Other people, including children with backpacks, are walking on the sidewalk. A utility pole stands in the middle ground. The scene is set against a backdrop of mountains.

# 6

## IMPLEMENTATION PLAN

## NEXT STEPS

The plans prepared for this document represent preliminary design. Plans contained in this document have received initial review and input from the City, and the concept plans have also been reviewed by the project's Advisory Groups.

With this initial design planning phase completed, the next step in making this project a built reality is securing funding for detailed design and construction.

## POTENTIAL FUNDING SOURCES

Funding for SRTS programs and projects, and for Complete Streets projects, may come from a variety of sources including matching grants, sales tax or other taxes, bond measures, or public/private partnerships. This section identifies sources of funding for planning, design, implementation, and maintenance of projects and programs. See the Appendix of this document for a detailed list of funding sources. Highlighted below are some of the "best fit" options for the City of Arvin.

The descriptions are intended to provide an overview of available options and do not represent a comprehensive list. It should be noted that this section reflects the funding available at the time of writing. The funding amounts, fund cycles, and even the programs themselves are susceptible to change without notice.



Students and a crossing guard at El Camino Real Elementary

## FEDERAL SOURCES

### Department of Housing and Urban Development: Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. More information: [www.hud.gov/cdbg](http://www.hud.gov/cdbg)

### Federal Highway Administration: Congestion Mitigation and Air Quality Improvement Program

Funds may be used for a transportation project or program that is likely to contribute to the attainment or maintenance of a national ambient air quality standard, with a high level of effectiveness in reducing air pollution. More information: [www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm](http://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm)

## STATE SOURCES

### California Department of Housing and Community Development Affordable Housing and Sustainable Communities Program

The purpose of the Affordable Housing and Sustainable Communities Program is to reduce greenhouse gas emissions through projects that implement land-use, housing, transportation, and agricultural land preservation practices to support infill and compact development, and that support related and coordinated public

policy objectives. More information: [www.hcd.ca.gov/grants-funding/active-funding/ahsc.shtml](http://www.hcd.ca.gov/grants-funding/active-funding/ahsc.shtml)

### Caltrans Funding Programs

Caltrans operates a number of different competitive grant programs focused on improvements for active transportation. For additional information on these and all Caltrans funding programs visit: <https://dot.ca.gov/programs>

- » Active Transportation Program
- » Sustainable Transportation Planning Grants.
- » Community Based Transportation Planning Grant Program
- » Highway Safety Improvement Program
- » Regional Surface Transportation Program

### California Natural Resources Agency

The CNRA operates two grant programs that specifically fund green infrastructure improvements: The Urban Greening program, and the Green Infrastructure program. These can provide funding to plant trees and stormwater-receptive plantings that are often not covered through active transportation funding sources.

## REGIONAL & LOCAL SOURCES

### Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bicycle and pedestrian projects. These projects have commonly provided Class II facilities for portions of on-street, previously planned routes and public spaces. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area.

### Local Bond Measures

Local bond measures, or levies, are usually initiated by voter-approved general obligation bonds for specific projects. Bond measures are typically limited by time, based on the debt load of the local government or the project under focus. Funding from bond measures can be used for right-of-way acquisition, engineering, design, and construction of pedestrian and bicycle facilities. Bond measures are often used by cities for local match in grant applications. Transportation-specific bond measures featuring a significant bicycle/pedestrian facility element have passed in other communities, such as Seattle's "Closing the Gap" measure.

### San Joaquin Valley Air Pollution Control District Grants & Incentives

The San Joaquin Valley Air Pollution Control District accepts applications for bicycle infrastructure projects, including Class I (Bicycle Path Construction), Class II (Bicycle Lane Striping), or Class III (Bicycle Route) projects. The program provides funding to assist with the development or expansion of a comprehensive bicycle-transportation network which will provide a viable transportation option for travel to school, work, and commercial sites. Funding for this program is limited to municipalities, government agencies, and public educational institutions located within the boundaries of the district. Funding opportunities include:

- » Up to \$150,000 per project for Class I shared-use paths
- » Up to \$100,000 per project for Class II bike lanes
- » Up to \$100,000 per project for Class III bike routes

## Kern County Air Pollution Mitigation Fund

The Kern County Air Pollution Mitigation Fund fulfills the intent of a series of settlements between the Sierra Club and residential building developers in the Bakersfield area. As required by these settlements, the Fund receives air pollution mitigation fees paid by property developers to offset the cumulative air pollution impacts of new developments. With the advice of a Bakersfield-based funding advisory board, the Rose Foundation uses these developer fees to support grants for projects designed to reduce particulate or ozone air pollution in Kern County.

## POLICIES

Adopting policy changes is a low-cost way for cities to lay the groundwork for infrastructure improvements while they apply for competitive funding for design and construction.

Complete Streets policies are now required in each General Plan update in California. The Complete Streets projects recommended in this Plan should be incorporated into the City's Circulation Element, where applicable. Additionally, many communities adopt Complete Streets ordinances. Example policies and ordinances the City of Arvin may consider as models are included in the Appendix of this document for reference.

There is no similar requirement for Safe Routes to School policies or programs in the state of California; however, communities that do have such policies and programs in place are better positioned for competitive funding. Some example SRTS policy language is included in the Appendix of this document for reference. Because all school districts participating in the National School Lunch Program are required to adopt a local school wellness policy, a SRTS policy adopted by the City of Arvin should consider the relationship between these two efforts. This requirement reflects the essential role schools play in promoting student health, including preventing childhood obesity. Wellness policies must include "goals for nutrition promotion and education, physical activity, and other school-based activities that promote student wellness."

## LOW-COST IMPROVEMENTS AND MAINTENANCE

Regular bicycle facility maintenance includes sweeping, maintaining a smooth surface, ensuring that the gutter-to-pavement transition remains relatively flush, and installing bicycle-friendly drainage grates. Pavement overlays are also a good opportunity to improve bicycle facilities. In terms of bicycle parking maintenance, it is important to refer to City Codes since most of them require the person, firm, business, or corporation originally providing the racks to remain the owner and to be responsible for maintaining them in good condition.

Where new developments are planned in the City, there is an opportunity for the City to require developers to fund maintenance needs for new sidewalks and streetscapes, lessening the cost to the City. Intersection and crossing projects will also be treated as part of the normal roadway maintenance program.

In April 2017 the Road Repair & Accountability Act was adopted, establishing the Road Maintenance & Rehabilitation Program (RMRP). The act introduces a long-term transportation reform and funding package, including new revenues to make road safety improvements, fill potholes, and repair local streets, highways, bridges, and overpasses. Funding from this program could be used to maintain both Caltrans highways and local roads.

Recommended maintenance and operations measures are listed in the following sections. These procedures are designed to make roads safer and more comfortable for bicyclists and pedestrians.

### Maintenance

#### SWEEPING

- » Establish a seasonal sweeping schedule that prioritizes roadways with major bicycle routes.
- » Sweep walkways and bikeways whenever there is an accumulation of debris on the facility.
- » In curbed sections, sweepers should pick up debris; on open shoulders, debris can be swept onto gravel shoulders.

#### SIGNAGE

- » Check regulatory and wayfinding signage along bikeways for signs of vandalism, graffiti, or normal wear. Replace signage along the bikeway network as needed.
- » Perform a regularly scheduled check on the status of signage with follow-up as necessary.
- » Create a Maintenance Management Plan.

ROADWAY SURFACE

- » Maintain a smooth pothole-free surface.
- » Ensure that on new roadway construction, the finished surface on bikeways does not vary more than 1/4-inch.
- » Maintain pavement so that ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- » Inspect the pavement two to four months after trenching construction activities are completed to ensure that excessive settlement has not occurred.

PAVEMENT OVERLAYS

- » Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge.
- » If the shoulder or bike lane pavement is of good quality, it may be appropriate to end the overlay at the shoulder or bike lane stripe, provided no abrupt ridge remains.
- » Ensure that inlet grates and manhole and valve covers are within 1/4-inch of the finished pavement surface and are made or treated with slip-resistant materials.

**Table 4: Recommended Maintenance Activities and Frequency**

Maintenance Activity	Frequency
Inspections	Seasonal – at beginning and end of summer
Pavement sweeping/blowing	As needed, with higher frequency in the early spring and fall
Pavement sealing	5 to 15 years
Pothole repair	1 week to 1 month after report
Culvert and drainage grate	Before winter and after major storms
Pavement markings replacement	As needed
Signage replacement	As needed
Shoulder plant trimming (weeds, trees, brambles)	Twice a year; middle of growing season and early fall
Tree and shrub plantings, trimming	1 to 3 years
Major damage response (washouts, fallen trees, flooding)	As soon as possible

## DRAINAGE GRATES

- » Require all new drainage grates to be bicycle-friendly, including grates that have horizontal slats on them so that bicycle tires and assistive devices do not fall through the vertical slats.
- » Create a program to inventory all existing drainage grates to determine where grates need to be cleaned or replaced. Additionally, temporary modifications such as installing rebar horizontally across the grate should not be an acceptable alternative to replacement where needed.

## GUTTER-TO-PAVEMENT TRANSITION

- » Ensure that gutter-to-pavement transitions have no more than a 1/4-inch vertical transition.
- » Examine pavement transitions during every roadway project for new construction, maintenance activities, and other construction activities.

## LANDSCAPE

- » Ensure that shoulder plants do not hang into or impede passage along bikeways.
- » After major damage incidents, remove fallen trees or other debris from bikeways as quickly as possible.

## MAINTENANCE MANAGEMENT PLAN

- » Provide fire and police departments with a map of the system, along with access points to gates/bollards.
- » Enforce trespassing laws for people attempting to enter adjacent private properties.
- » Provide bicycle detour routes and signs during roadway construction.

## Operations

### ENFORCEMENT

- » Enforce speed limits and other rules of the road.
- » Work with the California Highway Patrol and local police to ensure officers are trained on safe bicycling practices and are up-to-date on bicycle-related laws.
- » Work with the California Highway Patrol and local police to improve reporting and analysis of bicyclist-involved collisions and bicycle theft.

### IMPLEMENTATION AND DESIGN

- » Implement on-street bicycle and pedestrian facilities recommended in this Plan when completing road rehabilitation and reconstruction projects.
- » Design and maintain all streets to incorporate Complete Streets standards.
- » Adopt an accelerated pavement maintenance schedule for all designated existing and planned bikeways.
- » Apply pavement stenciling to indicate detention areas at all traffic signals.
- » Identify opportunities to remove travel lanes from roads where there is excess capacity in order to provide new or improved bicycle facilities.

### EVALUATION

- » Measure air quality and reductions in greenhouse gas emissions that may result from a decrease in vehicular use as bicycle use increases.
- » Create an annual bicycle and pedestrian count program.
- » Regularly monitor implementation of the Active Transportation Plan, and review and update the recommended bicycle and pedestrian facilities every five years.

## Cost Estimates

The cost estimates for bicycle and pedestrian projects are listed below. It should be noted that cost estimates will fluctuate, particularly over the longer time period covered by this Plan. Estimated costs were developed based on similar recent projects and only reflect unit costs. They do not account for plans, specifications, and estimates, construction, or contingency.

**Table 5: Cost Estimates**

Treatment	Unit	Cost Estimate*	
Sidewalk	square feet	\$17	
High-visibility crosswalk	each	\$2,500	
Advance yield markings	each	\$1,000	
Curb extension	per corner	\$40,000	
Rectangular Rapid Flashing Beacon	each	\$20,000	
High-Intensity Activated Crosswalk (HAWK) beacon	each	\$80,000	
Traffic signal	each	\$300,000	
Pedestrian refuge	each	\$30,000	
Stop sign	each	\$500	
Close slip lanes	each	\$20,000	
W-11-2, W16-9P pedestrian ahead signage	each	\$500	
Speed feedback sign	each	\$10,000	
Chicanes	each	\$40,000	low
		\$100,000	high
Roundabout	each	\$500,000	
Street Trees	each	\$350	low
		\$1,250	high
Class I Shared Use Path	per mile	\$2,000,000	
Class II Bicycle Lanes	per mile	\$102,000	
Class II Buffered Bicycle Lanes	per mile	\$125,000	
Class III Bicycle Boulevard	per mile	\$140,000	
Class IV Separated Bikeway	per mile	\$220,000	low
		\$360,000	medium
		\$1,410,000	high

\*Trees and landscape enhancements have not been included in cost estimates and should be considered on a per-project basis where feasible.

# Appendix: Complete Streets *and* Safe Routes to School Plan

APÉNDICE: PLAN DE CALLES COMPLETAS  
Y RUTAS SEGURAS A LA ESCUELA

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PLAN REVIEW



This review of local, regional, and statewide plans and policies documents the context for the City of Arvin Complete Streets and Safe Routes to School (SRTS) Plan. Relevant goals, policies, and facility improvements identified will inform the development of the Plan. Projects identified in prior plans will be considered within the evaluation of potential projects. Prior recommendations will be supplemented by information from the Existing Conditions Review and public input during the planning process.

## LOCAL PLANS

### ARVIN GENERAL PLAN UPDATE

The Arvin General Plan Update was adopted by the City of Arvin in August, 2012. The update included an Existing Conditions Report that examined the nature and extent of land use, air quality, and health related issues facing Arvin. Goals, policies and action programs were developed and incorporated into the Plan based on the Existing Conditions Report.

Recommendations from the Existing Conditions Report include three overarching goals related to the walking and bicycling network:

- » Development patterns should contribute to healthier lifestyles and enable more residents to live within walking or bicycling distance to jobs and neighborhood services.
- » The site design of buildings and their relationship to the street and sidewalk should facilitate the ease of walking and bicycling by creating safe and inviting public spaces for pedestrians.
- » The design of streets and public spaces should create safe and inviting public spaces for pedestrians, enabling residents to engage in physical activity and gather with other community members.

### RECOMMENDATIONS TO IMPROVE PEDESTRIAN AND BICYCLE SAFETY FOR THE CITY OF ARVIN

This 2018 report was created at the culmination of the Community Pedestrian and Bicycle Safety Training (CPBST), through a collaboration of Bike Arvin, California Walks, the University of California at Berkeley's Safe Transportation Research and Education Center (SafeTREC), and the City of Arvin Planning Committee. Through stakeholder engagement, a review of plans and policies, and analysis and mapping of pedestrian and bicycle injury data, this report identifies existing conditions and challenges and makes recommendations to improve safety of walking and bicycling in Arvin.

Key findings from an analysis of existing conditions include:

- » Collisions involving pedestrians during the study period (2007 – 2016) were concentrated on Bear Mountain Boulevard (SR 223), Haven Drive, Meyer Street, and South A Street.
- » The top two collision factors for collisions involving pedestrians were drivers failing to yield to a pedestrian within a crosswalk and pedestrians failing to yield to drivers when crossing outside a designated crosswalk.

- » Collisions involving bicycles during the study period were concentrated on Bear Mountain Boulevard (SR 223), Meyer Street, Walnut Drive, and Sycamore Drive.
- » The top three collision factors for collisions involving bicyclists were bicyclists or drivers failing to yield the right-of-way when entering or crossing a highway, bicyclists or drivers failing to stop or yield at stop signs, and bicyclists or drivers failing to yield right-of-way in a crosswalk.
- » Pedestrian-involved collisions are clustered on arterial roads between low-income neighborhoods. The report found that these arterials are home to businesses and services that residents of the low-income communities access on a daily basis.
- » Faded bicycle lane and travel lane markings pose safety challenges to bicycling. In addition, some bicycle lanes are painted in the "door zone," posing an additional safety hazard.
- » Many sidewalks are missing accessible ramps, creating challenges for users with assisted mobility devices, and people using scooters or skateboards. Residents reported that many sidewalks are in disrepair and tree roots have lifted up the sidewalk in some places.
- » Community stakeholders reported that they enjoy the walking and bicycling culture in their community.

Recommendations to address these challenges and enhance walking and bicycling include:

- » Implement traffic calming measures such as speed bumps, curb extensions, and safety islands.
- » Enhance crosswalks in high traffic areas by installing high-visibility crosswalks, especially at the intersections of Haven Drive and South A Street, South Derby Street and Bear Mountain Boulevard (SR 223), and Haven Drive and Meyer Street
- » Create a well-connected bicycle network through new facilities and perform regular maintenance of existing bicycling facilities. Community Stakeholders also requested more bicycle parking and a separated bike lane to separate bicyclists from vehicular traffic and the opening doors of parked vehicles.
- » Community Stakeholders identified that they would like to see more community-wide walking and bicycling events and cross-generational educational campaigns.
- » Partner with Safe Kids Kern County to support pedestrian and bicycle injury prevention activities at Arvin schools. Review the California Department of Public Health's Kid's Plate Grant as a potential funding opportunity to provide education and encouragement programs.

- » Partner with Caltrans to implement infrastructure improvements for Bear Mountain Boulevard (SR 223).
- » Develop a Safe Routes to School and Complete Streets Advisory Board.
- » Perform citywide street lighting and tree and landscaping assessments to identify locations presenting challenges or opportunities for enhancement of the active transportation environment.

## STREET STORY

University of California Berkeley Safe TREC has created a community data collection portal for active transportation collisions, near-misses, and safety concerns. The portal, funded by a grant from the California Office of Traffic Safety, through the National Highway Traffic Safety Administration, is available at this website: <https://streetstory.berkeley.edu/city/arvin>. Reports made by others can be viewed here: <https://streetstory.berkeley.edu/reports.php>. To date, few reports have been made.

## REGIONAL PLANS

### KERN REGION ACTIVE TRANSPORTATION PLAN

The Kern County Active Transportation Plan was adopted in March 2018 by the Kern Council of Governments. The Plan guides the Council of Governments in its efforts to enhance walking, bicycling, and transit throughout Kern County. Through a review of existing conditions and stakeholder engagement, the Plan identifies broad goals and policies for active transportation in Kern County.

Themes incorporated into the Plan's overall goals and policies include:

- » Enhance the safety, accessibility and connectivity of the active transportation network.
- » Incorporate bicycling and walking elements into other transportation plans.
- » Use the existing bicycle and pedestrian infrastructure as a tool for community revitalization and economic growth.
- » Provide infrastructure that enables people to walk and bicycle more frequently to improve health.
- » Ensure the active transportation network equitably serves all people.

The Plan also includes a detailed analysis of the City of Arvin as a "focus area" community within Kern County. This "focus area" analysis describes the existing conditions of the active transportation network in Arvin and outlines proposed projects and programs to enhance walking and bicycling. For the City of Arvin, the Plan recommends over 17 miles of new bikeways and over 12 miles of pedestrian improvements, such as sidewalk gap closures, traffic calming, and crossing improvements. The Plan also makes recommendations for end-of-trip facilities, such as the number and location of long-term and short-term bicycle parking.

The highest priority bikeway projects include:

- » A Street, a 1.1-mile Class II Bike Lane from Olson Way to 5th Avenue
- » Haven Drive, a 1.0-mile Class II Bike Lane from Comanche Drive to Tejon Highway
- » Meyer Street, a 1.0-mile Class II Bike Lane from SR-223 to Sycamore Road
- » Franklin Street, a 0.8-mile Class II Buffered Bike Lane from Walnut Drive to S Derby Street
- » Tejon Highway, a 2.5-mile Class II Bike Lane from SR-223 to Burkett Boulevard

Challenges presented by existing pedestrian facility conditions include:

- » Mid-block crossings are not signalized and have limited signage, creating visibility issues for pedestrians and motorists.
- » Most marked crosswalks are low-visibility transverse crossings.
- » Many curb ramps and crosswalks are uneven and poorly maintained which may pose challenges for pedestrians with varying abilities.
- » Many residential neighborhoods do not have sidewalks or have gaps in their existing sidewalk network.
- » Near Arvin High School, the midblock crossing on Varsity Road is unsignalized and faded, causing low visibility for pedestrians and motorists.

- » Sidewalks are commonly located near Arvin schools, but they do not connect to a larger, connected pedestrian network.
- » The Plan also reports on bicyclist and pedestrian involved collisions in Arvin. The Plan determined that reported bicycle and pedestrian involved collisions occur at higher frequencies in the northern section of Arvin, north of Sycamore Road. The report also identifies three roadways with the highest number of reported bicycle and pedestrian collisions, which include Bear Mountain Boulevard (SR 223), Haven Drive, and Meyer Street.

Recommended bicycle and pedestrian facilities are illustrated in the following figures.

Figure 1: Recommended Bikeways and End-of-Trip Facilities in Arvin



Figure 2: Recommended Pedestrian Facilities in Arvin



## STATEWIDE PLANS

Several state-level plans and policies will guide development of and provide requirements for the Complete Streets and Safe Routes to School Plan. Plans include *Toward an Active California: Statewide Bicycle and Pedestrian Plan* as well as the *California Transportation Plan 2040*. Policies include the *California Complete Streets Policy* and the *2014 Design Flexibility in Multimodal Design Memorandum*. The Arvin Complete Streets and Safe Routes to School Plan will be consistent with each of these plans and policies.

### TOWARD AN ACTIVE CALIFORNIA: STATEWIDE BICYCLE AND PEDESTRIAN PLAN

This 2017 plan is the first bicycle and pedestrian plan developed for the state. Primarily a policy document, it aims to align Caltrans policies and programs to support increased walking and bicycling in California. The plan includes strategies and actions intended to influence change at the state level while informing development of local plans like *Safe Routes to School* and *Active Transportation Plans*. The strategies are organized into four key objectives: safety, mobility, preservation, and social equity. The Plan's recommendations surrounding *Safe Routes to School* include implementing fun and engaging activities to encourage children to walk and bicycle to school regularly and education programs to teach motorists and pedestrians about traffic safety.

The Arvin Complete Streets and Safe Routes to School Plan will be a local tool to help achieve the statewide vision of *Toward an Active California*: "By 2040, people in California of all ages, abilities, and incomes can safely, conveniently, and comfortably walk and bicycle for their transportation needs." Similarly, the Objectives presented in this statewide document will help guide the development and implementation of this Plan for Arvin:

- » Safety: reduce the number, rate, and severity of bicycle and pedestrian involved collisions
- » Mobility: Increase walking and bicycling in California
- » Preservation: Maintain a high quality transportation system
- » Social Equity: Invest resources in communities that are most dependent on active transportation and transit

## CALIFORNIA TRANSPORTATION PLAN 2040

The California Transportation Plan 2040 (CTP) is a long-range policy document to help Caltrans effectively meet the state's mobility needs while working to reduce greenhouse gas emissions. The CTP sets forth a vision that:

California's transportation system is safe, sustainable, and globally competitive. It provides reliable and efficient mobility and accessibility for people, goods and services while meeting greenhouse gas emission reduction goals and preserving community character. This integrated, connected, and resilient multimodal system supports a prosperous economy, human and environmental health, and social equity.

The goals set forth in the CTP relevant to this effort include: Improve multimodal mobility and accessibility for all people, Foster livable and healthy communities and promote social equity, and Practice environmental stewardship.

## CALTRANS STRATEGIC MANAGEMENT PLAN

The Strategic Management Plan provides direction for Caltrans as an organization. The most recent 2015-2020 plan set a goal to double walking and triple bicycling in California by 2020, based on 2010 levels, reduce bicycle and pedestrian fatalities by ten percent per year, and increase the number of complete streets projects by twenty percent.

## CALIFORNIA COMPLETE STREETS DEPUTY DIRECTIVE 64

This policy is the foundation of active transportation policy in California, requiring Complete Streets principles to be integrated in all agency activities since 2008. Caltrans monitors and guides Complete Streets progress in the Complete Streets Implementation Action Plan released in 2010 and the updated Complete Streets Implementation Action Plan 2.0 released in 2014.

## SMART MOBILITY 2010: A CALL TO ACTION FOR THE NEW DECADE

Caltrans' Smart Mobility framework provides tools and resources to help state and local agencies create a more sustainable transportation system, with policies centered on public health and safety. The Smart Mobility framework incorporates the California Transportation Plan and Regional Blueprint planning efforts, calling on the state Department of Transportation to design and implement complete streets that support walking, bicycling, and transit as everyday transportation choices.

## MAIN STREET CALIFORNIA: A GUIDE FOR IMPROVING COMMUNITY AND TRANSPORTATION VITALITY

This 2013 document focuses on the design of state highways in California that also serve as main streets or local commercial streets in communities. The guide consolidates information from existing Caltrans manuals and policies, as well as national resources, to help communities improve multimodal access, livability, and sustainability while meeting appropriate engineering standards. The guide helps readers find information about standards and procedures described in the Caltrans Highway Design Manual (HDM), the California Manual of Uniform Traffic Control Devices (MUTCD), and the Project Development Procedures Manual.

## COMPLETE INTERSECTIONS: A GUIDE TO RECONSTRUCTING INTERSECTIONS AND INTERCHANGES FOR BICYCLISTS AND PEDESTRIANS

This guide provides direction on implementing an important component of Caltrans' Complete Streets policy by identifying "actions that will improve safety and mobility for bicyclists and pedestrians at intersections and interchanges." The guide is intended primarily for Caltrans planners, engineers, and other highway designers working as generalists or specialists in advising, engineering, or designing for safe travel for all highway users at intersections and interchanges.

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The elements that follow can be applied in combination with one another to make walking, biking, taking transit, and driving more intuitive, safe, accessible, and enjoyable for all. These improvements can also foster placemaking and community beautification.

Caltrans supports the implementation of Complete Streets efforts and policies along Caltrans right of way in Arvin. For information from Caltrans relating to Complete Streets, please visit <http://www.dot.ca.gov/transplanning/ocp/complete-streets.html>.

## PEDESTRIAN REALM IMPROVEMENTS

The pedestrian realm includes everything between private property lines and the curb of a roadway: sidewalks, planting areas, and street furniture such as benches and trashcans within the public right-of-way, and crossing improvements described later in this toolkit.

### SIDEWALKS

Many of Arvin's streets lack sidewalks. Closing these gaps in the pedestrian network is a key component to completing the City's transportation network and improving safety and access for pedestrians. A typical sidewalk is paved, provides a minimum 5' clear zone for pedestrians, and integrates a space for planting, street furniture, and transit stops. See the Intersection Treatments section of this document for additional information about design standards, and the Americans with Disabilities Act for specific standards to make sidewalks accessible for everyone.

### STREET TREES

A city's green spaces play an integral role in regulating temperatures, reducing heat, managing stormwater, and beautifying the community. Street trees provide a "green backbone" to a city's open space network and can be integrated with other greening strategies to maximize environmental and aesthetic benefits.



Street Trees

Street trees, landscaping and other aesthetic elements, such as art or banners, produce a feeling of enclosure and add visual stimuli along a roadway corridor. Urban forests and green infrastructure also provide environmental benefits. Trees have been found to cool surface temperatures by as much as 45 degrees, providing much needed shade and making it more comfortable to walk and bike during the summer months. It is recommended that trees are spaced no further apart than their mature tree canopy size to create continuous shade along city streets. Plantings also enhance the experience of the street and beautify communities while creating a buffer between pedestrians and vehicle traffic.

## STORMWATER PLANTING TREATMENTS

Stormwater swales are densely planted linear depressions that are designed to slow, filter, infiltrate, and convey stormwater. Check dams can be incorporated along the length of the swale to slow the conveyance of water and encourage infiltration. Swales can be enhanced with a subsurface gravel layer to increase storage capacity and an underdrain to convey excess stormwater to existing storm drains.



Stormwater Bio-Swale. Source: scpr.org

Stormwater planters, which include rain gardens, are manmade depressions in the landscape that slow, filter, and infiltrate stormwater. Unlike stormwater swales, which often parallel a road and have a larger catchment area, stormwater planters are designed to collect water from a discrete, local source, such as a rooftop, driveway, or street corner. Stormwater planters can be planted with perennials, grasses, shrubs, and/or trees and provide a great opportunity to improve streetscape aesthetics.



Stormwater Planter



Pedestrian-scaled lighting. Source: NACTO.org

## PEDESTRIAN SCALE LIGHTING

Appropriately scaled street lighting provides a safer, more visible, and more inviting environment for all roadway users. Pairing pedestrian-scaled street lighting with other improvements, such as street trees, helps alert motorists to the potential presence of pedestrians and bicyclists.

## SITE FURNISHINGS

Site furnishings are critical components of creating a socially and economically vibrant streetscape and accommodating a wide range of needs and activities. Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Bike racks accommodate bicyclists traveling to their destinations. Trash and recycling receptacles promote cleanliness and sustainability. Landscaped planters and movable furniture offer aesthetic and placemaking benefits to the sidewalk.

## WAYFINDING AND SIGNAGE

Human-scale, versus vehicular-scale, wayfinding and signage can make it easier to utilize walking and biking as a primary mode of transportation. Key destinations, such as parks, schools, and shopping areas are often included in a city's wayfinding plan.

## PUBLIC ART

A useful component in enhancing user experience and creating a sense of place in public space is art. Public art can be in the form of murals, sculpture, or decorative paving for example. Culturally relevant art should be a priority for inclusion in public space and partnering with local artists is an added bonus. Functionally, public art can serve as a landmark, wayfinding element, educational, placemaking element, reinforce cultural identity etc. Public art should be located in areas with high pedestrian concentrations, such as downtown, and can be located anywhere in the sidewalk zone except the path of travel.



Mural Wall Art. Source: Curbed LA

## BICYCLE PARKING

No bicycle network is complete without secure places to park bicycles near desired destinations in visible, well-situated locations. Bicycle racks for short-term parking are relatively inexpensive and can be installed in unused space along building frontages, in furniture zones on sidewalks, or in underutilized parking spaces (often called a 'bike corral'). The rack types illustrated below and recommended for use in Arvin are consistent with those recommended in the Association of Pedestrian and Bicycle Professionals Essentials of Bike Parking: Selecting and Installing Bike Parking that Works (2015).

## TRANSIT STOPS

Arvin Transit operates bus service throughout the City. For all users, transit stops should provide accessible alighting zones, benches for the comfort of waiting passengers, and a covered space to protect passengers from the sun and inclement weather. Sidewalks and paved walkways should be present at bus stops and should directly connect to adjacent development.

Transit route and station design should also minimize conflicts with bicyclists, provide secure bicycle parking, and provide ample loading space for bicycles on bus-mounted bicycle racks.

Transit stops and systems should look, feel, and be clean and secure. This can be accomplished through a number of methods, including lighting and the provision of trash and recycling receptacles.



U-Rack



Post and Loop



Wheelwell Secure

Recommended types of bicycle racks (short-term parking)



Transit Stop, Glendale, CA. Source: NACTO.org

Transit stops should provide users with clear and informative system information and can be enhanced with digital amenities, such as real-time bus arrival information, wifi hot spots, and USB charging ports.

Transit stops should respond to the unique qualities of a place and community landmarks. Local, relevant art should be incorporated into the transit stations and all aspects of the transit system in order to improve the quality of users' experiences.

## ROADWAYS

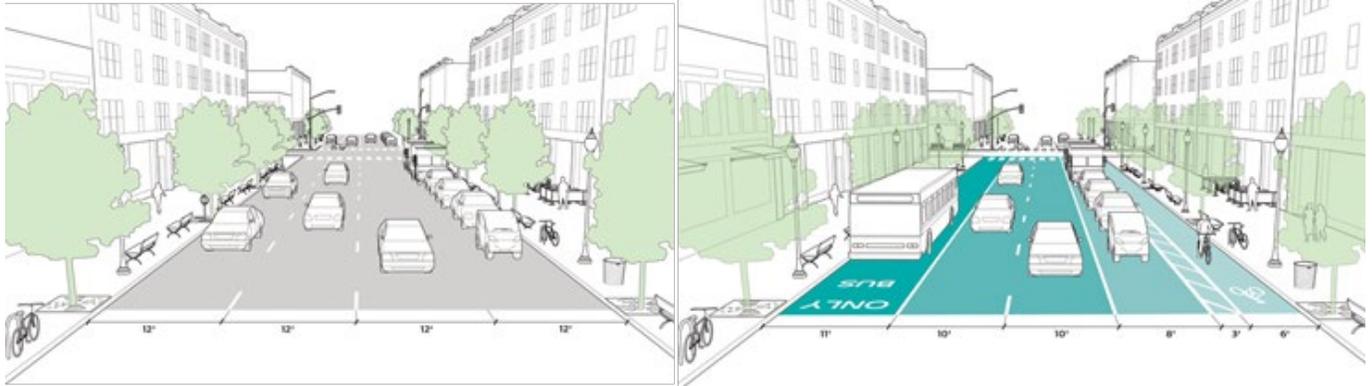
Roadways refer to the space dedicated to travel and parking for vehicles, and space dedicated to on-street bike facilities. Design elements in this section are focused on improvements the City of Arvin may consider within the roadway that will improve its sustainability, function, safety for all.

## ROAD DIETS

Road diets are a reduction in the number of lanes along a roadway. Typically, four lane roads are reduced to three lanes – one lane for each direction of travel and a center two-way turning lane. By reducing the amount of the roadway dedicated to motor vehicles, more space is available for bicycle and pedestrian facilities. This not only improves conditions for bicyclists, but also enhances the pedestrian environment, improves traffic flow, and reduces vehicle-on-vehicle collision rates.



Road diet before and after. Source: NACTO.org



Lane Narrowing Before and After. Source NACTO.org

## LANE NARROWING

Lane narrowing is when an excessively wide lane is reduced through the striping of a shoulder or the addition of bike lanes. This helps reduce motor vehicle speeds and creates dedicated space for bicyclists and/or pedestrians.

## BACK-IN OR REVERSE ANGLED PARKING

'Back-in' or 'Reverse Angle' parking requires drivers to back their vehicles into diagonally angled parking spaces. The benefits of this parking configuration include an increased field of vision when exiting a space, which reduces the risk of collisions with pedestrians or bicyclists, and for some drivers is easier than standard parallel parking. Loading and unloading is also more convenient with the vehicle's trunk space oriented toward the sidewalk. This type of parking configuration should be considered as part of any road diet project.



Reverse-angle Parking

## SIGNAL TIMING UPGRADES

Taking a closer look at signal timing throughout the City may consider a variety of modifications to make intersections safer and more intuitive for all users.

**Leading Pedestrian Intervals** Prioritizes pedestrian movement at intersections by giving pedestrians a head-start when entering a crosswalk. This makes pedestrians more visible and may help reduce conflicts. They are best utilized at intersections with high volumes of pedestrian crossings and vehicle turning movements, such as Bear Mountain Boulevard.

**Shorter Signal Cycle Length** Prioritizes pedestrian movement at intersections by decreasing wait times to cross the street. This encourages better pedestrian behavior and provides more consistent crossing opportunities.

## PLANTED MEDIANS AND MEDIAN REFUGE ISLANDS

Landscaped medians can reduce head-on and turning collisions and provide refuge for pedestrian crossings, all while beautifying the area. Trees have been found to cool surface temperatures by as much as 45 degrees, providing much needed shade. It is recommended that trees are spaced no further apart than their mature tree canopy size to create a continuous shade along city streets. Plantings also enhance the experience of the street and can aid in traffic calming.

Median refuge islands are protected spaces placed in the center of the street, which can also be planted and can be incorporated into longer medians, to facilitate bicycle and pedestrian crossings. Crossings of two-way streets are simplified by allowing bicyclists and pedestrians to navigate only one direction of traffic at a time. This treatment is most useful on high-volume multi-lane roadways that otherwise would be difficult to cross. Recommended minimum width for pedestrian refuge islands is 6 feet.

Planted median and street trees





Public works employees apply a cool paving treatment in Los Angeles.

## COOL PAVING

Dark colored pavements, such as the asphalt most roads are made of, get hot in the sun because they absorb 80-95% of the its rays. These hot pavements intensify what is known as the "urban heat island effect" by raising the local air temperature in cities that are dominated by impermeable surfaces like pavement and buildings, versus permeable surfaces like planted areas. By using light-colored materials for paving that reflect sunlight, the urban heat island effect can be reduced. Many cities are using light-colored surface treatments on asphalt roads to create "cool streets," such as the example below in the City of Los Angeles.

## TRAFFIC CALMING

### SPEED HUMPS AND TABLES

Speed humps are rounded vertical traffic calming features common on residential streets, and may be used to control speed along a corridor. Speed tables are similar mesa-shaped features that may be configured as raised crossings, as shown above. If configured as a raised crossing, the speed table should be elevated so that it is flush with the sidewalk and/or multi-use trail.

### CHICANES

A chicane is a curb extension, usually built in alternating patterns or with intermittent median strips, that creates an S-shaped curve on a street. These minor curves require motorists to proceed with greater caution and slower speeds. They may also provide additional space for landscaping or pedestrians. Some chicanes are concrete curbs, while others are painted on the roadway.

### DIVERTERS

A diverter diverts motor vehicle traffic from one street to another while allowing pedestrian and bicycle traffic to proceed normally. They are most common parallel to arterial streets where congestion may lead motorists to seek alternative routes on local streets through a neighborhood. Common on bike routes, diverters are the most intense traffic calming treatment applied and should be implemented only after study and community outreach.

### MINIMIZE CORNER RADII

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances.

## BICYCLE IMPROVEMENTS

Active transportation (biking and walking) is a key component in Arvin's overall transportation system. As some residents lack access to a vehicle and transit service is limited in terms of routes and frequency within the City, it is important for the city to be able to provide a safe and convenient network of bicycle and pedestrian facilities. Many of the recommendations put forth in these guidelines can be achieved without having to alter existing roadway widths and curb locations.

### ON-STREET SEPARATED BIKEWAYS (CLASS IV)

A separated bike lane is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A separated bike lane is physically separated from motor vehicle traffic and distinct from the sidewalk.

Separated bike lanes may be directional (i.e., one-way) or bidirectional (i.e., two-way) and may be at street level, sidewalk level, or at an intermediate level. If at sidewalk level, a curb or median separates the facility from motor traffic, while different pavement color/texture separates the facility from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking, or flexible delineators.

By separating bicyclists from motor traffic, separated bike lanes can offer a higher level of comfort than bike lanes and are attractive to a wider spectrum of the public.



Durfee Avenue in South El Monte, CA, a community in the San Gabriel Valley whose climate is similar to Arvin. Here curb extensions capture and clean water and provide shade.

Separated bikeways can increase safety and promote proper riding by:

- » Defining road space for bicyclists and motorists, reducing the possibility that motorists will stray into the bicyclists' path.
- » Discouraging bicyclists from riding on the sidewalk.
- » Reducing the incidence of wrong way riding.
- » Reminding motorists that bicyclists have a right to the road.

## MULTI-USE PATH (CLASS I)

Multi-use or shared use paths are paved rights-of-way completely separated from streets for the exclusive use of those walking and biking. These paths are often located along rivers and creeks, in railroad rights-of-way, or in parks or civic campuses. These paths are typically shared with pedestrians and often called mixed-use paths.



The Orange Line Path provides a separated facility for people walking and biking in Los Angeles' San Fernando Valley.

Image source: LADOT



Buffered bike lane

## BIKE LANES (CLASS II)

Bike lanes are designated exclusively for bicycle use and are demarcated with pavement markings and signage. They are located on the roadway directly adjacent to motor vehicle travel lanes and follow the same direction as motor vehicles. Bike lanes provide visual separation from motor vehicles, which helps bicyclists and motorists anticipate one another's movements and behaviors.

Bike lanes can also increase safety and promote proper riding by:

- » Defining road space for bicyclists and motorists and reducing the possibility that motorists will stray into the bicyclists' path;
- » Discouraging bicyclists from riding on the sidewalk;
- » Reducing the incidence of wrong way riding; and,
- » Reminding motorists that bicyclists have a right to the road.

The optimal width of a bike lane is 6-feet. The minimum preferred width is 5-feet.

Bike lanes can be enhanced with buffer zones, which further separate the bike lane from adjacent motor vehicle lanes. Buffer zones are most appropriate on roadways with high motor vehicle traffic volumes and speeds and adjacent to parking lanes.



Sharrow marking

### CLASS III OR SHARED LANE MARKINGS ("SHARROWS")

Shared roadways, defined by Caltrans as Class III bikeways, are designated bicycle routes where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. These facilities are best suited for local roads with low speeds and low traffic volumes. Shared roadway treatments can include various forms of signage and shared lane markings that delineate a roadway as a bicycle route and indicating that drivers must share the road and/or allow bicyclists to occupy the entire lane of travel.



Bicycle Corral

### BICYCLE CORRAL

A bicycle corral creates additional bicycle parking by removing an existing on-street parking space, and replacing with a row of bicycle racks. They work well in areas where sidewalks are too narrow to accommodate bike racks, or demand for bicycle parking is not met by existing sidewalk racks.

### BIKE SHARE PROGRAMS

Per Advisory Group Meeting # 3, Alta to add additional information to the toolkit pertaining to bike share programs.

# INTERSECTIONS AND CROSSINGS

## HIGH VISIBILITY CROSSWALKS

There are a number of marked crosswalk types. Standard transverse crosswalks consist of two parallel lines that mark the edges of the crosswalk.

High visibility markings include ladder-style crosswalks, which include transverse lines in addition to bold bars across the crosswalk. These markings are more noticeable to drivers and are typically used where there is existing or anticipated high walking activity, where slower walkers are expected (near schools and senior centers), at uncontrolled crossings, and where high numbers of pedestrian related crashes have occurred. In school areas, the crosswalks are yellow whereas outside school areas the crosswalks are white. In school areas, advance warning signage is recommended, particularly for school crosswalks. Crosswalks can be combined with curb extensions to narrow crossing distances.



High-visibility crosswalk near a school



Artistic crosswalk. Source: Miamiartguide.com

Artistic crosswalks serve as high visibility crosswalks and can improve the attractiveness of public space and create a sense of place. The most recent guidance from the Federal Highway Administration (Interpretation Letter 3(09)-24(I)) has recommended limited colors and patterns. However, cities across California and the U.S. have installed designs that may not comport to the FHWA guidance. The City of Arvin should explore their level of acceptable risk versus creating a sense of place or unique design highlighting Arvin's culture and values related to compliance with federal regulations before implementing these designs.



All Way Pedestrian Crossing Phase (Scramble Crosswalks)



Advance Yield Line

## ALL WAY PEDESTRIAN CROSSING PHASE (SCRAMBLE CROSSWALKS)

All way pedestrian crossing phase, also referred to as a scramble signal, is a signal phase where all vehicle movements are stopped, and all pedestrian movements are permitted. Pedestrians may travel along all crosswalk legs and potentially even in a diagonal movement across the intersection.

Right turn on red should be prohibited during all way pedestrian crossing phases. This treatment is most appropriate in areas of high pedestrian crossing demand. It is important to consider the accessibility needs of all people using the intersection in an all way pedestrian crossing, particularly those with hearing or vision impairments.

## ADVANCE STOP LINE AND ADVANCE YIELD LINE

Advance stop lines are placed six to ten feet before a marked crosswalk to indicate to motorists where they should stop. Advance yield lines are used at uncontrolled or midblock crossings (see graphic on the next page). Advance stop lines improve visibility of pedestrians by discouraging drivers from encroaching into the crosswalk. This is especially important at uncontrolled crossings on multi-lane streets, where a vehicle stopped too close to the crosswalk may hide a pedestrian from view of an approaching driver in the second lane. Advanced yield lines on multilane streets will vary depending on speed and other conditions but should be placed 20 to 50 feet from the crosswalk.

This Plan recommends advance stop lines or yield lines be installed at all new or retrofitted marked crosswalks, especially on multi-lane streets.

## CURB EXTENSIONS

Curb extensions shorten pedestrian crossing distance, increase visibility, and encourage turning vehicles to slow down. They can be used at any marked crossing where the parking lane can absorb the extension of the curb. Curb extensions may be built with drainage channels that do not impact existing stormwater flow, or with integrated bioswales that filter stormwater and facilitate infiltration. Curb extensions should not encroach on bike lanes.

## LEFT TURN RESTRICTIONS

Split Phasing divides the green light segment of a traffic signal into separate phases. One phase is for through traffic and pedestrian crossing, and another for turning vehicles. In practice, this eliminates conflict between turning vehicles and pedestrians. It can be applied at intersections with dedicated turning lanes and higher pedestrian crossing volumes.

## RESTRICTED PARKING IN INTERSECTIONS

Limiting parking within intersections, either at a certain distance from a 4-way intersection, typically 15-20', or in the 'T' of a 3-way intersection, can greatly improve the visibility of pedestrians crossing to those driving. This can also improve visibility for turning vehicles and can reduce collisions.

## RECTANGULAR RAPID-FLASHING BEACONS (RRFBs)

Rectangular Rapid Flashing Beacons (RRFBs) are user-actuated warning beacons that supplement pedestrian warning signs at unsignalized intersections or mid-block crossings. RRFBs have also been shown to increase motor vehicle yielding compliance at crossings of multi-lane or high-volume roadways. RRFBs should be paired with a marked crosswalk, advanced yield pavement markings, and push buttons allowing pedestrians and bicyclists to activate the RRFBs.

## BIKE BOXES

Bike Boxes designate an area for bicyclists to queue in front of automobiles, but behind the crosswalk, at signalized intersections. These designs increase visibility and reduce vehicle incursion into crosswalks. Bike Boxes also provide priority for cyclists when the light turns green and are helpful at facilitating left turns for cyclists.

## ROUNDBABOUTS

Roundabouts, mini-roundabouts, and traffic circles have been proven to reduce collisions, as well as the severity of collisions. Roundabouts also allow for a greater capacity of vehicle traffic throughout the day, improving traffic flow without widening roadways. Mini roundabouts and neighborhood traffic circles can lower speeds at minor intersection crossings and can be an ideal treatment for uncontrolled intersections.



Curb extension with high visibility crosswalk



LEFT: Rectangular rapid flashing beacon

BELOW LEFT: Bike box

BELOW RIGHT: Mini-Roundabout



## SIGNALIZED INTERSECTIONS

### PEDESTRIAN COUNTDOWN HEADS

Pedestrian heads are the "walk/don't walk" signal boxes instructing pedestrians at signalized intersections. A walking person indicates that it is safe to cross the street, followed by a blinking red hand with a number counting down the seconds until the signal changes.

### AUDIBLE SIGNALS

In addition to the visual cues provided by signal heads, audible signals provide guidance for vision-impaired pedestrians. Different audible signals should be used for different crossing directions to inform the pedestrian which intersection leg has a walk signal. Sounds should be activated by the pedestrian push-button.

### LEADING PEDESTRIAN INTERVALS

The Leading Pedestrian Interval (called "LPI") gives pedestrians a walk signal a few seconds before motorists receive a green light, which makes pedestrians more visible to motorists making right turns.

### BICYCLE DETECTION AT TRAFFIC SIGNALS

Traffic signals control traffic by either using timers or actuation (detection). Bicycle detection at actuated traffic signals provides a substantial improvement for bicycle access and mobility. California Assembly Bill 1581 requires all new and modified actuated traffic signals to detect bicyclists. Caltrans Policy Directive 09-06 clarifies the requirements. By installing bicycle detection at actuated intersections in coordination with roadway repaving or other maintenance activities, costs may be reduced.



Bicycle Detector Pavement Marking. Source: City of Santa Monica



Protected intersection

## PROTECTED INTERSECTIONS

Protected intersections reduce turning conflicts between drivers and bicyclists by providing clear paths for each user. Protected intersections are relatively new to the United States and have been shown to reduce collisions.

The protected intersection is a way of accommodating separated bikeways at intersections. It is modeled after Dutch intersection design and includes features for corner refuge islands that put the stop bar for bicyclists ahead of the stop bar for vehicles and bicyclist crossings set back approximately one car length from the adjacent travel lane. This intersection treatment should be carefully designed. It requires adjustments to traffic signal phasing, signage, and as a more unusual treatment may require education on behalf of users to be successful.

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COLLISION  
ANALYSIS



# COLLISION SITE CONDITIONS

## TIME OF DAY

Overall, collisions for all modes were concentrated in the afternoon and early evening, between 3 pm and 8 pm (Figure 1). Nearly 40 percent of bicycle-involved collisions occurred around 5 pm, and over 30 percent of pedestrian-involved collisions occurred around 7 pm (Figure 2).

Figure 1: Total Collisions by Hour and Mode

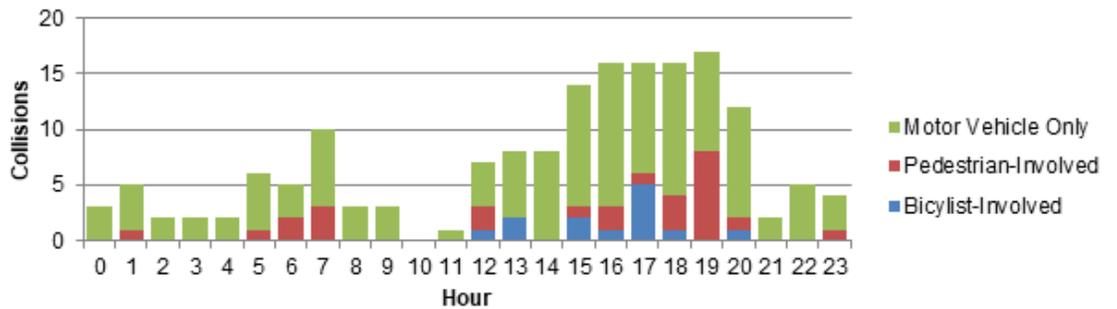


Figure 2: Crashes by Hour, as a Percent of Total by Mode

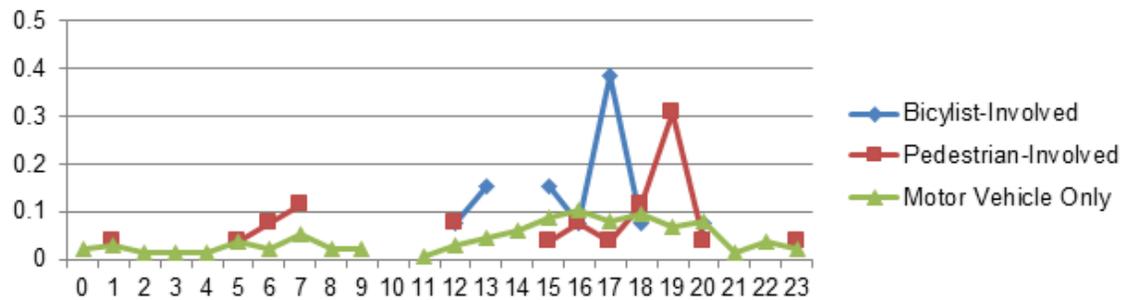


Figure 3: Lighting Conditions at Time of Collision by Mode

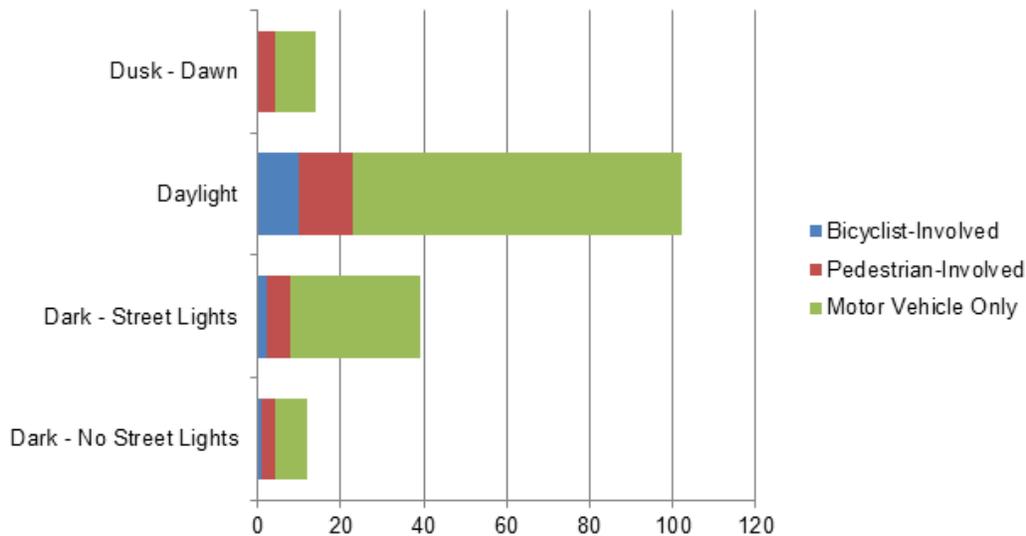
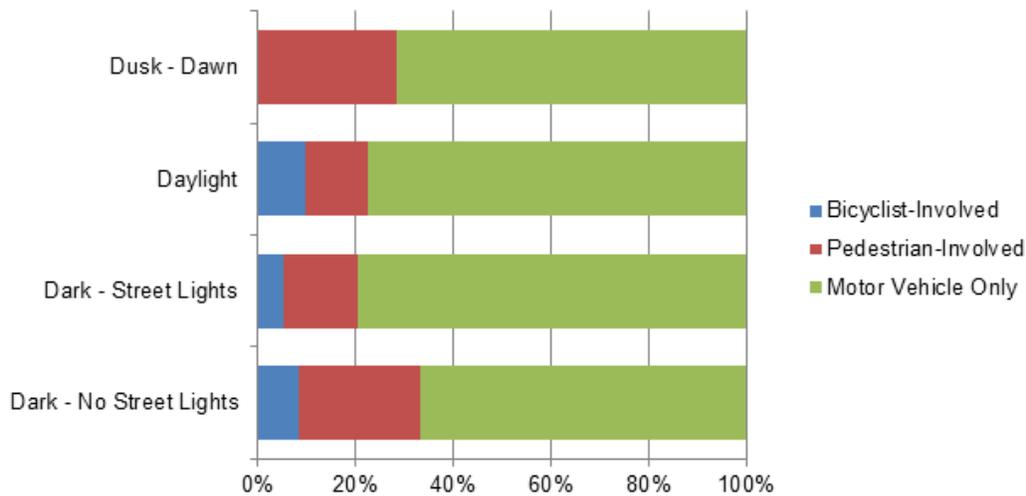


Figure 4: Lighting Conditions: Percent of Collisions by Mode



## LIGHTING

Over 60 percent of collisions occurred in daylight hours (Figure 3). Bicyclist and pedestrian-involved collisions made up 33 percent of collisions that occurred at night where no street lights were present, but only 20.5 percent of collisions that occurred at night where street lights were

present (Figure 4). Low-visibility conditions may have contributed to the collisions on streets with no street lights.

Half of pedestrian-involved collisions occurred at night or during dusk/dawn, while only 23 percent of bicyclist-involved collisions occurred at those times (Figure 5 and Figure 6).

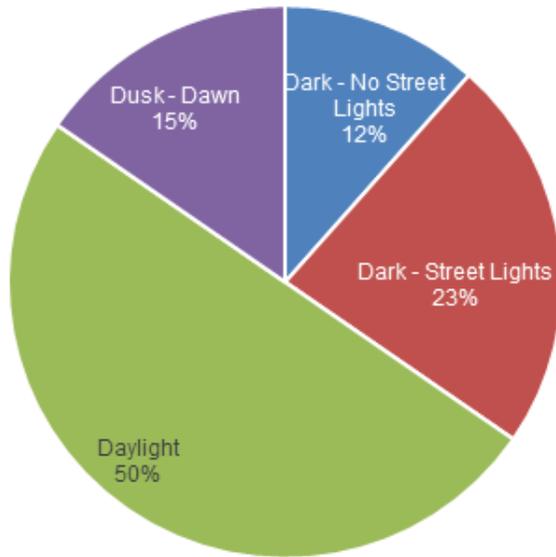


Figure 5: Pedestrian-Involved Collisions by Lighting Conditions

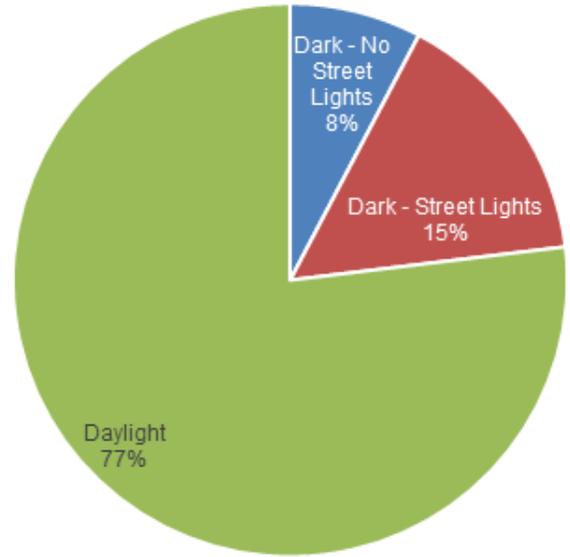


Figure 6: Bicyclist-Involved Collisions by Lighting Conditions

### TRAFFIC CONTROL DEVICES

More than three times as many bicycle and pedestrian-involved collisions occurred at locations without a traffic control device than occurred at locations with a traffic control device (Figure 7).

### WEATHER

In 95 percent of all collisions, the weather was clear.

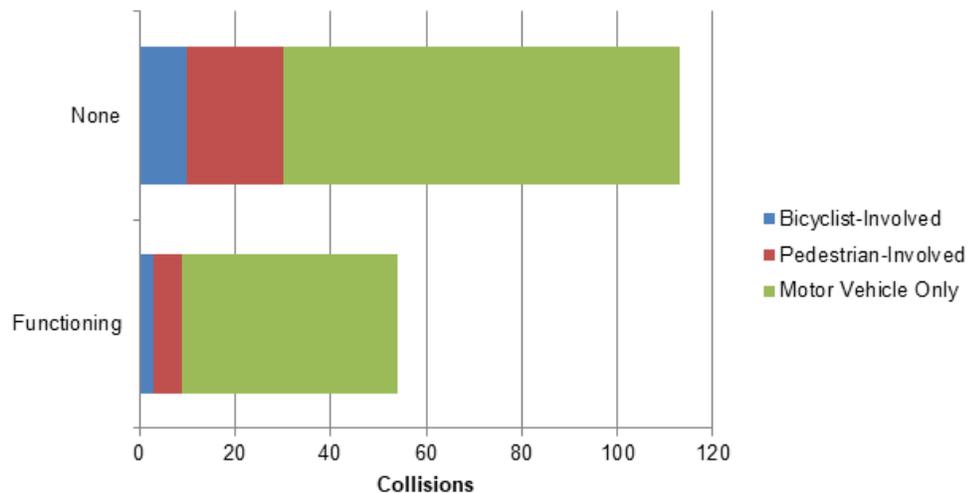


Figure 7: Traffic Control Device by Mode

# COLLISION FACTORS

## BICYCLIST-INVOLVED COLLISIONS

Bicyclists were determined to be at fault in 8 of the 13 collisions reported during the study period (Table 1). The most common bicyclist violation was traffic signals and signs.

Drivers were determined to be at fault in 5 of the 13 bicycle involved collisions during the study period. The most common violation was failing to yield the right of way to an automobile.

## PEDESTRIAN-INVOLVED COLLISIONS

There were 26 pedestrian-involved collisions during the study period. Drivers were determined to be at fault in nearly 60 percent of collisions where a determination was made (14 of 24 collisions). Eighty (80)

percent of pedestrian-fault collisions were attributed to a pedestrian violation, which can include behavior like pedestrians crossing streets outside of a crosswalk or otherwise failing to follow traffic laws. Among the 14 collisions determined to be the fault of a driver, five were attributed to a driver failing to yield the right of way to a pedestrian and four were attributed to unsafe starting or backing (Table 2).

For pedestrian collisions, reports also include information about the action or location of the pedestrian prior to the collision. Of the 26 collisions that were reported, 4 involved a pedestrian crossing in a crosswalk at an intersection, 13 involved a pedestrian crossing outside a crosswalk, and 5 involved pedestrians walking in the roadway or on a shoulder (Table 3). In 3 cases, the pedestrian who was injured was not in the roadway.

**Table 1: Primary Bicycle Collision Factors**

Violation	Bicyclist at Fault	Motorist at Fault
Unsafe Speed	1	1
Wrong Side of Road	1	
Unsafe Lane Change	1	
Automobile Right of Way	1	3
Pedestrian Right of Way		1
Traffic Signals and Signs	2	
Other Hazardous Violation	1	
Unsafe Starting or Backing	1	
Total	8	5

**Table 2: Primary Pedestrian Collision Factors**

Violation	Pedestrian at Fault	Motorist at Fault	No Fault Determination
Not Stated	1		
Unsafe Speed		1	
Improper Turning			1
Pedestrian Right of Way		5	
Pedestrian Violation	8	2	
Traffic Signals and Signs		1	
Other hazardous violation	1		
Other than driver or pedestrian			1
Unsafe Starting or Backing		4	
Other Improper Driving		1	
Total	10	14	2

**Table 3: Pedestrian Action**

Pedestrian Action	Pedestrian at Fault	Motorist at Fault	No Fault Determination	Total
Crossing in Crosswalk at Intersection		4		4
Crossing in Crosswalk Not at Intersection		1		1
Crossing Not in Crosswalk	8	5		13
In Road, Including Shoulder	2	2	1	5
Not in Road		2	1	3
Total	10	14	2	26

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# D

## FUNDING SOURCES

## FEDERAL SOURCES

### Department of Housing and Urban Development: Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal CDBG grantees may "use Community Development Block Grant funds for activities that include (but are not limited to): acquiring real property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grant funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs." Trails and greenway projects that enhance accessibility are the best fit for this funding source.

More information: [www.hud.gov/cdbg](http://www.hud.gov/cdbg)

### Department of Transportation: Transportation Investments Generating Economic Recovery (TIGER) Program

Can be used for innovative, multimodal, and multi-jurisdictional transportation projects that promise significant economic and environmental benefits to an entire metropolitan area, region, or nation. These include bicycle and pedestrian projects. Project minimum is \$10 million.

More information: [www.transportation.gov/tiger](http://www.transportation.gov/tiger)

### Environmental Protection Agency: Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to "improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which is to provide more transportation choices. The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including the TIGER grants).

More information: [www.epa.gov/smartgrowth/hud-dot-epapartnershipsustainable-communities](http://www.epa.gov/smartgrowth/hud-dot-epapartnershipsustainable-communities)

### **Environmental Protection Agency: Smart Growth Program**

EPA's Smart Growth Program helps communities improve local development practices and get the type of development residents desire. The Smart Growth Program works with local, state, and national experts to discover and encourage development strategies that protect human health and the environment, create economic opportunities, and provide attractive and affordable neighborhoods for people of all income levels. The Smart Growth Program is housed in EPA's Office of Sustainable Communities, which also coordinates EPA's Green Building Work.

More information: [www.epa.gov/smartgrowth/epa-smart-growth-grantsandother-funding](http://www.epa.gov/smartgrowth/epa-smart-growth-grantsandother-funding)

### **Federal Highway Administration: Accelerated Innovation Deployment Demonstration**

The AID Demonstration program provides funding as an incentive to accelerate the use of innovation in highway transportation projects. The Federal Highway Administration (FHWA) expects approximately \$10 million to be made available for AID Demonstration grants in each of Fiscal Years 2016 through 2020 from amounts authorized within the Technology and Innovation Deployment Program (TIDP) under the Fixing America's Surface Transportation (FAST) Act. The grants are administered through the

FHWA Center for Accelerating Innovation and involve any phase of a highway transportation project. This grant can be used for road rebalancing improvements.

More information: [www.fhwa.dot.gov/innovation/grants/edc4\\_aiddemo\\_factsheet.pdf](http://www.fhwa.dot.gov/innovation/grants/edc4_aiddemo_factsheet.pdf)

### **Federal Highway Administration: Fixing America's Surface Transportation Act (Fast Act)**

The FAST Act, which replaced Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2015, provides long-term funding certainty for surface transportation projects, meaning States and local governments can move forward with critical transportation projects with the confidence that they will have a Federal partner over the long term (at least five years). The law makes changes and reforms to many Federal transportation programs, including streamlining the approval processes for new transportation projects and providing new safety tools. It also allows local entities that are direct recipients of Federal dollars to use a design publication that is different than one used by their State DOT.

More information: [www.transportation.gov/fastact](http://www.transportation.gov/fastact)

### **Federal Highway Administration: Congestion Mitigation and Air Quality Improvement Program**

Funds may be used for a transportation project or program that is likely to contribute to the attainment or maintenance of a national ambient air quality standard, with a high level of effectiveness in reducing air pollution, and that is included in the metropolitan planning organization's (MPO's) current transportation plan and transportation improvement program (TIP) or the current state transportation improvement program (STIP) in areas without an MPO.

More information: [www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm](http://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.cfm)

### **Federal Highway Administration: Surface Transportation Block Grant (STBGP)**

The FAST Act expanded the existing Surface Transportation Program (STP) into the Surface Transportation Block Grant Program (STBGP), which places more decision-making power in the hands of state and local governments. The FAST Act simplifies the list of uses eligible for program funds and increases the ways that funds can be used for local roads and rural minor collectors. The Transportation Alternatives Program (TAP) is a set-aside program of this block grant. The new program requires 55 percent of program funds be distributed within each state on the basis of population, compared to 50 percent under STP. In California, STBGP is allocated through the Regional Surface

Transportation Program (RSTP). The TAP program is allocated through the Active Transportation Program (ATP).

More information: [www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm](http://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm)

### **Federal Transit Administration: Bus and Bus Facilities Program: State of Good Repair**

Can be used for projects to provide access for bicycles to public transportation facilities, to provide shelters and parking facilities for bicycles in or around public transportation facilities, or to install equipment for transporting bicycles on public transportation vehicles.

More information: [www.fta.dot.gov/grants/13094\\_3557.html](http://www.fta.dot.gov/grants/13094_3557.html)

### **National Park Service: Land and Water Conservation Fund**

The Land and Water Conservation Fund (LWCF) is a National Parks Service program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The program is administered by the California Department of Parks and Recreation. Funds can be used for right-of-way acquisition and construction. Any projects located in future parks could benefit from planning and land acquisition funding through the LWCF. Trail corridor acquisition can be funded with LWCF grants as well.

More information: [www.nps.gov/subjects/lwcf/stateside.htm](http://www.nps.gov/subjects/lwcf/stateside.htm)

## STATE SOURCES

### California Department of Housing and Community Development Affordable Housing and Sustainable Communities Program

The purpose of the Affordable Housing and Sustainable Communities (AHSC) Program is to reduce greenhouse gas (GHG) emissions through projects that implement land-use, housing, transportation, and agricultural land preservation practices to support infill and compact development, and that support related and coordinated public policy objectives, including the following:

- » reducing air pollution;
- » improving conditions in disadvantaged communities;
- » supporting or improving public health and other co-benefits as defined in Section 39712 of the Health and Safety Code;
- » improving connectivity and accessibility to jobs, housing, and services;
- » increasing options for mobility, including the implementation of the Active Transportation Program established pursuant to Section 2380 of the Streets and Highway Code;
- » increasing transit ridership;
- » preserving and developing affordable housing for lower income households; and
- » protecting agricultural lands to support infill development.

More information: [www.hcd.ca.gov/grants-funding/active-funding/ahsc.shtml](http://www.hcd.ca.gov/grants-funding/active-funding/ahsc.shtml)

### California Conservation Corps: Labor Assistance

The California Conservation Corps (CCC) provides labor assistance for projects related to natural resource management. Public agencies can hire a CCC team at low cost. The nearest CCC center is the Inland Empire center located in San Bernardino.

More information: [www.ccc.ca.gov/about/glance/faqs/abouthiringacrew/Pages/faqhirecrew.aspx](http://www.ccc.ca.gov/about/glance/faqs/abouthiringacrew/Pages/faqhirecrew.aspx)

### California Natural Resources Agency: Environmental Enhancement and Mitigation Program

The Environmental Enhancement Mitigation Program (EEMP) provides grant opportunities for projects that indirectly mitigate environmental impacts of new transportation facilities. Projects should fall into one of the following three categories: highway landscaping and urban forestry, resource lands projects, or roadside recreation facilities. Funds are available for land acquisition and construction. The local Caltrans district must support the project. The average award amount is \$250,000.

More information: [www.resources.ca.gov/grants/environmentalenhancementandmitigation-eem/](http://www.resources.ca.gov/grants/environmentalenhancementandmitigation-eem/)

### California Transportation Commission: State Transportation Improvement Program (STIP)

Funds new construction projects that add capacity to the transportation network. STIP consists of two components, Caltrans' Interregional Transportation Improvement Program (ITIP) and regional transportation planning agencies' Regional Transportation Improvement Program (RTIP). STIP funding is a mix of state, federal, and local taxes and fees. Bicycle and pedestrian projects may be programmed under ITIP and RTIP.

More information: [www.catc.ca.gov/programs/stip/](http://www.catc.ca.gov/programs/stip/)

### CALTRANS: Active Transportation Program

With the consolidation of federal funding sources in MAP-21 and again under the FAST Act, the California State Legislature has consolidated a number of state-funded programs centered on active transportation into a single program. The resulting Active Transportation Program (ATP) consolidated the federal programs, Bicycle Transportation Account, the Safe Routes to Schools Program, and the Recreational Trails Program. The ATP's authorizing legislation (signed into law by the Governor on September 26, 2013) also includes placeholder language to allow the ATP to receive funding from the newly established Cap-and-Trade Program in the future. The Statewide Competitive ATP has \$240 million available through the 2020/2021 fiscal cycles. The California Transportation Commission writes

guidelines and allocates funds for the ATP, while the ATP will be administered by the Caltrans Division of Local Assistance.

More information: [www.dot.ca.gov/hq/LocalPrograms/atp/index.html](http://www.dot.ca.gov/hq/LocalPrograms/atp/index.html)

### CALTRANS: Sustainable Transportation Planning Grants

The Sustainable Transportation Planning Grant Program was created to support the California Department of Transportation's (Caltrans) Mission: Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. The California Legislature passed, and Governor Edmund G. Brown Jr. signed into law, Senate Bill (SB) 1, the Road Repair and Accountability Act of 2017, a transportation funding bill that will provide a reliable source of funds to maintain and integrate the State's multimodal transportation system. In addition to the \$9.3 million in traditional State and federal grants, approximately \$24.5 million in SB 1 funds for Sustainable Communities Grants is available for the Fiscal Year (FY) 2019-2020 grant cycle. The SB 1 grant funding is intended to support and implement Regional Transportation Plan (RTP) Sustainable Communities Strategies (SCS) (where applicable) and to ultimately achieve the State's greenhouse gas (GHG) reduction target of 40 and 80 percent below 1990 levels by 2030 and 2050, respectively. Eligible planning projects must have a transportation

nexus per Article XIX Sections 2 and 3 of the California Constitution. Therefore, successful planning projects are expected to directly benefit the multi-modal transportation system. Sustainable Communities Grants will also improve public health, social equity, environmental justice, and provide other important community benefits.

More information: [www.dot.ca.gov/hq/tpp/grants.html](http://www.dot.ca.gov/hq/tpp/grants.html)

### **CALTRANS: Community Based Transportation Planning Grant Program**

The Community Based Transportation Planning (CBTP) grant program promotes transportation and land use planning projects that encourage community involvement and partnership. These grants include community and key stakeholder input, collaboration, and consensus building through an active public engagement process. CBTP grants support livable and sustainable community concepts with a transportation or mobility objective to promote community identity and quality of life.

More information: [www.dot.ca.gov/hq/tpp/offices/ocp/completed\\_projects\\_cbtp.html](http://www.dot.ca.gov/hq/tpp/offices/ocp/completed_projects_cbtp.html)

### **CALTRANS: Highway Safety Improvement Program**

The Highway Safety Improvement Program (HSIP) is a data-driven funding program, and eligible projects must be identified through analysis of crash experience, crash potential, crash rate, or other similar metrics. Infrastructure and non-infrastructure projects are eligible for HSIP funds. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan. In California, HSIP is administered by Caltrans.

More information: <http://www.dot.ca.gov/hq/LocalPrograms/hsip.html>

### **CALTRANS: Petroleum Violation Escrow Account**

In the late 1970s, a series of federal court decisions against selected United States oil companies ordered refunds to the states for price overcharges on crude oil and refined petroleum products during a period of price control regulations. To qualify for Petroleum Violation Escrow Account (PVEA) funding, a project must save or reduce energy and provide a direct public benefit within a reasonable time frame. In California, Caltrans Division of Local Assistance administers funds for transportation-related PVEA projects. PVEA funds do not require a match and can be used as match for additional federal funds.

More information: [www.dot.ca.gov/hq/LocalPrograms/lam/prog\\_g/g22state.pdf](http://www.dot.ca.gov/hq/LocalPrograms/lam/prog_g/g22state.pdf)

### CALTRANS: Regional Surface Transportation Program

The Regional Surface Transportation Program (RSTP) was established by California State Statute utilizing Surface Transportation Program Funds that are identified in Section 133 of Title 23 of the United States Code. This program provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital and intercity passenger projects.

More information:

[www.dot.ca.gov/hq/transprog/federal/rstp/regional\\_surface\\_transportation\\_program-map21\\_090115\\_1.pdf](http://www.dot.ca.gov/hq/transprog/federal/rstp/regional_surface_transportation_program-map21_090115_1.pdf)

### CALTRANS: Transportation Development Act Article III Funds

Transportation Development Act (TDA) Article III funds awarded annually to local jurisdictions for bicycle and pedestrian projects in California, with about \$700,000 awarded for San Bernardino County. These funds originate from the state gasoline tax and are distributed to counties based on population, with a competitive process administered by SANBAG for local jurisdictions. Funds may be used for the following bicycle and pedestrian activities:

- » Engineering expenses
- » Right-of-way acquisition
- » Construction and reconstruction

- » Retrofitting existing bicycle and pedestrian facilities, including signage installation and ADA compliance
- » Route improvements such as signal controls for cyclists, bicycle loop detectors, rubberized rail crossings and bicycle friendly drainage grates
- » Support facilities, such as bicycle parking and pedestrian amenities

More information: [www.dot.ca.gov/hq/MassTrans/State-TDA.html](http://www.dot.ca.gov/hq/MassTrans/State-TDA.html)

### CNRA: Green Infrastructure Program

The California Natural Resource Agency appropriated \$18.5 million for competitive grants for multibenefit green infrastructure investments in or benefiting disadvantaged communities. Applicants can be awarded between \$50,000-\$3 million. Applicants must show that their projects will achieve measurable benefits by, acquiring, creating, enhancing or expanding community parks and green spaces or use natural systems, or systems that mimic natural systems to achieve multiple benefits to create sustainable and vibrant communities.

### CNRA: Urban Greening Program

The California Natural Resource Agency provides grants through this program to projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption, and reducing vehicle miles travelled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improving air and water quality and reducing energy consumption, and creating more walkable and bike-able trails. Approximately \$19 million is available for urban greening projects, and there are no maximum or minimum grant amounts.

replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants. The California application deadline is January of each year. There is no maximum cap to the amount requested; however, all items in the proposal must be justified to meet the objectives of the proposal.

More information: [www.ots.ca.gov/Grants/Apply/default.asp](http://www.ots.ca.gov/Grants/Apply/default.asp)

### Office of Traffic Safety: Grants

The Office of Traffic Safety (OTS) distributes grants statewide to establish new traffic safety programs or fund ongoing safety programs. OTS grants are supported by federal funding under the National Highway Safety Act and MAP-21. Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Bicycle safety is included in the list of traffic safety priority areas. Eligible grantees are governmental agencies, state colleges, state universities, local town and county government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot

## REGIONAL & LOCAL SOURCES

### Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bicycle and pedestrian projects. These projects have commonly provided Class II facilities for portions of on-street, previously planned routes and public spaces. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

### Local Bond Measures

Local bond measures, or levies, are usually initiated by voter-approved general obligation bonds for specific projects. Bond measures are typically limited by time, based on the debt load of the local government or the project under focus. Funding from bond measures can be used for right-of-way acquisition, engineering, design, and construction of pedestrian and bicycle facilities. Bond measures are often used by cities for local match in grant applications. Transportation-specific bond measures featuring a significant bicycle/pedestrian facility element have passed in other communities, such as Seattle's "Closing the Gap" measure.

### Utility Projects

By monitoring the capital improvement plans of local utility companies, it may be possible to coordinate upcoming utility projects with the installation of motor vehicle, transit, bicycle, and pedestrian infrastructure within the same area or corridor. Often times, utility companies will mobilize the same type of forces required to construct transportation projects, resulting in the potential for a significant cost savings. These types of joint projects require a great deal of coordination, a careful delineation of scope items, and an agreement or memorandum of understanding, which may need to be approved by multiple governing bodies.

### New Construction

Future road widening and construction projects are one means of providing bicycle and pedestrian facilities. To ensure that roadway construction projects provide pedestrian and bicycle infrastructure where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California's 2008 Complete Streets Act and Caltrans' Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

### The Virginia and Alfred Harrell Foundation

Formerly known as The Bakersfield California Foundation, the foundation has roughly \$800,000 to distribute each year. \$500,000 of which funds grants for two cycles:

- » Spring: where BCF donates smaller grant amounts — around \$20,000 — to a larger number of organizations, based on a particular focus
- » Fall: a two-part competitive cycle, where they award amounts of \$100,000, \$50,000 and \$25,000 to fewer organizations

The remaining amount — around \$200,000 — is for year-round non-cycle grants, which are generally focused on animal welfare, literacy, education, and environmental / historical preservation. These grants also tend to be for smaller amounts. Previously, Bike Bakersfield was awarded \$5,000 for their Downtown Bicycle Parking and Community Enhancement project, which added artistic bicycle racks in front of downtown businesses.

More information: <http://www.vahfoundation.org/>

### San Joaquin Valley Air Pollution Control District Grants & Incentives

The San Joaquin Valley Air Pollution Control District accepts applications for bicycle infrastructure projects, including Class I (Bicycle Path Construction), Class II (Bicycle Lane Striping), or Class III (Bicycle Route) projects. The program provides funding to assist with the development or expansion of a comprehensive bicycle-transportation network which will provide a viable transportation option for travel to school, work and commercial sites. Funding for this program is limited to municipalities, government agencies, and public educational institutions located within the boundaries of the district. Funding opportunities include:

- » Up to \$150,000 per project for Class I shared-use paths
- » Up to \$100,000 per project for Class II bike lanes
- » Up to \$100,000 per project for Class III bike routes

## Kern County Air Pollution Mitigation Fund

The Kern County Air Pollution Mitigation Fund fulfills the intent of a series of settlements between the Sierra Club and residential building developers in the Bakersfield area. As required by these settlements, the Fund receives air pollution mitigation fees paid by property developers to offset the cumulative air pollution impacts of new developments. With the advice of a Bakersfield based funding advisory board, the Rose Foundation uses these developer fees to support grants for projects designed to reduce particulate or ozone air pollution in Kern County.



HAVEN DRIVE SCHOOL

