

Fremont Vision Zero 2020

A focused and collaborative effort to improve street safety and reduce traffic fatalities to zero.



Status Report and Action Plan
March 2016



Logo and Cover Design

The Fremont Vision Zero 2020 logo is an adaptation of the simple triangular traffic yield sign and highlights the triple focus on safer streets, people and vehicles. The cover design incorporates visual imagery from the art of Keith Haring, celebrating love and partnership. For Fremont's Vision Zero staff team, the cover design represents a labor of love to improve street safety and reduce traffic fatalities to zero, in a timely, focused and collaborative manner, working in partnership with the entire Fremont community.



Contents

- 5 Message from City Leaders
- 6 Introduction to Vision Zero
- 9 Traffic Safety in Fremont
- 17 Vision Zero Action Plan:
 “Safer Streets, Safer People, Safer Vehicles”



Safer Streets

- #1. Install Pedestrian Countdown Signals
- #2. Enhance Pedestrian Crossings
- #3. Provide New Traffic Signals at Priority Locations
- #4. Improve Nighttime Lighting
- #5. Tame High-Speed Arterial Streets
- #6. Build Better Bikeways
- #7. Make Freeway Interchanges Safer for Walking and Bicycling
- #8. Calm Traffic Around Schools and in Neighborhoods
- #9. Conduct Safety Assessments for “Safety Priority Streets”

Safer People

- #10. Expand Traffic Safety Education Programs
- #11. Continue Enforcement of “High Risk Behaviors” and “Hot Spots”
- #12. Study Possible Use of Automated Speed Enforcement Cameras

Safer Vehicles

- #13. Deploy Crash Avoidance Technology in All New Vehicles

31 Partnerships

32 Appendix

- A. Summary of 2015 Major Traffic Crashes
- B. Traffic Safety Tips



Acknowledgements

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Special thanks to Sweden, New York City, San Francisco, San Jose, the National Association of City Transportation Officials (NACTO) and the Vision Zero Network as their efforts helped inspire and guide Fremont's program.

The *Fremont Vision Zero 2020* action plan for safer streets, safer people, and safer vehicles is dedicated to those who lost their lives in a traffic crash, those who have been severely injured, and to their family and friends. Their loss inspires us to give a focused and whole-hearted effort to improve street safety and reduce traffic fatalities to zero.

Message from City Leaders

The community of Fremont, California is renown as a safe and livable city, having great neighborhoods, parks, schools, and a wonderfully diverse population, all located within the vibrant economy of Silicon Valley and as part of the cultural richness and environmental beauty of the San Francisco Bay Area.

With our population of nearly 230,000 residents, comprising one of the 100 largest cities in the United States, we value public safety as among our highest priorities. Unfortunately, today one of our greatest safety threats is on our own city streets where too often people are injured or killed in traffic crashes. That is why we have embraced “Vision Zero” as a traffic safety strategy with the goal of improving street safety and eliminating traffic fatalities.

Proudly, Fremont is already recognized as a leader in traffic safety among large cities in California and the nation. Our fatality crash rate of 3.5 (annual traffic deaths per 100,000 population) is substantially below the 7.8 rate for California and the 10.3 rate for the nation. However, we can and must continue to do better and improve.

Current trends are demanding safer streets, safer travel behaviors, and safer vehicles as we face challenges posed by an aging population, distracted driving, and an increasing shift in travel by walking and bicycling. Our Vision Zero plan is a strategy that is focused on data analytics and best practices, and has an emphasis on collaborating with the community to create a “safety first” culture. Further, we have the bold objective to do all we can to eliminate fatalities on Fremont streets by 2020. We call it our “2020 vision!”

We pledge to focus and collaborate on improving street safety and eliminating traffic deaths in Fremont. We look forward to having you join us!



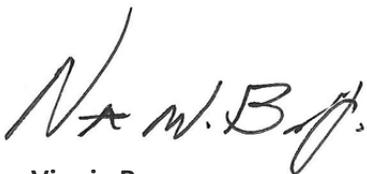
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Introduction to Vision Zero

Vision Zero is a street safety policy that strives to eliminate traffic fatalities and reduce severe injuries for all travel modes. First initiated by Sweden in 1997, Vision Zero has proven successful across Europe achieving 50% reductions in fatalities over a decade. Since 2014, the Vision Zero approach has been adopted by a growing number of American cities.



Each year over 30,000 people die on our nation’s streets and highways and hundreds of thousands more are severely injured, resulting in tragic personal loss and deep community impact. This includes: emotional trauma to affected individuals, families and friends; personal economic loss and long-term healthcare costs; and significant taxpayer spending on emergency response involving paramedics, police, ambulance services, and hospitals.

Vision Zero considers the loss of life from traffic crashes as unacceptable and preventable, and identifies safety as the highest priority for the design and operation of the transportation system. A Vision Zero approach recognizes that human errors are inevitable and unpredictable, and accordingly, the transportation system should be designed to anticipate error so the consequence is not severe injury or death.

Successful Vision Zero programs are guided by the rigorous evaluation of traffic crash data and the implementation of a comprehensive and coordinated action plan involving transportation engineers, law enforcement officials, educators, vehicle manufacturers, policy makers, and the community.

Vision Zero in Fremont

In September 2015, the Fremont City Council approved Vision Zero as its traffic safety policy. Among US cities, Fremont is an early adopter of Vision Zero and is now the sixth city to have a specific Vision Zero action plan, following New York City, San Francisco, Seattle, San Jose, and Washington DC. According to the national Vision Zero Network (see Figure 1), 15 US cities have adopted Vision Zero as their traffic safety policy and are actively engaged in implementing or developing Vision Zero programs for their community. Another 18 cities are considering Vision Zero.

Fremont’s Vision Zero 2020 status report and action plan includes a detailed assessment of traffic crashes in Fremont and presents a comprehensive set of actions to improve traffic safety over the next few years with a goal to significantly reduce fatalities and severe injuries by 2020. Getting to zero fatalities by 2020 is the ideal vision; continuous improvement is the minimum expectation. The Fremont Vision Zero 2020 action plan is organized around the themes of safer streets, people and vehicles.

Safer Streets

The goal of the **safer streets** program is to re-engineer Fremont's transportation system to safely accommodate all travel modes, all ages, and abilities, and to calm traffic speeds so that the consequence of traffic crashes does not result in the loss of life. It is noted that all fatal traffic crashes in 2015 occurred on Fremont streets with speed limits over 40 miles per hour.



Safer People

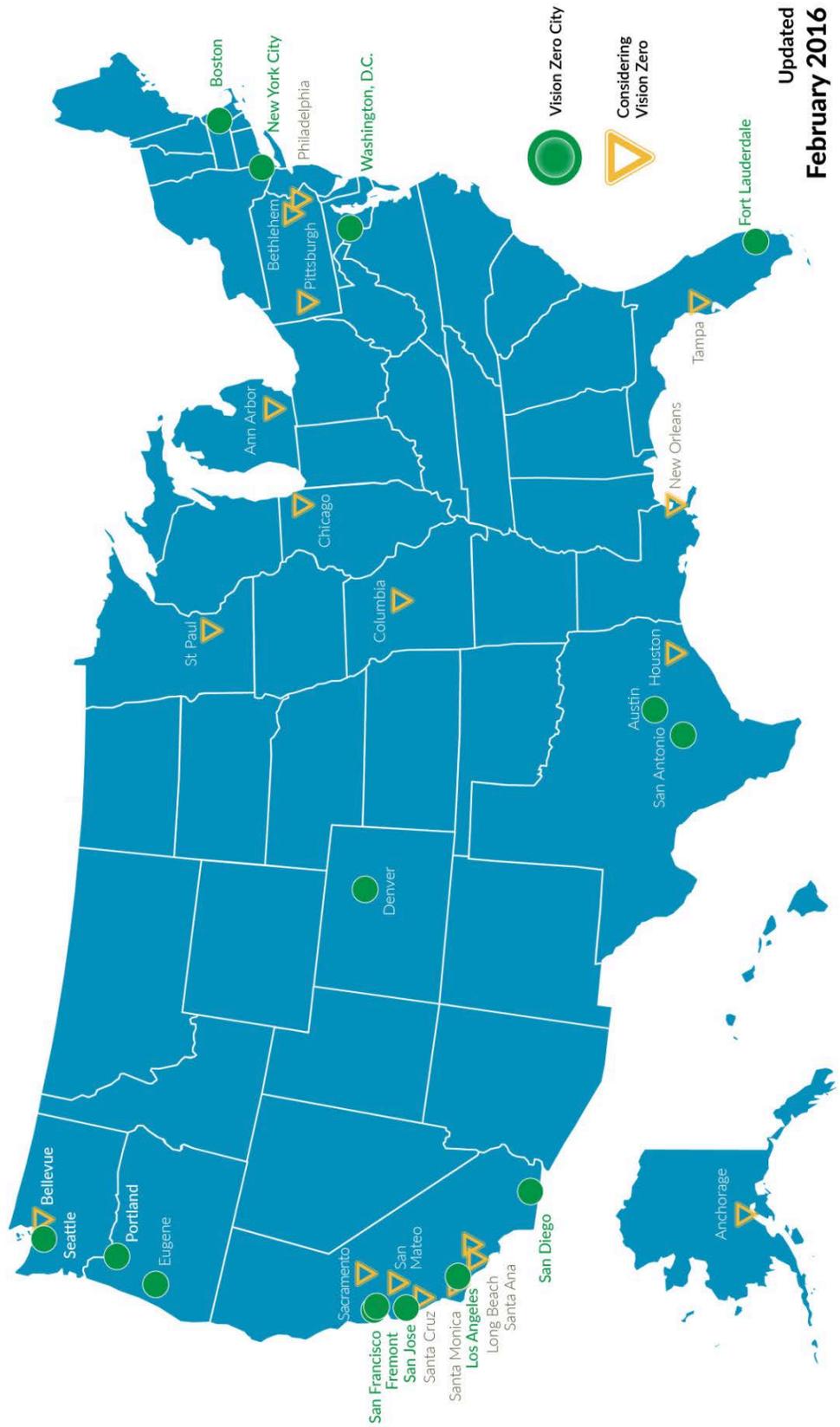
Studies on traffic safety have concluded that over 90% of traffic crashes are the result of human errors and unsafe behaviors. This includes speeding, running red lights and stop signs, intoxicated traveling (driving, biking and walking), distraction and inattention. The Vision Zero actions related to **safer people** are focused on enhancing enforcement and education programs.

Safer Vehicles

Ultimately, the continued development of **safer vehicles** has the potential to virtually eliminate traffic crashes. Overall traffic fatalities in the US have declined since a peak of 54,600 in 1972, as a result of improved vehicle safety measures like seat belts, airbags, and anti-lock braking. Today, exciting new technologies are being developed that can help avoid traffic crashes through the use of sensors and automated vehicle controls for braking and steering. Proudly, the world's safest vehicles are being made today in Fremont at the Tesla Motors factory. Accelerating the deployment of crash avoidance technologies in all vehicles is perhaps the way to achieve Vision Zero everywhere!



Figure 1 - Vision Zero Cities in the US



Updated
February 2016

Traffic Safety in Fremont

The City of Fremont already has a strong focus on traffic safety as a priority and is implementing the best practices known as the “4E’s”: 1) **Evaluating** traffic crash data to identify the most serious safety issues; 2) **Engineering** and delivering safety improvement projects; 3) **Enforcing** traffic laws to reduce unsafe behaviors like speeding, red-light running, and driving under the influence; and 4) **Educating** the community on safe practices for all modes of travel (walking, bicycling, and driving). Highlights of the City’s existing traffic safety practices include:

Collaborative Traffic Crash Data Reporting and Evaluation

City staff from the Fremont Police Department and the Public Works Transportation Engineering Section work closely to review traffic collision reports and crash trends. In many jurisdictions, police reports are submitted to a state agency that enters crash information into a database. Information on local crashes is often not available to local transportation engineers for more than a year. In Fremont, Police and Public Works staff share crash information in “real time”, meet regularly to analyze current issues and trends, and strategically align resources for enforcement, education, and engineering.

Automated Red-Light Camera Enforcement

The Fremont Police Department uses automated camera systems to enforce red light running and illegal right turns. There are a total of ten intersections with 15 red light camera approaches in operation. Fremont has the highest number of automated red light cameras installed per capita of any California city.

“Hot Spot” Enforcement

The Fremont Police Department conducts enforcement at areas or “Hot Spots” plagued by frequent collisions. These areas are identified by a statistical analysis of the locations and the time of day when collisions are most frequent. Focused enforcement in these areas has proven successful in raising the public’s awareness and willingness to obey traffic laws.

Intoxicated Driving Prevention

In an effort to combat the dangers of driving under the influence (DUI) of alcohol and/or drugs, Fremont police officers contact local bars and warn them about the problems associated with over-serving their patrons. The Police Department also conducts saturation patrols on a monthly basis during nighttime hours when statistics show most DUI crashes occur.



Citywide Traffic Safety Education

The Fremont Police Department and Community Engagement Unit implement a traffic safety campaign that highlights a different safety topic each month. Information is provided to the community in a variety of ways, including a monthly newspaper column and through social media. Police staff personally engage the community with presentations, meetings, and site visits to provide traffic safety information.

Safe Access to School

Ensuring safe access to Fremont’s 33 elementary, middle and high schools is a collaborative effort between the Fremont Unified School District, the Alameda County Transportation Commission, and the City of Fremont Police and Engineering staff. Police Patrol and Traffic Unit staff are each assigned to a school and work with school officials to educate drivers who are picking up and dropping off their children. The Fremont Police Department also organizes and implements an adult crossing guard program to help protect children walking to and from school at 19 locations. The School District manages a program of parent volunteers that assist with school area access management. Fremont Transportation Engineering staff facilitates “safety audits” to identify and implement access improvements. The Alameda County Transportation Commission funds a Safe Routes to School program, implemented by TransForm, to provide safety education and encourage walking and bicycling to school.

Neighborhood Traffic Calming

Over the past two decades, Fremont has installed speed humps in school zones and within neighborhoods where speeding and traffic cut-through issues are a significant concern. Over 90% of Fremont’s elementary schools have traffic “slow zones.” As part of the *Fremont Vision Zero 2020* action plan new funding is proposed for neighborhood traffic calming at priority locations.



Over the past decade, Fremont has had a traffic safety record that is among the best for cities in the US. Fremont’s fatality crash rate per 100,000 in population has ranged between 2.0 (in 2008) and 3.5 (in 2014). The 2014 fatality crash rates for California and the US are 7.8 and 10.3, respectively.

For benchmarking purposes, Figure 2 provides a comparison of fatality crash rates for the 20 largest cities in California for the year 2014. Among these cities, Fremont is ranked fifth best for traffic safety. Nationally, fatality rates among states range between a low of 4.9 for Massachusetts and a high of 22.6 for Montana. Fatality rates are notably higher in rural environments than in urban settings. Internationally, Sweden, the originator of Vision Zero, is the world’s leader in traffic safety with a national traffic fatality rate of 2.7, and remarkably, the Swedish capital city of Stockholm has a 0.65 fatality rate. Stockholm has a population of 924,000 people and in 2013 had six traffic fatalities.

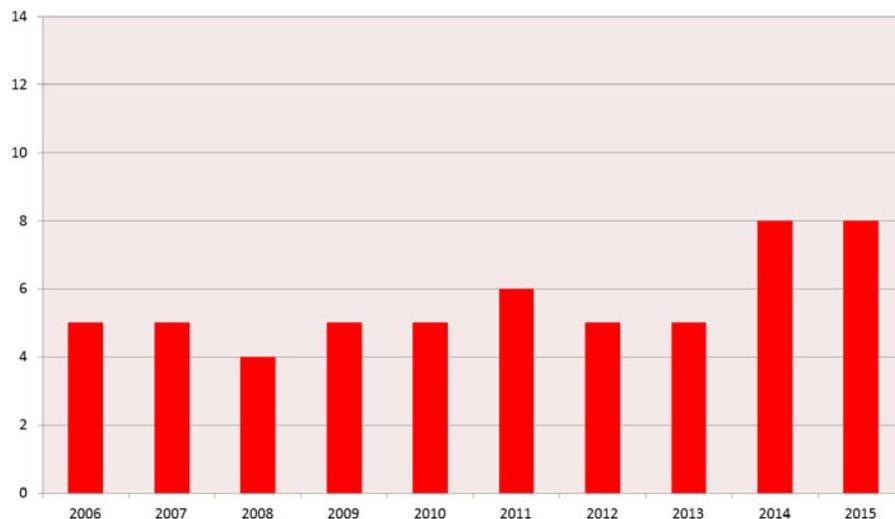
While Fremont ranks high for traffic safety within a US and California context, Fremont is however facing a concerning trend, whereby total fatalities and crash rates have increased in the past two years. As shown on Figure 3, there were eight traffic fatalities on Fremont streets in 2014 and 2015, the highest annual totals in the past decade. The increase in traffic fatalities mirrors a national trend that is attributed to an increase in distracted driving and an aging population.

Figure 2 - Fatality Crash Rates for 20 Largest California Cities

Irvine	2.01
Chula Vista	2.68
Long Beach	2.96
San Diego	3.19
Fremont	3.50
San Francisco	3.64
Oakland	3.87
San Jose	4.13
Stockton	4.30
Santa Ana	4.48
Modesto	4.78
Los Angeles	4.86
Anaheim	4.90
Sacramento	4.95
Fresno	5.04
Oxnard	5.35
Fontana	5.37
Riverside	6.57
Bakersfield	8.14
San Bernardino	13.94

Source: SWITRS, 2014 Calendar Year, Crash Rate per 100,000 Population

Figure 3 - 10-Year History for Traffic Fatalities in Fremont



2015 Crash Data and Issues



An in-depth evaluation of traffic crash data is a key element of the Vision Zero approach. Staff members from the Fremont Police Department and the Public Works Transportation Engineering Section work closely together to collect and analyze traffic crash reports in order to develop data-driven safety improvement actions related to engineering, enforcement and education.

Many traffic crashes occur in Fremont each day. The vast majority of them do not result in severe injuries or fatalities. Studies have identified that about 70% of crashes involve property damage only, 25% involve minor or moderate injuries, 4% result in severe injuries (broken bones, severe bleeding, and/or unconsciousness), and 1% are fatal. The Vision Zero approach specifically focuses on severe injuries and fatalities as the target for analysis and safety improvement measures.

A key principle of Vision Zero is a recognition that crashes will happen — largely due to factors related to human errors and behaviors — however; the consequence of a crash should not be the loss of life or a life altering injury. Therefore special attention is given to fatal and severe injury crashes. In 2015, there were 37 traffic crashes killing eight and severely injuring 31. A narrative summary for each of these crashes is provided in Appendix A of this report. A brief summary of the eight fatal traffic crashes is provided in Figure 4.

Traffic Crash Types and Frequency

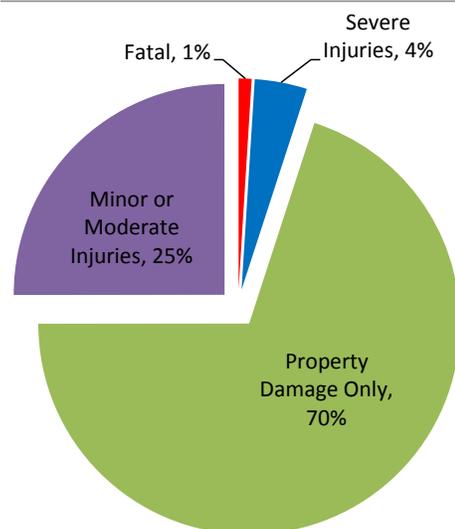


Figure 4 - Summary of 2015 Traffic Fatalities on Fremont Streets

1. A 57-year old female riding a bike on Fremont Blvd at the I-880 freeway interchange was hit by a truck driven by a 44-year old male.
2. A 61-year old male driving late at night (3:46 am) on Mission Blvd (State Route 262) near Nichols Av veered off road and hit a tree.
3. A 35-year old female walking at night across Fremont Blvd mid-block near Nicolet Av was hit by an auto driven by an intoxicated 33-year old male.
4. A 46-year old male driving on Niles Blvd near Kraftile Rd, was believed to be having an epileptic seizure, veered off road and hit a wall.
5. A 78-year old female walking at night across Fremont Blvd at Sundale Dr against the traffic light was hit by a private shuttle bus driven by a 43-year old male.
6. A 69-year old female walking across Mission Blvd (State Route 262) at Mission Cielo Av against the traffic light was hit by an auto driven by a 42-year old female.
7. A 57-year old male walking in early morning (6:41 am) across Fremont Blvd mid-block near Old Warm Springs Blvd was hit by an auto driven by a 42-year old female.
8. A 19-year old male driving recklessly at night with another vehicle on Dumbarton Circle (Ardenwood Business Park) veered off road and hit a tree.

Of the 37 severe injury and fatal crash incidents occurring in 2015, and affecting 39 people, Figures 5, 6, and 7 provide graphical information relative to travel mode, age of crash victims, and time of day. Some key findings are:

- 46% of the crash victims are people who were walking (18 of 39), and 10% are people who were bicycling (4 of 39).
- 62% of the fatalities (5 of 8) involved persons over the age of 50. This age group represents 28% of the Fremont population.
- The time period with the greatest frequency of major crashes was between 6 p.m. and 10 p.m.

Figure 5 - Travel Mode of Crash Victims

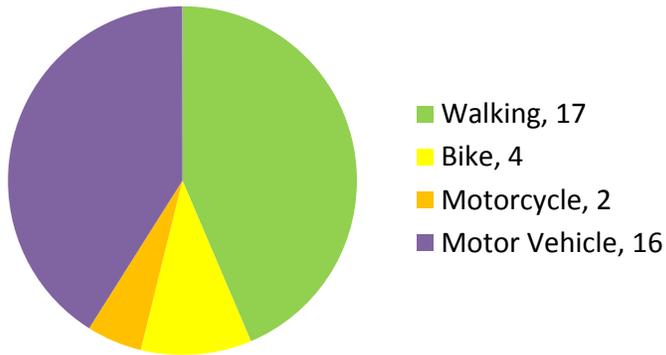


Figure 6 - Age of Crash Victims

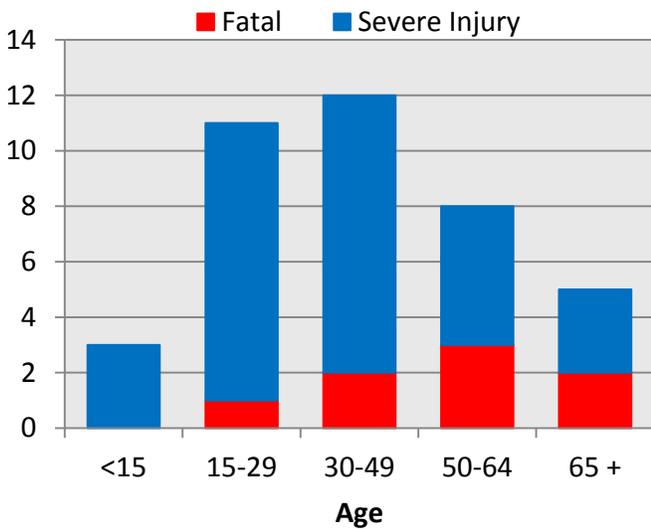


Figure 7 - Time of Day for Major Crashes

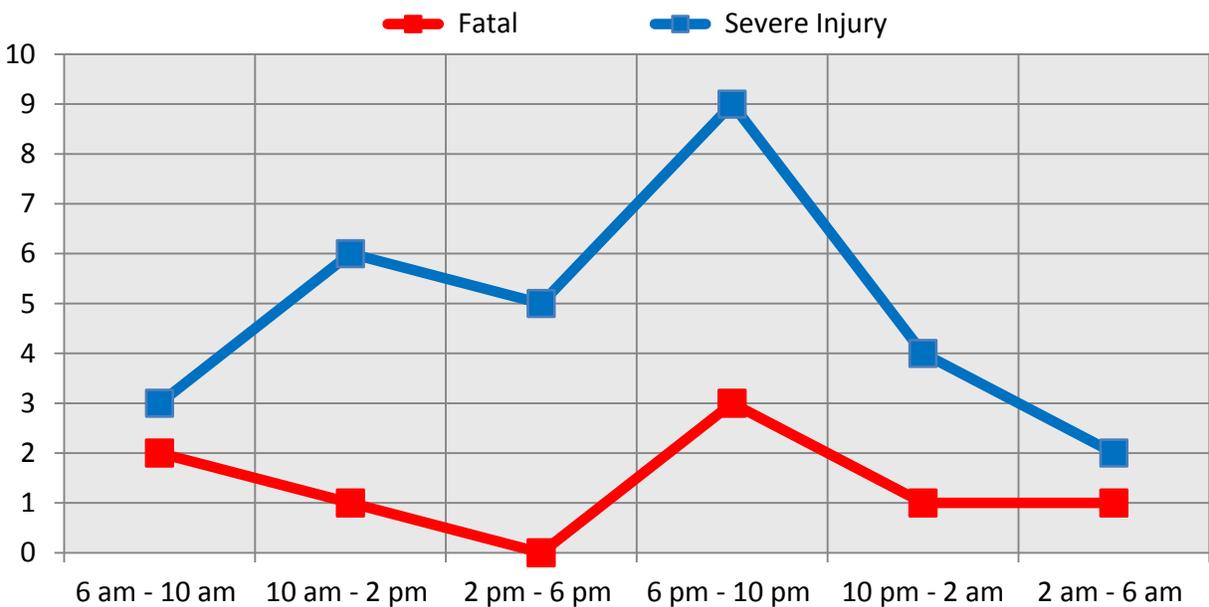
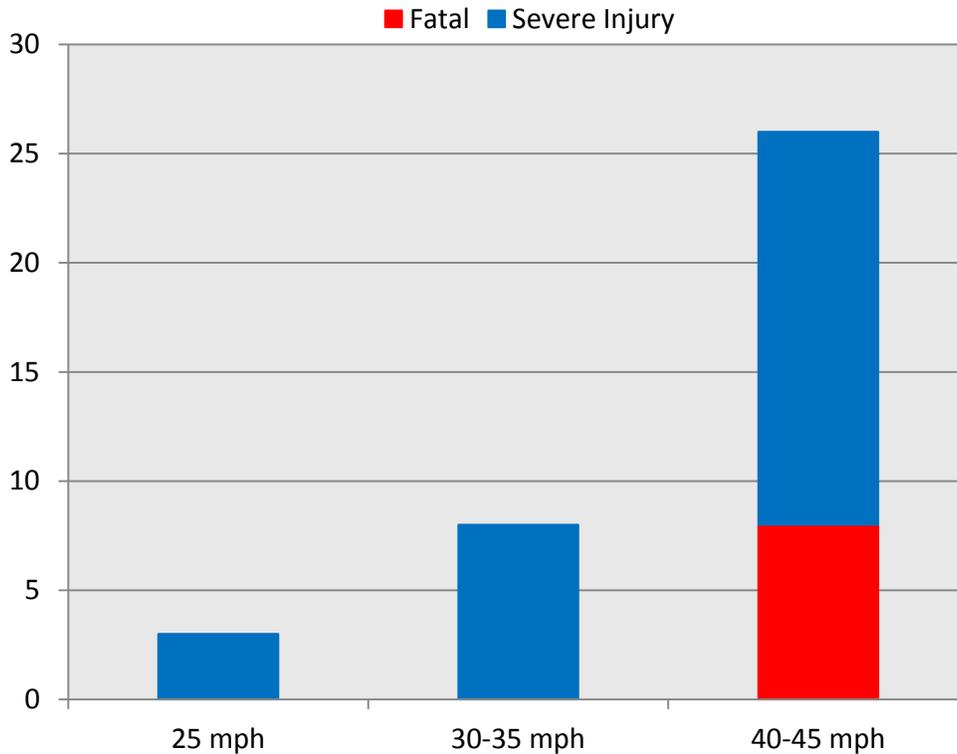


Figure 8 – Speed Limit of Streets Having Major Crashes

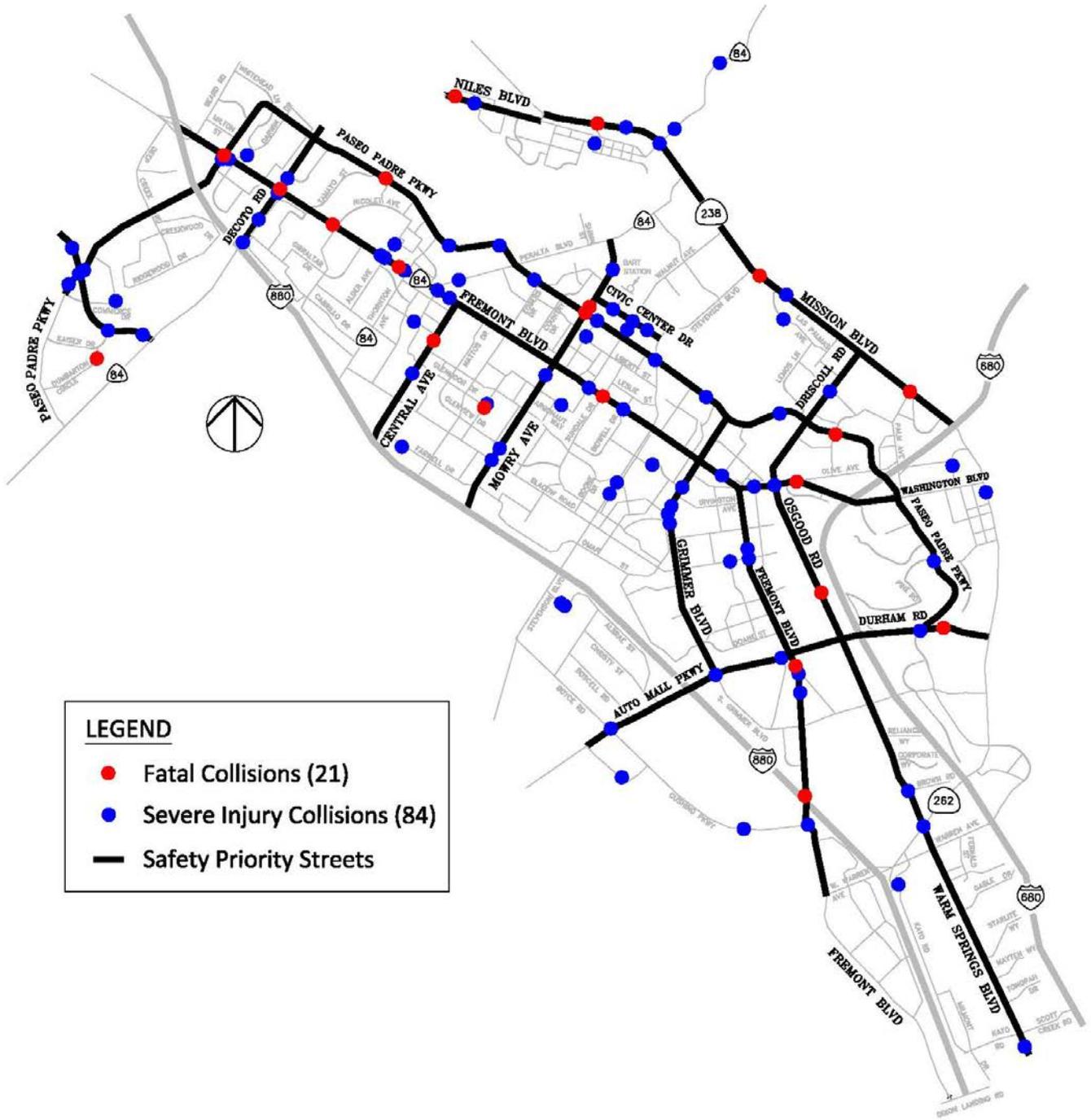


A significant conclusion from the analysis of Fremont crash data is the correlation of severe injuries and fatalities with high speed roadways. In 2015, all eight fatal traffic crashes occurred on major streets with posted speed limits of 40 miles per hour or greater, and 50% of the fatalities occurred on segments of Fremont Boulevard.

Figure 9 provides further insights on the location of major traffic crashes over a 3-year period and helps illustrate the conclusion that about two-thirds of all major crashes and 90% of fatalities happen on just 10% of Fremont streets -- streets like Fremont Boulevard, Paseo Padre Parkway, Mission Boulevard, and Mowry Avenue. These “safety priority streets” are proposed to be the focus of future safety improvement efforts related to engineering, enforcement and education.

It is noted that the “cluster” of traffic crashes appearing on Figure 8 on Grimmer Boulevard (at the curve) and on Civic Center Drive were addressed with recent safety improvement projects which included: at Grimmer, installation of a high friction pavement surface and curve warning beacons; and at Civic Center, installation of a “road diet” which reduced the number of lanes from 4 to 2 and added bike lanes and enhanced crosswalks.

Figure 9 - Location of Major Crashes in Past 3 Years (2013, 2014, 2015)



Vision Zero Action Plan

Safer Streets, Safer People, Safer Vehicles

To make progress toward the Fremont Vision Zero goal of improving street safety and eliminating traffic fatalities, a series of near-term actions are proposed. These traffic safety countermeasures are designed to address specific issues identified from a rigorous review of Fremont’s crash data and solve problems with a comprehensive approach towards safer streets, safer people and safer vehicles.

The Fremont Vision Zero action plan takes two approaches toward improving safety. The first approach involves addressing opportunities associated with each crash incident and location. The second approach incorporates the concept of “predictive analytics”, which extracts information from crash data and uses it to predict trends and the probability of future traffic crashes where similar conditions may exist.



As an example, two of the eight fatalities in 2015 on Fremont streets involved pedestrians crossing major streets within the crosswalk at signalized intersections. But at the time of the crash, the pedestrians were crossing against the traffic signal. These intersections did not have pedestrian countdown signals that could have alerted the pedestrian that there was

not adequate time remaining to safely cross the street. This situation exists in many places throughout Fremont. Accordingly, the Vision Zero action plan proposes to retrofit all traffic signals in Fremont with pedestrian countdown signals (Action Plan Item #1.) In addition, the action plan recommends advocacy for having pedestrian detection technology incorporated into all new vehicles (Action Plan Item #13.)

The majority of the Fremont Vision Zero action plan items involve engineering investments to improve the safety of Fremont streets, including efforts to provide safer street crossings for pedestrians, to improve visibility and nighttime lighting, and to manage vehicle travel speed. Fortunately, Fremont has new funding resources available to invest in safer streets as a result of the Measure BB transportation improvement program approved by Alameda County voters in November 2014. As a supplement to Fremont’s ongoing programs for street improvements from development fees, gas taxes, and competitive grants, the Measure BB program provides direct annual funding to Fremont with a focus on “complete streets” that are safe and convenient for all travel modes.

Safer Streets

#1. Install Pedestrian Countdown Signals

Crossing a six-lane, high speed arterial street can be a difficult task, even at signalized intersections. With conventional traffic signals, pedestrians are unsure about how much time remains to safely cross a street.



Conventional pedestrian signals have three indications presented in the following sequence: Walk, Flashing Don't Walk (FDW), and Steady Don't Walk. Research has shown that there is a general lack of comprehension and understanding of the FDW phase, which means that a pedestrian shall not start to cross the roadway. This lack of understanding is often blamed for unsafe pedestrian crossing behaviors. Twenty-five percent of Fremont's fatalities in 2015 occurred when senior citizens entered an intersection on the FDW phase and did not have sufficient time remaining to cross the roadway. These fatalities could have been prevented had the pedestrians known they only had a few seconds remaining to cross wide, multi-lane arterial roadways. One solution that promises to improve the comprehension of the FDW phase and improve pedestrian behavior is the Countdown Pedestrian Signal (CPS).

CPS informs pedestrians of the amount of time remaining in the "walk" phase before the signal changes to a steady Don't Walk indication. Research has shown that both drivers and pedestrians tend to comply with these signals more often than with non-countdown signals. Many pedestrians like knowing the actual amount of time remaining in the full pedestrian phase so that they can elect whether to begin crossing or adjust their speed to cross more safely. An older person can cross a wide intersection with greater confidence knowing how much time remains for crossing.

Currently, only 40 of the 170 traffic signals citywide are equipped with CPS. Starting in 2016, CPS will be installed at all traffic signals citywide over a two-year period. The first year will focus on traffic signals on arterial streets with a history of pedestrian-vehicle collisions, high pedestrian activity and in proximity to shopping and retail centers, schools, community and senior centers, and parks. By late 2016, a majority of intersections along Fremont Boulevard, Mission Boulevard, Mowry Avenue, Paseo Padre Parkway, Auto Mall Parkway, and Stevenson Boulevard will be equipped with CPS. By late 2017, every traffic signal in Fremont will be able to inform every pedestrian and bicyclist of the available time to cross major arterial intersections.

#2. Enhance Pedestrian Crossings

Fremont has close to 40 pedestrian crossings at uncontrolled intersections on high speed arterial streets where pedestrians are required to traverse four to six lanes of vehicle traffic. They can be challenging to cross for pedestrians due to the combination of high vehicle travel speeds and yielding motorists blocking the view of other motorists in adjacent lanes (the “multiple lane threat” issue). Despite pedestrian warning signage and pavement striping at many of these locations, motorists often do not expect to see a pedestrian and may not yield to a pedestrian in the crosswalk. A number of these locations are located near the Fremont BART Station and other transit lines and in proximity to shopping and retail centers, schools, community and senior centers, and parks. Fortunately, there are a number of design solutions that can be implemented to enhance the marked pedestrian crossings.



Pedestrian Hybrid Beacons (PHB) provide a high level of comfort for pedestrians through the use of a red-signal indication to stop conflicting vehicle traffic. Vehicles can proceed once the pedestrian has crossed and during the final flashing red phase, which can reduce vehicle delay when compared to a full signal installation. A Federal Highway Association study in 2010 found that PHBs can reduce pedestrian crashes by 69 percent and total crashes by 29 percent.

Rectangular Rapid Flash Beacons (RRFB) can enhance safety by reducing crashes between vehicles and pedestrians at unsignalized intersections and mid-block pedestrian crossings by increasing driver awareness of potential pedestrian conflicts. Studies have shown that RRFBs are effective in increasing yielding to pedestrians from 18 percent to 81 percent at two-beacon arrangements and 88 percent at four-beacon arrangements.

Median refuge islands and curb extensions minimize pedestrian exposure by shortening the crossing distance and increasing the number of available gaps for crossing. Providing pedestrian refuge areas at pedestrian crossings at marked crosswalks has demonstrated a 46 percent reduction in pedestrian crashes.

In 2016, three marked crosswalks at uncontrolled intersections will receive PHB or RRFB enhancements along with median refuge islands and curb extensions. An additional three locations will be enhanced annually. Priorities will be given to projects at Mowry Avenue at Waterside Circle, Fremont Boulevard at Bonde Way, Warren Avenue at Bradley Street, Washington Boulevard at Olive Avenue, and Driscoll Road at Mission Creek Trail.

#3. Provide New Traffic Signals at Priority Locations

Traffic on Fremont’s roadways has significantly increased over the last few years due to regional economic growth, regional job/housing imbalance, and the guidance from navigation tools like Waze. Increased congestion on our roadways has made it more difficult for Fremont motorists, pedestrians, and bicyclists to cross or enter the roadway. More and more, there is a need for traffic signals to control traffic flow and create the gaps needed for other motorists to safely cross and enter high speed and high volume arterial streets.



Over the next three years, new traffic signals will be installed at intersections with high crash rates and near high pedestrian activity centers like shopping and retail centers, schools, community and senior centers, and parks. In 2016, a new traffic signal will be installed at Fremont Boulevard and Old Warm Springs, the site where a pedestrian was hit by a vehicle and killed. Over the following two years, two traffic signals will be installed annually at other high priority locations which currently include: Blacow Road at Gatewood Street, Grimmer Boulevard at Seneca Park Avenue, Mission Boulevard at Starr Street/Mill Creek Road, and Mission Boulevard at Sullivan Underpass/Nichols Avenue.

#4. Improve Nighttime Lighting

Fifty percent of our fatal injury collisions occurred in the early or late evening, when visibility is limited and it could be difficult to see pedestrians, bicyclists or other vehicles. The highest percentage of fatal and severe injury collisions occurred in the early evening rush hour period, 6pm to 10pm.

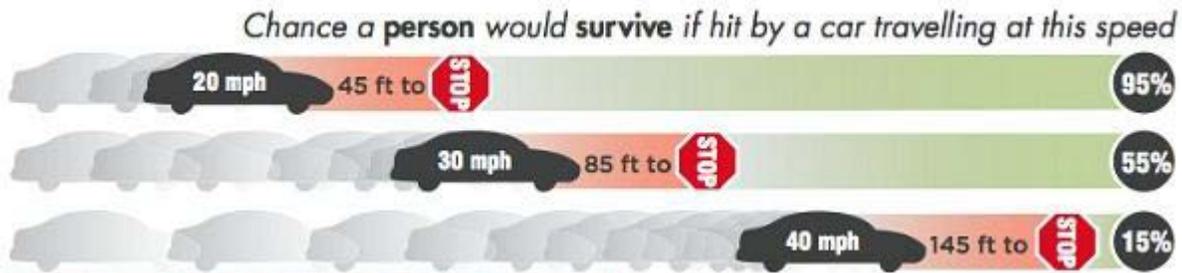
The City of Fremont will be implementing a citywide project to help improve night-time visibility and conserve energy. Fremont will be replacing and retrofitting all existing street lighting with energy efficient “white” light-emitting diode (LED) light fixtures. LED street lights provide a number of benefits over the high-pressure sodium that we currently use today. They improve night-time visibility and safety through better color rendering, more uniform lighting distributions and the elimination of many dark areas between poles.

Fremont Boulevard has been identified as a transit spine in the General Plan and is one of Vision Zero Fremont’s Safety Priority Streets for its large percentage share of pedestrian fatalities. Lighting levels on Fremont Boulevard in the Downtown, Irvington and Centerville Districts will be increased to a level acceptable for a major roadway with high pedestrian conflicts.

#5. Tame High-Speed Arterial Streets

Historically, roadways have been designed and built to quickly and efficiently move cars. Fremont now has a network of high speed arterial streets with wide roadway configurations, wide vehicle travel lanes, and dedicated free right turn lanes that encourage traveling at higher speeds. As a result of roadway design and other contributing factors, one hundred percent of fatal injury collisions and seventy-two percent of severe injury collisions occur on high speed streets.

Over the next five years, Fremont plans to reestablish the speed limits on high speed arterial streets. As part of the annual pavement maintenance program, any arterial street that receives pavement resurfacing will be restriped with narrower ten foot vehicle travel lanes. Studies have shown that narrower streets or traffic lanes slow traffic, reducing the frequency of accidents and the severity of any crashes that do occur.



Fremont also plans to use new traffic sign technologies to help reduce speeds on arterial streets. Speed feedback signs (SFS) will be installed at locations with a history of speed related, severe injury collisions. SFS, also known as dynamic speed displays, provide feedback to drivers about their current speeds and may prompt better compliance with speed limit, without the need for continuous enforcement. When appropriately complemented with police enforcement, SFS can be an effective method for reducing speeds at a desired location.

After vehicle travel lanes have been reduced and SFS have been installed, Traffic Engineering staff will conduct an Engineering and Traffic Survey to reestablish the appropriate speed limits on Fremont's arterial streets and strive to reduce the number of streets with speed limits over 35 miles per hour.

#6. Build Better Bikeways

Fremont is currently in the process of updating its Bicycle Master Plan. The master plan update will develop a “recommended bikeway network” that provides a connected system of bike trails, bikes lanes, and bike routes that will also connect to larger regional bikeway systems and trails. It will also identify existing facilities that can be improved and provide conceptual improvement plans that can be implemented as funding allows.



Another opportunity to enhance Fremont’s bikeway network is through the annual pavement maintenance program and the implementation of reduced vehicle travel lane widths. Narrowing the vehicle lane widths allow the bike lanes on arterial streets to be enhanced with buffers. Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle from the adjacent vehicle travel lane. Buffers effectively implement California’s new law that motorists maintain a 3-foot buffer between themselves and bicyclists when they pass cyclists traveling in the same direction. Buffered bike lanes appeal to a wider cross-section of bicycle users and encourages bicycling by contributing to the perception of safety among users of the bicycle network.

Fremont will also be implementing other enhancements to the bikeway network. As part of the annual pavement maintenance program, bike lanes will be painted green in conflict areas to increase the visibility of the bikeway facility and to reinforce yielding to bicyclists. Green bike lanes help to promote the multimodal nature of a corridor, increases the visibility of bicyclists, and helps reduce conflicts with turning motorists.

Another enhancement that will be implemented is protected bike lanes. Protected bike lanes use a variety of methods for physical protection or separations from adjacent vehicle traffic. Fremont will be using different forms of delineators within the buffered space to separate vehicle traffic from bicyclists. The protected bike lanes will improve comfort and safety on arterial streets with multiple lanes, high traffic volumes, and high speed traffic.

Over the next five years, bikeway improvements will be implemented with annual funding from Measure BB and other regional grants, with priority given to enhancing bikeways near the Fremont BART Station. The first streets to receive green bike lanes and protected bike lanes will be Civic Center Drive between Stevenson Boulevard and BART Way, Walnut Avenue between Mission Boulevard and Civic Center Drive, and Stevenson Boulevard between Mission Boulevard and Fremont Boulevard.

#7. Make Freeway Interchanges Safer for Walking and Bicycling

Freeway interchanges can be difficult to traverse for pedestrian and bicyclists. Freeway interchanges have historically utilized the cloverleaf design, which allows vehicles to merge freely between the arterial street and the on-ramps and off-ramps. Freeway interchanges create long, uncontrolled crossings for pedestrians where motorists don't typically expect pedestrians and aren't prepared to yield. For bicyclists, freeway interchanges create long conflict areas where vehicles are merging at higher speeds. In 2015, a bicyclist was killed crossing the I-880 interchange at Fremont Boulevard.



Over the next five years, there will be a focused effort to make freeway interchanges safer for walking and bicycling. Fremont will work with Caltrans to improve freeway interchanges citywide by installing green bike lanes for the entire length of the conflict areas and providing high visibility crosswalks at all pedestrian crossings. Improvements at the Fremont Boulevard/I-880, Auto Mall Parkway/I-880, and Washington Boulevard/I-680 interchanges are of the highest priority and will be completed by 2017. Improvement plans will be developed for interchanges at Mission Boulevard/I-680 North, Stevenson Boulevard/I-880, and Mowry Avenue/I-880, with implementation by 2020.



#8. Calming Traffic Around Schools and in Neighborhoods



Fremont has invested significantly to reduce speeds on local streets in neighborhoods and surrounding schools. Twenty-six of twenty-eight elementary schools have had speed lumps installed on adjacent streets. As a result of the prior investment, no fatal injury collisions and only two severe injury collisions have occurred on local streets.

The *Fremont Vision Zero 2020* program includes plans to revive a traffic calming program to install speed lumps on additional neighborhood streets.

#9. Conduct Safety Assessments for “Safety Priority Streets”

Over a three year period from 2013 to 2015, 90% of fatal injury collisions and 65% of severe injury collisions occurred on just ten percent of the overall Fremont street system. These streets referred to as “safety priority streets” (shown in Figure 9) include portions of Ardenwood Boulevard, Auto Mall Parkway, Central Avenue, Civic Center Drive, Decoto Road, Driscoll Road, Durham Road, Fremont Boulevard, Grimmer Boulevard, Mission Boulevard, Mowry Avenue, Osgood Road, Paseo Padre Parkway, Warm Springs Boulevard, and Washington Boulevard.



In addition to the improvements and enhancements described previously, Traffic Engineering staff will conduct safety assessments on the streets listed above or “safety priority streets.” Over the next year, staff will walk each roadway and identify other enhancements that may be specific to that roadway. Simpler enhancements, such as trimming overgrown trees for better visibility of traffic signals or removing parking for better visibility of oncoming traffic, will be done immediately. Other costly infrastructure improvements, such as reduced curb radii at intersections or removal of free right turns, will be installed over the next five years as funding allows.

Safer People

#10. Expand Traffic Safety Education Programs



Public education is an effective tool to help change the attitude and behavior of roadway users and provide information on safe driver, bicyclist, and pedestrian practices and tips. Fremont has had a very successful suite of traffic safety education programs that reaches out to all areas and ages of the community.

The Safe Routes to School (SR2S) program is a comprehensive, proven approach that encourages more children to walk and bike safely to Fremont schools. It gives kids and parents the skills, encouragement, and inspiration through a range of activities, events, and lessons, while also addressing location pedestrian and personal safety concerns. The SR2S program hosts activities throughout the year, such as the Golden Sneaker Contest, Bike to

School Week/Month, and International Walk & Roll to School Day, that creates an environment that encourages and develops a long term commitment to walking and biking. There are currently 15 elementary schools, two junior high schools and two high schools enrolled in SR2S program, but the program will be expanding in the next year with available funding and capacity to accept additional schools.

Fremont has also entered into a two-year contract with Safe Moves, a non-profit organization that is recognized as a leading authority in traffic safety education in the country. Safe Moves will provide supplemental encouragement and instruction through 64 school workshops, 32 school bike rodeos, and 6 community rodeos that are held at local festivals and special events. The last round of rodeos and workshops saw a total of 13,761 students participate in encouraging activities and instructional classes.

Fremont is also partnering with Bike East Bay, a leader for innovative and accessible bikeways and streets that meet the needs of all users. Their mission is to help promote healthy, sustainable communities by making bicycling safe, fun, and accessible. Bike East Bay promotes bicycling through a number of adult learn-to-ride classes, family cycling workshops, and kids bike rodeos throughout the city.

Fremont Schools Participating in Safe Routes to Schools Program

1. Ardenwood Elementary
2. Brier Elementary
3. Brookvale Elementary
4. Durham Elementary
5. Fred Weibel Elementary
6. Forest Park Elementary
7. Green Elementary
8. James Leitch Elementary
9. Joseph Azevada Elementary
10. Mattos Elementary
11. Niles Elementary
12. Oliveira Elementary
13. Parkmont Elementary
14. Warm Springs Elementary
15. Warwick Elementary
16. Walters Junior High
17. Thornton Junior High
18. Irvington High School
19. American High School

The Fremont Police Department (FPD) has educational efforts aimed at motorists not attentive to the speeds that they are traveling and that modifications to their own driving behavior may solve the problem. The Traffic Unit also provides a number of helpful safety tips and videos on various topics, such as proper pedestrian crossing practices, distracted driving, and increased driver and pedestrian awareness. These videos are posted through FPD’s Facebook and Twitter accounts, which have thousands of followers. FPD also organizes neighborhood meetings to discuss specific traffic issues for that neighborhood and recommend ways that the residents can personally reduce speeds and increase safety in their neighborhood.

Transportation Engineering staff will also be developing public service announcements and videos aimed at educating Fremont residents about the numerous improvements and enhancements that are taking place on roadways throughout the city. In late 2016, staff will release videos and flyers to inform motorists and bicyclists about the proper use of buffered bike lanes, introduce green bike lanes and protected bike lanes, and explain painted buffers between vehicle travel lanes in approach to major pedestrian crossings.

#11. Continue Enforcement of “High Risk Behaviors” and “Hot Spots”

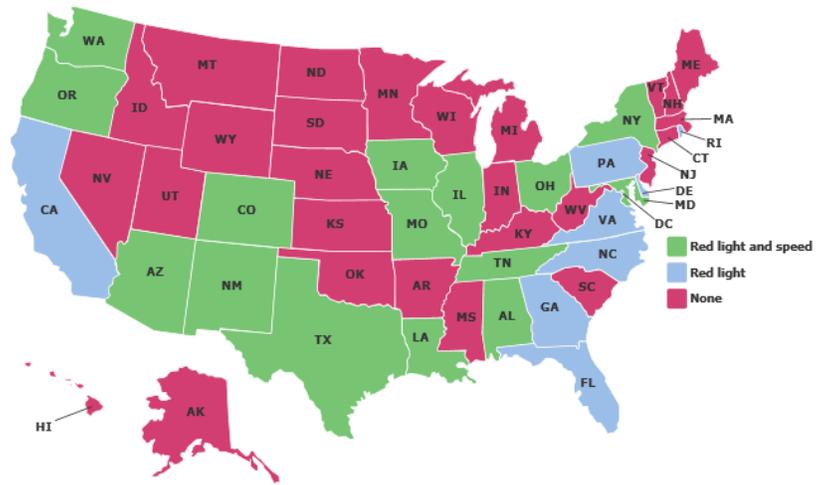
Speed enforcement is a large component of FPD’s Traffic Safety program. Using Vision Zero data analysis, FPD will continue to target Traffic Unit resources toward high frequency crash locations and toward behavior issues of speeding, intoxicated driving, and distracted driving. FPD is also looking to implement technological advances for more effective data driven enforcement and resource deployment.”



#12. Study Possible Use of Automated Speed Enforcement Cameras

According to the national Insurance Institute for Highway Safety (IIHS), 29% of fatal traffic crashes involve speeding. European countries that have implemented Vision Zero programs credit automated speed enforcement cameras for significant reductions in traffic fatalities. An increasing number of US cities are now using automated speed camera technology, as a supplement to local law enforcement resources.

Presently, 140 cities in 14 states use speed cameras including: Portland, Seattle, Denver, Santa Fe, Phoenix, New Orleans, Des Moines, Chicago, Washington DC, and New York City. The map shows in green color the states where speed cameras are used. In California, speed cameras are currently not authorized by state law. However, efforts to initiate legislation enabling use of automated speed cameras in California are being pursued by the cities of San Francisco, San Jose and Los Angeles as part of their Vision Zero programs.



During 2016, Fremont staff will evaluate the use of automated speed cameras programs in other cities and assess any proposed legislation to enable use of “speed cameras” in California with respect to their fair and effective use in Fremont.

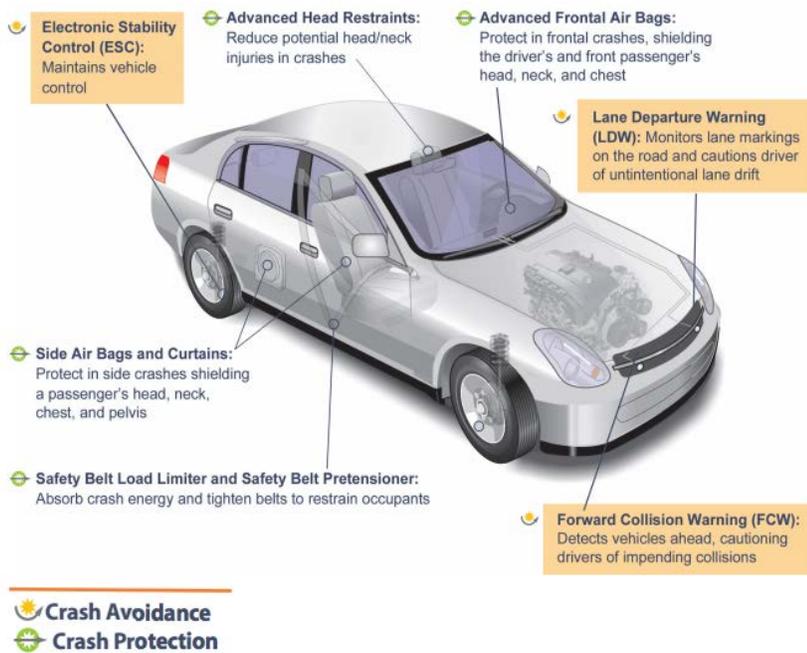
Best Practices for Speed Camera Programs

- Provide public information about the effectiveness of speed cameras and dispel myths about cameras being used for purposes other than reducing speeding and improving safety.
- Keep citation fine rate lower than moving violations and direct any net revenue to safety improvements. Most jurisdictions have speed camera fines set in the range of \$50 to \$100.
- Authorize citation issuance to the registered vehicle owner for simpler administration and enhance privacy as the camera will only capture the offender’s license plate.
- In addition to having fixed cameras at locations with special safety concerns, use mobile cameras because they can move to address new areas of concern and spread out enforcement to reach a greater number of locations. Equipment should be conspicuous to assure the public that program is not a “speed trap.”

Safer Vehicles

#13. Deploy Crash Avoidance Technology in All New Vehicles

Current advancements in automotive technology have the greatest opportunity to significantly reduce traffic crash injuries and fatalities. Building upon continued improvement in crash protection features like air bags, new technologies can help people operate vehicles more safely and prevent crashes altogether. They can better detect pedestrians, bicyclists, and road hazards; they can manage speed, braking, and lane alignment; they can see better in the dark; and they don't get distracted, drowsy, or drunk.



Additionally, the landscape of in-vehicle technologies is rapidly changing as new features continue to be introduced. Advances also are being made in systems that allow vehicles to communicate with one another or with the roadway infrastructure. With vehicle-to-vehicle (V2V) communication, vehicles transmit information regarding their actions to other vehicles. With vehicle-to-infrastructure (V2I) communications traffic signals can alert vehicles of an impending light change so drivers can prepare to stop.

Tesla vehicles, made in Fremont, have been rated as the safest vehicle approved for sale in the United States. Independent testing by the National Highway Traffic Safety Administration (NHTSA) awarded the Tesla Model S a 5-star safety rating, not just overall, but in every subcategory without exception. Approximately one percent of all cars tested by the federal government achieve 5 stars across the board. NHTSA does not publish a star rating above 5, however safety levels better than 5 stars are captured in the overall Vehicle Safety Score (VSS) provided to manufacturers, where the Model S achieved a new combined record of 5.4 stars.

The technology is here. What is needed is strong policy action to accelerate the deployment of crash avoidance technologies in all new vehicles. As part of *Fremont Vision Zero 2020*, the City can help provide education and advocacy to promote safer vehicles ... and even encourage everyone to buy a vehicle "made in Fremont!"

Partnerships

A core element of Vision Zero programs is to instill in the whole community a “safety first” culture. A focus on traffic safety needs to expand beyond “engineers and cops” and include a broader collaboration with educators, public health officials, auto manufacturers, innovators, elected officials, community organizations, and the public.

Fremont already benefits from a strong network of partners supportive of improving street safety. Listed below are a few examples of current partnership efforts. New and enhanced community partnerships will be continually encouraged to implement Fremont Vision Zero 2020.

- The Fremont City Council unanimously approved Vision Zero as its traffic safety policy in September 2015 and in February 2016, held a joint meeting with the Board of Directors for the Fremont Unified School District and discussed a continued partnership to implement Vision Zero. The Alameda County Transportation Commission has provided funds to increase Fremont School participation in the Safe Routes to Schools program.
- Bike East Bay has shared with their membership Fremont’s status as the first East Bay’s first city to adopt Vision Zero and is encouraging community participation with Fremont’s upcoming Bicycle Master Plan update. The growing local organization Bikeways for Fremont is working build a local culture of safe bicycle riding for transportation and pleasure.
- Washington Hospital is investing over \$1 million to upgrade Civic Center Drive for improved safety for all travel modes and Kaiser Permanente is a financial supporter of the national Vision Zero Network. Staff has initiated conversations with local public health officials regarding a Vision Zero traffic safety education campaign in Fremont.
- Tesla Motors is expanding their capacity to build in Fremont the safest vehicle sold in the US. Fremont staff is engaged with Silicon Valley innovators to harness new technologies for safer streets and vehicles, as well as enhance enforcement tools to encourage safer travel behaviors.



Appendix A - Summary of 2015 Major Traffic Crashes

#	Travel Mode	Narrative
1		On 1/2 at 5:35 pm (dark), a 57-year old male crossing Niles Canyon Road (a 2-lane, 45 mph, state highway) mid-block near Mission Boulevard, was severely injured when hit by a vehicle traveling westbound and driven by a 55-year old male.
2		On 1/12 at 10:09 pm (dark), a 55-year old female passenger, in a vehicle driven by a 54-year old male and traveling westbound on Mission Boulevard (a 6-lane, 45 mph, state highway) at Warm Springs Boulevard, was severely injured in a crash with a vehicle traveling eastbound and driven by an intoxicated 29-year old male.
3		On 1/26 at 3:18 pm, a 28-year old female riding a bicycle southbound on Paseo Padre Parkway (a 4-lane, 35 mph major street) near Shadow Brooke Common, was severely injured when hit by a vehicle traveling southbound and driven by a 52-year old female.
4		On 2/11 at 11:37 am, a 28-year old female crossing Capitol Avenue (a 2-lane, 30 mph minor street) at Hastings Street, was severely injured when hit by a vehicle traveling eastbound and driven by a 85-year old male.
5		On 2/16 at 2:39 am (dark), an unlicensed 22-year old male driving a stolen vehicle southbound on Mission Boulevard (a 4-lane, 40 mph, state highway) near Santa Teresa Terrace, was severely injured when vehicle veered off the road and hit a light pole and a tree.
6		On 3/20 at 4:53 pm, a 45-year old male riding a bicycle northbound on Paseo Padre Parkway (a 4-lane, 35 mph, major street) at Paseo Padre Court, was severely injured when hit by a vehicle traveling southbound and driven by a 19-year old female.
7		On 4/2 at 6:37 pm, a 43-year old male riding a bicycle on northbound Fremont Boulevard (a 4-lane, 45 mph major street) near Cushing Parkway, was severely injured when hit by a vehicle traveling northbound and driven by an intoxicated 45-year old male.
8		On 4/5 at 3:35 am (dark), a 29-year old male passenger, in a speeding vehicle driven by an intoxicated 24-year old female and traveling westbound on Grimmer Boulevard (a 4-lane, 40 mph major street) near Irvington Avenue, was severely injured when vehicle overturned.
9		On 4/24 at 8:47 pm (dark), an intoxicated 29-year old male traveling southbound on Paseo Padre Parkway (a 2-lane, 45 mph major street) at Durham Road, was severely injured in a crash with a vehicle traveling westbound and driven by a 42-year old male.
10		On 5/11 at 8:31 am, a 57-year old female riding a bicycle southbound on Fremont Boulevard (a 4-lane, 45 mph, major street) at the I-880 Interchange, was killed when hit by a truck traveling southbound and driven by a 44-year old male.

- 11  On 5/30 at 6:50pm, a 30-year old female driving southbound on Grimmer Boulevard (a 4-lane, 40 mph, major street) near Irvington Avenue, was severely injured after she veered of the road.
- 12  On 6/1 at 3:46 am (dark), a 61-year old male driving southbound on Mission Boulevard (a 4-lane, 45 mph, state highway) near Nichols Avenue, was killed when he veered off the road and hit a tree.
- 13  On 7/4 at 12:01 am (dark), a 60-year old male crossing Mowry Avenue (a 6-lane, 40 mph, major street) near Bell Street, was severely injured when hit by a vehicle traveling eastbound and driven by a 42-year old male.
- 14  On 7/4 at 8:19 pm, an intoxicated 44-year old female riding a motorcycle northbound on Grimmer Boulevard (a 4-lane, 40 mph major street) near Victoria Avenue, was severely injured when she veered off the road hit the center median.
- 15  On 7/22 at 9:33 am, a 9-year old male crossing 2nd Street (a 4-lane, 25 mph, minor street) at F Street, was severely injured when hit by a vehicle traveling southbound and driven by a 63-year old female.
- 16  On 8/9 at 12:01 am (dark), a 45-year old male walking in the roadway on Mission Boulevard (a 4-lane, 45 mph, state highway) in the roadway near Mayhews Road, was severely injured when hit by a vehicle traveling northbound and driven by an unknown motorist (hit and run).
- 17  On 8/17 at 10:20 am, a 56-year old male driving northbound on Fremont Avenue (a 6-lane, 40 mph, major street) at Walnut Avenue, was severely injured in a crash with a vehicle traveling westbound and driven by a 31-year old female who was attempting to evade a marked police vehicle.
- 18  On 8/24 at 8:48 pm (dark), a 35-year old female walking across Fremont Boulevard (a 5-lane, 40 mph, major street) midblock near Nicolet Avenue, was killed when hit by a vehicle traveling northbound and driven by an intoxicated 33-year old male.
- 19  On 8/25 at 7:02 pm, a 46-year old male driving northbound on Niles Boulevard (a 2-lane, 40 mph, minor street) near Kraftile Road, was believed to be having an epileptic seizure, and was killed when vehicle veered off the road and hit a wall.
- 20  On 9/3 at 6:01 am (dark), a 23-year old female driving northbound on Paseo Padre Parkway (a 4-lane, 40 mph, major street) near Thornton Avenue, was severely injured when vehicle veered off road and hit a tree.
- 21  On 9/4 at 8:37 am, a 82-year old male crossing Mowry Avenue (6-lane, 40 mph, major street) at Sutter Drive, was severely injured when hit by a vehicle turning right and driven by a 53-year old male.

22		On 9/14 at 11:33 am, a 36-year old female crossing Blacow Road (4-lane, 40 mph, major street) at Gatewood Drive, was severely injured when hit by a vehicle traveling westbound and driven by a 56-year old male.
23		On 9/16 at 10:01 am, a 40-year old female driving westbound on Mowry Avenue (a 4-lane, 35 mph, major street) near Vancouver Common, was severely injured when the vehicle veered off the road and hit a tree.
24		On 9/19 at 3:36 pm, a 5-year old male crossing Starr Street (a 2-lane, 25 mph, minor street) near Olive Avenue, was severely injured when hit from behind by a vehicle traveling northbound and driven by a 24-year old female.
25		On 9/24 at 12:18 pm, a 24-year old female passenger, in a vehicle driven by a 25-year old female and stopped at the traffic signal on westbound Stevenson Boulevard (a 4-lane, 40 mph, major street) at Besco Drive, was severely injured when hit by a vehicle traveling westbound and driven by an 18-year old female.
26		On 9/28 at 7:54 pm (dark), a 54-year old male crossing Albrae Street (2-lane, 30 mph, minor street) mid-block near Stevenson Boulevard, was severely injured when hit by a vehicle traveling northbound and driven by a 52-year old male.
27		On 10/1 at 2:47 pm, a 16-year old male crossing Alder Avenue (2-lane, 25 mph, minor street) mid-block near Neetles Court, was severely injured when hit by a vehicle traveling westbound and driven by a 52-year old male.
28		On 10/10 at 7:12 pm (dark), a 78-year old female crossing Fremont Boulevard (a 6-lane, 40 mph major street) at Sundale Drive against the traffic signal, was killed when hit by a private shuttle traveling southbound and driven by a 43-year old male.
29		On 10/15 at 8:36 pm (dark), a 74-year old male crossing Mission Boulevard (a 2 lane, 35 mph, major street) mid-block near Mission Tierra Place, was severely injured when hit by a vehicle traveling northbound and driven by a 51-year old male.
30 31		On 10/25 at 7:19 pm (dark), a 42-year old male driving westbound on Mowry Avenue (5-lane, 35 mph, major street) near Vancouver Common and his 66-year old female passenger were severely injured after the driver lost control of the vehicle, likely due to a medical episode and hit another vehicle, the median, and a tree.
32		On 10/29 at 10:41 am, a 24-year old male riding a motorcycle eastbound on Niles Canyon Road (a 2-lane, 45 mph, State Route 84) near the Rosewanes U.P. Train Bridge, was severely injured when he lost control of his motorcycle and crashed into the guardrail.
33		On 11/6 at 10:15 am, a 5-month old male infant passenger, in a vehicle driven by a 33-year old male making a left turn from northbound Fremont Boulevard (a 6-lane, 40 mph, major street) to Bidwell Drive, was severely injured when hit by a vehicle traveling southbound and driven by a 35-year old male.

- 34


On 11/8 at 10:47 am, a 69-year old female crossing Mission Blvd (a 4-lane, 40 mph, major street) at Mission Cielo Avenue against the traffic signal, was killed when hit by a vehicle traveling northbound and driven by a 42-year old female.
- 35


On 11/25 at 6:41 am, a 57-year old male crossing Fremont Boulevard (4-lane, 45 mph major street) near Old Warm Springs, was killed when hit by a vehicle traveling southbound and driven by a 42-year old female.
- 36


On 11/29 at 7:40 pm (dark), a 25-year old female crossing Paseo Padre Parkway (a 6-lane, 35 mph, major street) at Stevenson Boulevard against the traffic signal, was severely injured when hit by a vehicle traveling southbound and driven by an 18-year old male.
- 37
38


On 12/19 at 12:57 am (dark), a 42-year old and 29-year old male crossing Fremont Boulevard (6-lane, 40 mph, major street) at Paseo Padre Parkway, were severely injured when hit by a vehicle traveling southbound and driven by an unknown motorist.
- 39


On 12/22 at 10:55 pm (dark), a 19-year old male driving westbound on Dumbarton Circle (a 2-lane, 40 mph, minor street) near Campus Court, was killed when he drove at a high rate of speed, hit another vehicle, and crashed into a tree.

Appendix B - Traffic Safety Tips



STAY **SAFE** FREMONT



PEDESTRIAN SAFETY TIPS



BE PREDICTABLE
Follow the rules of the road and obey signs and signals.



USE CROSSWALKS
Cross streets at crosswalks or intersections whenever possible.



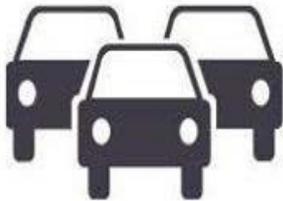
BE ALERT
Don't be distracted by electronic gadgets that take your eyes (and ears) off the road.

BE VISIBLE
Wear bright clothing during the day and reflective materials at night or use a flashlight.
If a crosswalk isn't available, locate a well-lit area (day or night) where you have the best view of traffic to cross.

TIMING IS EVERYTHING
Look for cars in all directions.
Wait for a signal to cross. If a signal isn't available, wait for a gap in traffic that allows you enough time to cross safely.
Continue to watch for traffic as you cross.

WALK SMART
Walk on sidewalks whenever they're available.
If no sidewalk is available, walk facing traffic and as far away from traffic as possible.
Watch for cars entering/exiting driveways and backing up.

DRIVER SAFETY TIPS



BE PREDICTABLE

Follow the rules of the road and obey signs and signals.

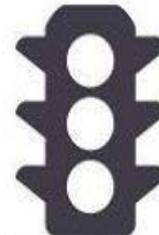
Lookout for pedestrians everywhere, at all times.



YIELD

Yield to pedestrians in crosswalks.

Never pass vehicles stopped at crosswalks. (People may be crossing that you can't see.)



KNOW YOUR SPEED

Follow speed limits, especially around people on the street.

Slow your speed in school zones and residential areas.

SHARE RESPONSIBILITY

Safety is a shared responsibility.

Be prepared to stop when turning or entering a crosswalk.

Never drive under the influence of alcohol and/ or drugs.

USE CAUTION

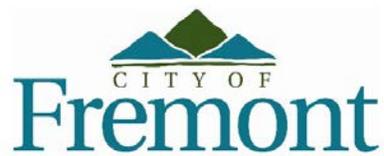
Use extra caution when driving in hard-to-see conditions, such as nighttime or bad weather.

Be extra cautious when backing up - pedestrians can move into your path.



CREATED BY THE FREMONT POLICE DEPARTMENT TRAFFIC UNIT





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