STRATEGICECONOMICS

MEMORANDUM

Date: June 15, 2016

To: Jim Lightbody and Linda Forsberg

From: Sujata Srivastava, Alison Nemirow, and Emily Heard, Strategic Economics

Subject: Economic Impact Analysis of Grade Separation Alternatives for Castro Street: Draft Report

INTRODUCTION

The City of Mountain View is considering several grade-separation alternatives for the Castro Street Caltrain railroad crossing. The City commissioned Strategic Economics to conduct an analysis of the potential economic impacts (permanent and construction-related) of the alternatives. The specific alternatives are currently under development, but the ideas that have been explored to date include variations on the following options:

- Depression of the Castro Street roadway below the adjacent sidewalk (Alternative 1);
- Rerouting Castro Street and diverting auto traffic to Shoreline Boulevard (Alternative 4); and
- Depression of the railroad.

Some of the alternatives may have impact on the businesses in the Study Area, including temporary or permanent loss of visibility, reduced levels of pass-by traffic, and/or reduced on-street parking. The analysis focuses on the impacts to the 100 block of Castro Street and the 100-200 blocks of Moffett Boulevard, but there may be some other areas of Downtown Mountain View that are also affected, depending on the alternative that is selected. This memorandum describes the results of Strategic Economics' analysis, and includes the following sections:

- Summary of key findings.
- Analysis of the existing retail environment, including business performance and traffic volumes.
- Review of literature on the business impacts of short-term construction projects and longer-term changes to the street environment, as well as the elements of street design that contribute to a successful, pedestrian-oriented retail district.
- Case studies of three recent street reconstruction projects in pedestrian-oriented shopping districts located in Burlingame (Burlingame Avenue), Palo Alto (California Avenue), and Livermore (First Street).
- Discussion of strategies for mitigating construction impacts and designing the grade-separation project to preserve and enhance the retail environment on Castro Street and Moffett Boulevard.

KEY FINDINGS

This section summarizes the key findings from the analysis. Each of the findings described below are discussed in more detail in subsequent sections of the memo.

Castro Street is a thriving retail and restaurant district that benefits from an inviting pedestrian atmosphere, the availability of nearby parking, and attractive outdoor dining. Downtown Mountain View has experienced rapid growth in retail and restaurant sales over the past decade, and local retail brokers report that the 100 block of Castro Street is the strongest location in Downtown for dining establishments. Rents are between $4.00 and $4.50 per square foot per month, and there are very limited vacancies. The pedestrian environment on the 100 block of Castro Street is a key factor that helps draw diners and other customers. In addition to the wide sidewalks, outdoor dining, street trees, lights, furniture, and other streetscape elements, the slow vehicle traffic contributes to the pedestrian-friendly feel of the street. While there is limited street parking on Castro Street – especially on the 100 block, where many of the parking spaces have been converted to outdoor dining – retail brokers do not perceive this as a problem given the supply of public garage and lot parking located within a short walking distance.

Retail and restaurant sales on Castro Street are driven primarily by foot traffic from customers who park nearby, rather than by drive-by vehicle traffic. According to brokers, Castro Street primarily draws residents and employees who live and/or work in Mountain View or other nearby cities such as Sunnyvale. These customers typically come with a meal or errand in mind, park in one of the nearby public parking facilities, and then walk to their destination. Few customers drive from store to store, or cruise the street by car looking for a restaurant or other destination.

These characteristics suggest that Castro Street is in a strong position to weather construction. Case studies of major construction projects show that pedestrian-oriented retail districts with a mix of restaurants and shops and a dedicated customer base (such as Burlingame Avenue in Burlingame and California Avenue in Palo Alto) tend to weather construction with relatively few impacts, if cities implement proactive construction mitigation strategies. However, even weaker retail markets can retain the vast majority of businesses through construction, although financial assistance may be required to offset some of the impacts of larger, more disruptive construction projects. For example, Seattle and the Twin Cities managed to retain 85 to 90 percent of businesses in districts affected by the construction of new light rail lines over several years, although businesses did experience temporary declines in sales. These light rail projects were significantly more disruptive than the grade separation alternatives that the City of Mountain View is considering, and the retail districts were performing much less well than Castro Street prior to construction.

Moffett Boulevard has a different character and market than Castro Street, and may require different mitigation strategies during construction. As noted in the 2030 General Plan's vision for the Moffett/Whisman Planning Area, Moffett Boulevard is distinct from the core of Downtown Mountain View**.** Compared to the 100 block of Castro, the 100-200 blocks of Moffett Boulevard is characterized by a much more auto-oriented street design with fewer pedestrian amenities and no public parking facilities. Moffett Boulevard's business mix is service-oriented, with no restaurants, and the properties command significantly lower rents than Castro Street. Maintaining vehicle access from the north, east, and west and providing adequate nearby parking will be critical to supporting the success of businesses on 100-200 Moffett throughout construction. The amount of vehicle and pedestrian traffic that crosses the tracks between Moffett and Castro is currently limited, suggesting that these businesses do not necessarily rely on connectivity to Castro Street, and that reductions in auto access across the tracks may not have a significant impact on these businesses. In the longer-term, a grade separation alternative that creates a stronger pedestrian connection to Downtown could help to increase sales activity on Moffett Boulevard, especially if combined with pedestrian improvements on the 100-200 blocks of Moffett.

The City should plan proactively to mitigate construction impacts on businesses, and design the grade separation project to support the long-term success of retail on Castro Street and Moffett Boulevard. Specifically, the City should consider the following three strategies in selecting a grade separation alternative, designing the project, and planning for construction:

1. **Develop a plan for mitigating short-term construction impacts**. By developing a clear plan for mitigating construction impacts that reflects business input, the City can help address business and property owners' concerns and demonstrate a commitment to keeping Castro Street and Moffett Boulevard open for business. The construction mitigation plan should draw on best practices, and include significant, continued business outreach; careful selection of a contractor that can be responsive to businesses' needs; phasing construction to maintain visibility, circulation, and access to parking as much as possible while minimizing disruption during business hours; and a marketing and promotions strategy to let Mountain View residents and workers know that 100 Castro Street and 100-200 Moffett Boulevard businesses are open during construction.
2. **Design the project to support Castro Street's long-term success by preserving and enhancing sidewalk access and outdoor seating.** The grade separation project should be designed to maintain and reinforce the elements of the street that make Castro Street attractive for pedestrians, including pedestrian amenities and access to parking (addressed in Strategy 3). Studies of downtowns and other "Main Street" retail districts have found that that the most successful places prioritize pedestrian access, safety, and comfort, while providing easily accessible parking within walking distance. Maintaining vehicle access is also important, but improvements that give preference to pedestrians and bicyclists – such as reduced speed limits, narrowed travel lanes, and new bike lanes – have been shown to improve retail sales in downtown districts.
3. **Maintain and Expand Convenient Access to Parking.** Easily accessible parking within walking distance of businesses is a critical component of Castro Street's success as a pedestrian-oriented retail and restaurant destination. In order to mitigate the potential impacts of the grade-separation project, the City should monitor parking utilization in and around Downtown and consider strategies such as expanding signage to assist customers in finding parking quickly and conveniently, expanding shared parking opportunities, and adjusting time limits and other parking policies as needed.
4. **Enhance pedestrian connectivity across the tracks.** Brokers report that pedestrian activity across the railroad tracks between Castro Street and Moffett Boulevard is currently limited. The grade separation project should be designed to improve the pedestrian and bicycle connection – for example, by reducing wait times and providing additional pedestrian refuges across Central Expressway, and making it easier and faster to cross the rail tracks. Increased foot traffic may offset the impacts of any potential reductions to vehicle traffic on Castro Street, and help support increased sales activity on the 100-200 blocks of Moffett.

EXISTING RETAIL ENVIRONMENT

In order to characterize the current retail environment and recent trends in business performance, Strategic Economics interviewed retail brokers with recent experience in Downtown Mountain View and analyzed data on the business inventory and sales tax revenues in the study area and broader Downtown Mountain View retail district.[1] This section also includes recent data on traffic volumes provided by the City of Mountain View.

[1] As defined by the City, the downtown Business Improvement Districts (BID), Downtown Mountain View is bounded by El Camino Real, the Central Expressway, Franklin Street, and View Street.

Retail Environment & Performance

Castro Street is a thriving retail and restaurant district that benefits from an attractive physical environment. Castro Street (from El Camino Real to the Central Expressway) serves as Downtown Mountain View's main street, and is characterized by:

- **An excellent pedestrian environment:** According to brokers, the pedestrian environment on Castro Street helps draw diners and other customers. In addition to the wide sidewalks, street trees, lights, furniture, and other streetscape elements, the slow vehicle traffic contributes to the pedestrian-friendly feel of the street.
- **Attractive outdoor dining:** Many of the restaurants on Castro Street – particularly on the 100 block – provide outdoor dining space with landscaping and other screening from the street. While the look and feel of each outdoor dining space is distinct, reflecting the variety of restaurants on the corridor, the City works with restaurant owners and the two downtown Business Improvement Districts (BIDs) to maintain outdoor space to a common standard.
- **Availability of parking nearby:** Customers who drive to Downtown Mountain View generally park in a garage or lot and walk to the retail and restaurants. Brokers consider Castro Street to be a "destination" rather than a "drive-through" street, in that customers come with a meal or errand in mind, park, and then walk to their destination (rather than driving from store to store). While there is limited street parking on Castro Street – especially on the 100 block, where many of the parking spaces have been converted to outdoor dining – retail brokers do not perceive this as a problem given the supply of garage and lot parking located within a short walking distance.
- **Proximity to job centers and residential neighborhoods:** According to brokers, Castro Street primarily draws residents and employees who live and/or work in Mountain View or other nearby cities such as Sunnyvale. As a primarily local-serving retail district, Downtown Castro Street primarily competes for customers with other restaurants and retail clusters located in or near Mountain View, rather than with than with other, more regional-serving shopping districts such as Downtown Los Gatos or University Avenue in Palo Alto.

Restaurants and hotels are the largest and fastest growing retail sector in Downtown Mountain View. Figure 2 shows annual sales tax revenues by business category for Downtown Mountain View.[2] The restaurant and retail category accounted for nearly two-thirds of total sales taxes in fiscal year (FY) 2014-15. After accounting for inflation, sales tax revenues from the combined restaurant and hotel category increased by 85 percent between FY 2005-06 and FY 2014-15[3]. Over the same period of time, sales of general consumer goods (retail) increased by 18 percent. In comparison, citywide sales tax revenues on retail and food services increased by just 5 percent between 2005 and 2014,[4] after adjusting for inflation.

Within Downtown, the 100 block of Castro Street has the highest concentration of restaurants. Figure 3 shows the existing business mix for the 100 block of Castro, the 100-200 blocks of Moffett, and Downtown as a whole. On the 100 block of Castro, 19 of 35 businesses (54 percent) are restaurants and only two (six percent) are retail stores. The remaining storefronts on the block are occupied by a mix of firms in the technology and professional services industries, as well as few civic and cultural organizations

[2] The sales tax revenues shown in Figure 2 includes the 100-200 blocks of Moffett; however, the vast majority of businesses reporting sales tax are in Downtown (on Castro Street).
[3] It should be noted that while the sales tax category combines "restaurant and hotel sales", there are no active hotels in the Study Area.
[4] As reported by the California Board of Equalization. 2005 data are for calendar year; 2014 sale tax revenues were estimated based on the fourth quarter of 2013 and the first three quarters of 2014 (most recent time periods available).

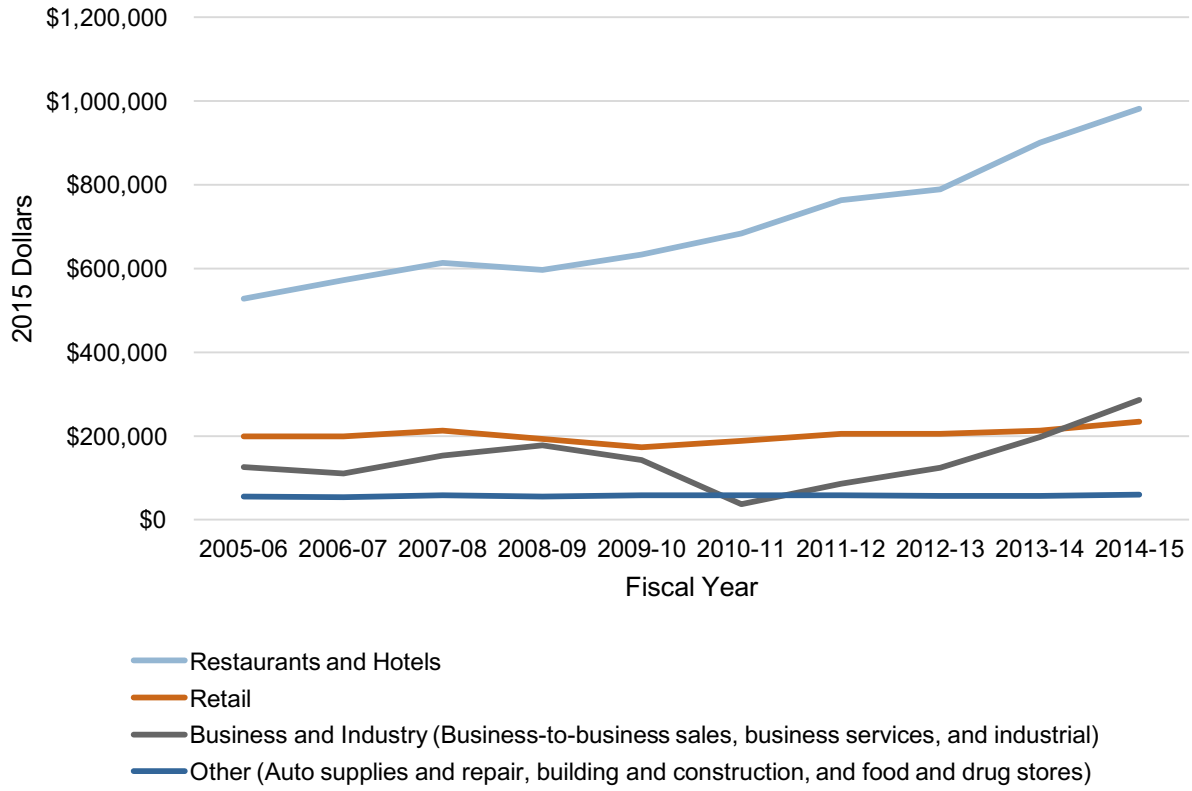
such as the Jehning Family Lock Museum and the Fraternal Order of Eagles. In comparison, in Downtown Mountain View (defined as the two downtown BIDs), 27 percent of the businesses are restaurants, 23 percent are retail stores, and about 50 percent are professional businesses.

Consistent with the high concentration of restaurants, brokers perceive the 100 block of Castro Street as the strongest location for restaurants in Mountain View. Brokers reported that the 100 block of Castro Street is the strongest location in Downtown for dining establishments, with rents between $4.00 and $4.50 per square foot per month.

Moffett Boulevard has a significantly different character, business mix, and retail market. The look and feel of Moffett Boulevard is very different from that of Castro Street. In particular, Moffett Street is characterized by:

- **Auto-oriented street design with fewer pedestrian amenities:** Moffett Boulevard widens to two lanes of traffic in each direction, compared to one lane in each direction on the majority of Castro Street. The sidewalks along the 100-200 blocks of Moffett are generally narrow, with limited landscaping or other improvements. In addition, whereas most buildings on Castro Street generally front directly onto the sidewalk, many of the properties on the 100-200 blocks of Moffett have parking lots between the street and the building.
- **More service-oriented businesses and no restaurants:** As shown in Figure 3, the 100-200 blocks of Moffett have 11 businesses. The four retail stores include an auto parts store, flower shop, a photography store, an electronics store. The seven other establishments include some offices and personal service establishments such as fitness centers and a childcare center. There are no restaurants on the block.
- **Lower rents:** While no retail space is currently available for rent on Moffett Boulevard, brokers report that rental rates are significantly lower on Moffett compared to Castro Street.

Figure 1: Annual Sales Tax Revenues by Business Category: Downtown Mountain View* and 100-200 Blocks of Moffett, 2005-2015 (Inflation Adjusted to 2015 Dollars)



*Includes area bounded by El Camino Real, the Central Expressway, Franklin Street, and Hope and View Streets.
It should be noted that while the sales tax category is "restaurant and hotel sales", there are no active hotels in the Study Area.
Source: City of Mountain View, 2016.

Figure 2: Businesses by Category: 100 Block of Castro, 100-200 Blocks of Moffett, and Downtown Mountain View*

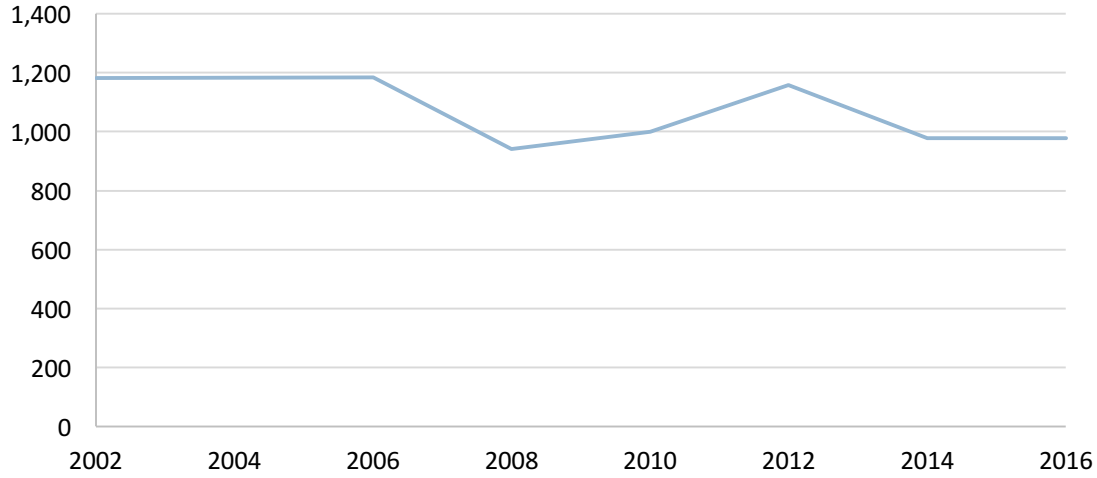
Business Category	100 Castro		100-200 Moffett		Downtown*	
	#	% of Total	#	% of Total	#	% of Total
Retail	2	6%	4	36%	69	23%
Restaurant	19	54%	0	0%	81	27%
Other**	14	40%	7	64%	146	49%
Total	35	100%	11	100%	296	100%

*Includes the two downtown Business Improvement Districts, an area roughly bounded by El Camino Real, the Central Expressway, Franklin Street, and View Street (including 100 block of Castro); does not include 100-200 block of Moffett.
**Other includes professional businesses, services, and other non-retail or restaurant businesses.
Numbers may not equal 100 due to rounding.
Source: City of Mountain View, 2016.

Vehicle Traffic

As restaurant and retail sales in Downtown have increased over the past decade, traffic counts have declined slightly. Since 2002, peak hour traffic volumes have been steady or decreasing on Castro Street (Figure 4). Daily volumes have dropped from 15,900 in 2006 to 10,900 in 2016. As described above, during this same period, restaurant and hotel sales increased by 86 percent and retail sales increased by 18 percent (Figure 2).

Figure 3: Total PM Peak Hour Traffic Volume on Castro Street at Rail Crossing



Source: City of Mountain View, 2016.

The majority of traffic at the intersection of Castro, Moffett, and Central Expressway does not continue into Downtown. Figure 5 shows May 2015 weekday traffic volumes at the intersection of Castro, Moffett, and the Central Expressway. Depending on the time of day, cross-track traffic – i.e., traffic across the rail tracks between Castro and Moffett – accounts for just 13 to 29 percent of the total traffic volume at the Castro/Moffett/Central intersection.

Traffic volumes are significantly higher at the Castro and Villa intersection than across the tracks between Castro and Moffett, suggesting that many drivers approach Downtown from the south, east, or west and park before reaching the tracks. For example, traffic volumes at the mid-day peak declined from over 1,100 cars at the intersection of Castro and Villa, to just 666 cars crossing the tracks between Castro and Moffett (Figure 5). The limited traffic across the tracks compared to traffic just one block to the south supports brokers' perception that Castro Street is more of a destination street that draws customers who park and walk to restaurants or stores, rather than a drive-through street where customers drive from store to store.

The amount of pedestrian traffic across the tracks also appears to be relatively limited. Brokers report that the pedestrian activity across the tracks between Moffett and Castro is currently limited, although this is expected to increase when the apartment project currently under construction at the northwest corner of Moffett and Central Expressway is completed.

Figure 4: Weekday Traffic Volumes by Intersection, May 2015

Intersection	AM Peak	Mid-Day Peak	PM Peak
Castro/Moffett and Central Expressway	3,359	2,316	4,011
Cross-Track Traffic*	439	666	577
Cross-Traffic as % of Total Intersection Traffic	13%	29%	14%
Castro and Villa	824	1,116	1,383

*Cross-Track Traffic includes all movements originating from Castro, and through traffic from Moffett. Right and left turn movements originating from Moffett are not included, as they do not cross the train tracks. Right and left turns from Castro onto Central Expressway are included in cross-track traffic, because these vehicles cross the train tracks before reaching the Central Expressway.
Traffic counts performed May 19, 2015.
Source: Hexagon Transportation Consultants and the City of Mountain View, 2015.

LITERATURE REVIEW

Strategic Economic reviewed academic literature and industry reports to identify potential short-term construction impacts and longer-term impacts of street changes on retail districts. The literature review did not identify any examples of construction projects or street realignments that were directly analogous to the grade-separation alternatives being considered for Castro Street. However, previous studies do shed light on the likely impacts of major construction impacts on local businesses, best practices for mitigating construction impacts, and street design characteristics that can contribute to a successful retail district. These topics are discussed below.

SHORT-TERM CONSTRUCTION IMPACTS ON BUSINESSES

Construction may temporarily or permanently limit access to stores, hinder visibility from the street and sidewalk, or otherwise interrupt store traffic in a busy district. While street construction may be necessary to solve an infrastructure issue, or provide much-needed improvements, the construction period is typically stressful for businesses. Construction may impact store accessibility for an extended period of time, depending on the type and specific location of the improvements.[5]

Businesses can suffer from a temporary loss of sales revenues during construction. Generally, there is very little data on sales revenues before and during major construction projects. However, businesses in construction zones consistently report revenue losses during construction. For example, during the construction of a new light rail line in the Rainier Valley neighborhood of Seattle, all of businesses on the corridor reported revenue loss, with over half reporting that sales declined by 50 percent or more.[6] The level of impact depends somewhat on the mitigation measures taken and the type of business in the district (these factors are discussed below).

Depending on the extent of disruption during construction, businesses may relocate. In cases where businesses face significant disruption or sales losses, some may choose to relocate to areas that are not affected by construction. For example, during the construction of light rail in the Rainier Valley, 15 percent

[5] PolicyLink, "Business Impact Mitigations for Transit Projects," Prepared for the Oakland Sustainable Neighborhoods Initiative, November 2013; Federal Transit Administration, "Technical Report on the Potential Impacts on Business Revenues during Construction of the Central Corridor Light Rail Project," United States Department of Transportation, February 2011; Safe Harbor Working Group and MainStreet Business Assistance Program, "Mitigation of Transportation Construction Impacts on Business," prepared for the City of Tucson, 2014.
[6] PolicyLink, November 2013.

of all businesses relocated during construction.[7] During the construction of the Central Corridor Light Rail in the Twin Cities, only seven percent of businesses relocated during construction.[8]

Construction may affect different types of businesses differently. While all businesses within a street construction zone may be impacted by increased noise and inconvenience, not all businesses find their sales impacted to the same degree. Certain business types may be more sensitive to changes. A 2011 FTA review of five previous, quantitative studies found that general merchandise, food stores, automotive outlets, and home furnishings stores experienced the greatest sales losses (Figure 6). In contrast, building materials, clothing, restaurants, drug stores, liquor stores, and "miscellaneous businesses" were the least impacted.[9]

Figure 5: Recent Quantitative Studies of Construction Sales Revenue Impacts on Businesses

Study	Construction Context	Magnitude of Impact
Buddemeyer, Young, and Vander Giessen (2008)	Rural highway reconstruction	No impact, "holding steady with minor declines"
De Solminihac and Harrison (1993)	Urban highway rehabilitation	General Merchandise: -28% Food stores: -37% Automotive: -32% Home Furnishings: -17%
Wildenthal and Buffington (1996)	Rural highway widening	5% decrease
Young, Wolffing, and Tomasini (2005)	An assortment of highway projects	8.3-39.9% decrease

Source: Federal Transit Administration, 2011.

The physical and market context can also affect the extent of economic impact. For example, the FTA study found that a rural environment with limited retail may not be greatly impacted by a new highway interchange, whereas an urban environment is more complex and is more sensitive to large changes to traffic flow and pedestrian environment.[10] Regional economic changes outside the control of any individual project can also alter the overall economic outlook in an area, making it difficult to evaluate the impact of any individual project.[11] However, even weaker retail markets can retain the vast majority of businesses through construction, although financial assistance may be required to offset some of the impacts of larger, more disruptive construction projects. Seattle and the Twin Cities managed to retain 85 to 90 percent of businesses in districts affected by the construction of new light rail lines over several years, although businesses did experience temporary declines in sales.[12] Both retail districts are located in relatively low-income neighborhoods and were performing much less well than Castro Street prior to construction.

Construction projects that take longer to complete and involve more extensive disruptions to traffic access can result in greater impacts to businesses. A 2014 report for the City of Tucson, AZ found that length of construction and extent of road closure can play a significant role in the level of impact to nearby businesses.[13] The study, which reviewed impacts from recent public sector construction projects in the Tucson area, found that for every six months of construction, it can take an additional three months for

[7] Ibid.
[8] Ibid.
[9] Federal Transit Administration, February 2011.
[10] Ibid.
[11] Ibid.
[12] PolicyLink, November 2013.
[13] Safe Harbor Working Group and MainStreet Business Assistance Program, 2014.

traffic in an area to resume to pre-construction levels. The study also found that partial road closures resulted in traffic volumes declining by 40 to 60 percent, due to the perceived difficulty of accessing the street.

MITIGATING CONSTRUCTION IMPACTS

While construction projects vary considerably, some successful strategies have been identified to mitigate short-term construction impacts. The variation in the length, extent, and location of construction projects, as well as in the pre-existing construction environment, make it difficult to definitively predict the impact of a planned construction project on local businesses. However, previous studies have identified best practices to mitigate construction impacts and improve business retention. The text boxes below summarize some of the specific best practices used to reduce business impacts during the construction of the Rainier Valley and Central Corridor light rail line projects. Strategies identified in these cases and in other studies include:

- **Sensitive construction planning to reduce construction time, minimize noise and utility interruptions, and maintain access to businesses.** Examples of successful construction management strategies include timing utility shut-offs to occur outside of business hours, maintaining at least one access point to all businesses at all times, and responding quickly to business concerns about contractors and construction.[14]
- **Early, consistent, and personal outreach to businesses.** The Tucson study found that offering businesses regular updates on construction timelines and actively seeking to be responsive to concerns about visibility, business access, and utility shut-offs helped increase business trust and reduce loss in sales revenues.[15] A PolicyLink study of the Central Corridor light rail project in the Twin Cities found that personalized outreach provided by organizations with a history of work in the area was most effective. In addition to funding local service providers, the Met Council (the metropolitan planning organization for the Twin Cities region) also hired outside "community liaisons" to facilitate communications with businesses and community members. However, businesses reported that the community liaisons were not empowered to directly address business concerns, which resulted in added frustration.[16]
- **Providing grants and loans to compensate businesses for lost sales.** For example, in the Rainier Valley, the City and its partners set aside $28 million for "supplemental mitigation assistance" that included a variety of grants and loans to compensate businesses for interruptions to sales and assist businesses that were physically displaced by the light rail relocate. Approximately 180 businesses (out of roughly 300 that were eligible) received some sort of assistance over five years. Grants were much more widely used than loans. Of businesses that received financial assistance, the retention rate was 90 percent, five percent higher than the average along the entire corridor.[17]
- **Providing targeted technical assistance**. In addition to direct financial assistance, businesses affected by the Central Corridor construction benefitted from assistance with preparing taxes, devising marketing and branding strategies, and expanding online retailing activities. These assistance programs helped businesses navigate the challenges associated with reduced visibility and lost foot traffic during construction.

[14] Ibid.
[15] Ibid.
[16] PolicyLink, November 2013.
[17] Ibid.

Rainier Valley Light Rail
Seattle, WA

- New 4.3-mile light rail transit line affecting 300 existing businesses.
- Construction lasted three years, from 2006 to 2009.
- City, transit agency, and county created a $28 million Community Development Fund to provide financial assistance during construction. More than half of businesses received grant/loan assistance during construction, including:
  - Grants to offset revenue losses during construction.
  - Grants and low-interest loans to assist businesses physically displaced by the light rail line relocate.
  - Most of the money for grants was ultimately paid out, while only a small fraction of the money set aside for loans was used.
- In addition to providing financial assistance during construction, the Community Development Fund also set aside $21 million for long-term community development investments in the Rainier Valley.
- 85 percent of all businesses were retained during construction, and 90 percent of all businesses that received financial assistance.
- Despite assistance, surveyed businesses reported revenue loss ranging from 15-50% during construction. However, business owners expected more customers after completion of the project.

Source: PolicyLink, 2013.

Central Corridor Light Rail
Twin Cities, MN

- New 11-mile light rail line affecting about 1,100 existing businesses.
- Construction period lasted three years, from 2010 to 2013.
- Public and philanthropic sources contributed $16 million in funds to support businesses along the corridor.
- One of the largest business support programs was a $4 million "Ready for Rail Business Support Fund"
    - Originally established as a low-interest loan program, but ultimately converted to forgivable loans to meet the needs of businesses facing significant revenue losses.
    - Loans of up to $20,000 per business, for qualifying small businesses with less than $2 million in gross annual sales.
- Significant outreach and technical assistance provided by business consultants
    - Small business consultants provided assistance with preparing taxes, marketing and branding, and expanding online retailing activities.
- 93 percent business retention rate (typical turnover for this area).
- Most businesses expected sales revenues to increase after completion.

Source: PolicyLink, 2013.

DESIGNING STREETS AND DISTRICTS TO SUPPORT SUCCESSFUL RETAIL

As mentioned above, Strategic Economics did not find any studies of grade-separation projects located in or immediately adjacent to retail districts. However, the literature does provide guidance on the street design factors, streetscape improvements, and other common characteristics of successful downtowns and other "Main Street" shopping districts. These characteristics include:

- **Activity generators:** Successful downtowns typically have destinations or attractions that help attract people to the area. These can include nearby civic centers, cultural amenities, and colleges or universities.[18]
- **Pedestrian access, safety, and comfort:** While the characteristics of successful downtowns vary, they generally share the common attributes of inviting pedestrian environments framed by active storefronts that engage pedestrians.[19] Wide sidewalks, frequent street crossings, and through-block connections allow pedestrians to easily flow between destinations and access retail. Narrow streets and streetscape amenities can further indicate to pedestrians that they are in a safe and comfortable space.[20]
- **Wayfinding:** Stores are dependent on customers being able to locate them. Providing excellent signage with a consistent visual theme makes it easier for drivers, pedestrians, and cyclists to find the district and see businesses.[21]

[18] Gary Ferguson, "Characteristics of Successful Downtowns: Shared Attributes of Outstanding Small and Mid-Sized Downtowns," Ithaca Downtown Partnership, September 2005.
[19] Ferguson, September 2005.
[20] Cy Paumier, "Creating a Vibrant City Center," Urban Land Institute, 2004.
[21] Paumier, 2004.

- **Balance of transportation modes:** While successful downtown commercial corridors give preference to pedestrian access, auto access and easily accessible parking are also critical to the success of downtown retail districts. At times cities have attempted to close busy commercial streets completely to vehicle traffic in order to reduce conflicts with pedestrians. These strategies can sap the vibrancy from a retail district.[22] At the same time, "traffic calming" or "sustainable streets" improvements that maintain auto access while prioritizing pedestrian and bicycle traffic – such as reduced speed limits, narrowed lanes, and new bike lanes – have been shown to increase retail sales. For example, a 2013 study by the New York City Department of Transportation compared business performance in retail districts where the Department had recently implemented sustainable streets improvements, with nearby retail districts that had experienced no improvements. In most instances, the study found that districts with sustainable street improvements saw sales improvements above and beyond either comparison areas or borough averages, with sales in some districts improving by up to 102 percent in three years.[23] A 2003 study of the economic impacts of traffic calming on urban small businesses found that after the installation of bike lanes on Valencia Street in San Francisco, business owners reported an increase in sales, pedestrian and cyclist activity, and new customers from outside the district.[24]
- **Strong adjacent residential neighborhoods and employment centers:** Successful downtowns typically have a substantial, well-off residential population, or are bordered by walkable, upscale residential neighborhoods.[25] Links to nearby office and governmental uses can also help provide a strong customer base for downtown retail.[26]
- **Balance of uses:** A diversity of stores, restaurants, residential and office uses, and civic activities help maintain regular day and nighttime activity and draw foot traffic.[27]

Note that Castro Street already benefits from many of the characteristics described above, including an excellent pedestrian atmosphere, availability of nearby parking, a mix of uses including retail, restaurants, office, residential, and civic uses, and access to nearby residential neighborhoods and employment centers. Maintaining these elements and incorporating additional improvements into the final grade-separation project will help support Castro Street's success over the long term. In comparison, the 100-200 blocks of Moffett Boulevard is characterized by a much more auto-oriented street design with fewer pedestrian amenities and no public parking facilities. A grade separation alternative that creates a stronger pedestrian connection to Downtown could help to increase sales activity on Moffett Boulevard, especially if combined with pedestrian improvements on the 100-200 blocks of Moffett.

CASE STUDIES

Strategic Economics conducted three case studies of recent street reconstruction projects in pedestrian-oriented shopping districts located in Burlingame (Burlingame Avenue), Palo Alto (California Avenue), and Livermore (First Street). Although the improvements made in the case studies are not directly analogous to the grade separation project proposed in Mountain View, all three case studies involved significant disruption to an existing retail district and resulted in major changes to the street. The case

[22] Ibid.
[23] New York City Department of Transportation, "Economic Benefits of Sustainable Streets," New York City Department of Transportation, 2013.
[24] Emily Drennen, "Economic Impacts of Traffic Calming on Urban Small Businesses," San Francisco State University, 2003.
[25] Ferguson, September 2005.
[26] Paumier, 2004.
[27] Paumier, 2004; Ferguston, September 2005.

studies provide information on the short-term impacts of construction, the long-term impacts of changes to street configuration, and best practices for mitigating effects on businesses.

BURLINGAME AVENUE STREETSCAPE IMPROVEMENTS

Project Background

PROJECT SUMMARY

Where: Burlingame Avenue, in Burlingame, from El Camino Real to California Avenue

What: Sewer repairs and streetscape improvements including: special paving materials, street trees, gateway elements, sidewalk expansion, mid-block crossings, improved lighting, and conversion from angled parking to parallel parking.

When: Study began in the mid-2000s, construction began in April 2013, and the project was completed in late 2014

Project Cost: $16.5 million total (estimated)

In the mid-2000s, Burlingame Avenue was already a successful retail street, attracting people from throughout the region to shop, eat, and stroll. As a historic street dating back to Burlingame's origin, Burlingame Avenue was well-established as one of the two primary commercial centers in Burlingame. However, the street also carried a different legacy: 100-year-old sewer lines. In the mid-2000s, it was becoming clear that the sewers, water mains, and other utilities would need to be replaced. And, in order to replace the utility lines, the City of Burlingame was going to need to tear up the entire street.

Rather than patch the street after construction, the Department of Public Works saw an opportunity to combine the much-needed utility repairs with streetscape improvements that could make Burlingame Avenue a more attractive destination for pedestrians and support local businesses. With support from the Downtown property owners, who contributed funding through a special assessment district, the City was able to implement a streetscape plan including gateway elements, traffic calming, sidewalk enhancements, and street furniture.

Mitigating the Impacts of Construction

Construction of the streetscape and utility repairs was planned to take about a year. The improvements resulted in the permanent loss of about ten parking spaces. In addition, parking fees were increased leading up to construction to help fund the streetscape improvements. The City of Burlingame undertook several efforts to mitigate the impacts of construction including outreach and education, construction phasing and management, and promotion and advertising.

Outreach and education: During the planning stages before construction, the City reached out to local businesses to educate business owners on the potential construction, and to solicit feedback on potential impacts to businesses on Burlingame Avenue. City staff reached out personally, through extensive one-on-one communication both before and during construction, and used visual renderings of the street to help property owners and business owners visualize the potential changes.

Construction phasing and management: The construction itself was extensively planned to limit impacts on any one business. As part of the contractor selection process, the City specifically evaluated contractors based on their plans to work expediently and reduce construction impacts on businesses. Construction was phased, with only one block under construction at a time to allow for vehicle and pedestrian access to be maintained along the corridor. Construction was also phased so as to complete the sidewalks first, in order to restore pedestrian access as quickly as possible. Finally, to the extent possible, the majority of the construction and utility cut-offs were scheduled at night, when businesses were closed. During the holiday

season, the City ceased construction completely to allow access to the corridor during the busiest time of the year. Because of careful management and incentives provided to the contractor, the City was able to shorten the length of construction by one month.

Promotion and advertising: Throughout the process, the City dedicated time and consideration to promoting the businesses to minimize any potential revenue losses. This included "open for business" signs and additional, temporary wayfinding signs. The City also made free parking available along the avenue on Friday afternoons, to encourage customers to stop and shop.

Impacts on Businesses

The City of Burlingame's extensive planning and mitigation efforts succeeded in limiting impacts during construction. According to City staff, no businesses closed during construction. However, some businesses reported temporary revenue losses of approximately 25 percent during construction.

Since construction was completed in 2014, Burlingame Avenue has seen increased foot traffic and expanded restaurant space due to the increased sidewalk width and improved pedestrian space. According to City staff, vehicle traffic has also increased. As Burlingame Avenue has become an increasingly attractive retail destination, rents along the avenue have increased. According to City staff, after rental increases were put into place, a small number of businesses moved to Broadway Avenue, a lower cost retail district in Burlingame.

Lessons Learned

Business outreach during and after construction is critical to successful mitigation of construction impacts. Businesses are subject to day-to-day inconveniences due to construction, resulting in potential revenue loss. Business owners who are regularly informed and asked for feedback are more likely to be patient with construction inconveniences. At the same time, business feedback can help inform construction phasing that is sensitive to business impacts.

Construction practices that are sensitive to business needs and access play an important role in maintaining a successful retail environment during construction. Burlingame's construction phasing and marketing and promotion activities helped continue to draw pedestrians to the avenue despite the disruption caused by construction.

Streetscape improvements that result in higher pedestrian activity can benefit independent businesses and restaurants. However, increased shopping activity can also contribute to higher rents, potentially causing some business displacement in the long-run.

In addition to long-term benefits for businesses, property owners may also see a benefit from investments that result in long-term improvements to the retail environment. Improvements may increase foot traffic and a basis for increased rental revenue. Because Burlingame Avenue property owners saw the potential benefits of the proposed sewer and streetscape improvements, they were willing to pass a special assessment that helped fund the project.

Sources

- City of Burlingame, "Burlingame Avenue Streetscape Improvements" https://www.burlingame.org/index.aspx?page=1713, accessed March 16, 2016.
- Interviews with City staff, March 2016.

CALIFORNIA AVENUE STREETSCAPE IMPROVEMENTS

Project Background

California Avenue has long been an important commercial center. Before the street and surrounding neighborhoods were annexed by Palo Alto in the 1920s, California Avenue was the town center for the unincorporated community of Mayfield. With the construction of the Central Expressway in the 1960s, California Avenue was closed at the railroad tracks. Nevertheless, California Avenue remained a successful commercial street over the decades, frequently considered the "second downtown" of Palo Alto.

By the mid-2000s however, the streetscape was in need of improvements. In 2009, an early streetscape improvement plan was adopted, which called for repaving the street and installing new street trees. However, before implementation could get fully underway, the City's Public Works Department cut down all of the street trees on the corridor over a three-day period, with little warning to local residents and businesses. The tree removal prompted a citizen outcry and led the City to revisit the plans for the corridor and adopt a more aggressive streetscape improvement plan.

PROJECT SUMMARY

Where: California Avenue, in Palo Alto, from El Camino Real to the Caltrain tracks

What: Streetscape improvements included new street trees, street narrowing, sidewalk expansion, mid-block crossings, improved lighting, street furniture, new plazas, and additional parking on the side street

When: Construction began in 2014, completed in 2015

Project Cost: $6-8 million (estimated)

The new plan included complete streets elements such as improved pedestrian crossings, small pedestrian plazas, and benches. It also sought to normalize the lanes on California Avenue, which had some blocks with four lanes and others with two. At the same time as the City implemented the street and streetscape improvements, Palo Alto also installed a new water main and added additional parking on Birch Street.

Mitigating the Impacts of Construction

Construction took about 18 months, during which the street was never entirely closed to through traffic. Having learned from the communication failure that led to the tree removal, the City of Palo Alto took a "high-touch" approach to reduce construction impacts on businesses, including extensive outreach and education, construction phasing and management, and promoting street activity through regular events.

Outreach and education: Before construction, City staff reached out personally to business owners with extensive one-on-one communication. During project planning and throughout construction, City staff maintained a project website, sent out weekly emails, and conducted regular events at local businesses to ensure that the public was fully aware of the streetscape plans and upcoming construction activity. During construction, the City hired a communications consultant to conduct additional outreach and notification before each major action.

Construction phasing and management: The construction itself was extensively planned to limit impacts on any one business. Construction was phased by the half block, with only one side of one block closed at a time. Consequently, no block was completely closed during construction. Pedestrian access to all stores was maintained throughout construction. The City limited construction daily to business hours, with a quiet period between 11:30 am and 1:00 pm. Finally, the City paused construction during the holidays to allow for increased store access.

Marketing, wayfinding, and events: Throughout the construction process, the City dedicated time and consideration to promoting the businesses in an attempt to minimize any potential revenue losses. Mitigations included "open for business" signs and additional, temporary wayfinding signs. The City also strove to maintain regular events that brought customers to the street. The corridor's regular farmer's market was maintained and expanded during construction, and a shuttle was created to bring office workers to the area at lunchtime.

Impacts on Businesses

The City of Palo Alto's "high-touch" approach succeeded in limiting impacts during construction. According to City staff, no businesses closed during construction. During construction, some businesses did report revenue loss. However, City staff report that even the business owners who expressed the most skepticism prior to and during construction have come out fully in support of the project since construction was completed. One such owner even gave a speech at the grand opening ceremony.

Before construction, California Avenue was already seeing an increase in residential investment and a shift towards service-oriented retail with a heavy focus on food and dining. Since construction was completed in 2015, California Avenue has continued to move towards a strong service-oriented retail environment. Rents have increased and retail in the area has shifted towards more upscale establishments. Some of the less profitable, more space-intensive businesses left the street during the planning process, or have moved on in the time since construction was completed.

Lessons Learned

"High-touch" outreach can help prepare business owners for the disruption associated with construction, and inform construction management strategies. Regular, one-on-one outreach to business owners allows business and community members to ask questions and give feedback. On California Avenue, the City conducted consistent outreach to ensure everyone was aware of the impending construction, and knew who to speak to about concerns. By providing information in multiple formats, the City ensured that interested community members had multiple opportunities to find out more about the project. The feedback that business providers also helped inform construction management, including phasing and pausing for lunch and holidays.

Phasing construction can help maintain traffic flow and customer access. One of the main concerns businesses have during a major street construction project is loss of customer access and visibility. By phasing construction so that no part of the street was entirely closed at any time, Palo Alto provided a visible reminder that the City valued business access. This phasing strategy also maintained customers' ability to drive by their destination and see that it was open.

Maintaining regular events may be challenging, but can help remind customers that retail remains open for business. Events can help encourage customers to continue to frequent a retail district during construction, and remind everyone that local businesses are still open. Palo Alto found that continuing the regular farmer's market provided a helpful reminder to customers and consistently brought traffic to the area.

Sources

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- Alex Hicks, "California Avenue Businesses in Palo Alto Lament Lost Revenues Amid Construction", Peninsula Press, November 21, 2014, http://peninsulapress.com/2014/11/21/california-ave-construction-businesses-lost-revenues-palo-alto/, accessed April 27, 2016.
- Interview with City staff, April 2016.

DOWNTOWN LIVERMORE STREETSCAPE IMPROVEMENTS

Project Background

In the early 2000s, the City of Livermore completely re-envisioned the City's downtown as a walkable, mixed-use center. The City adopted a Downtown Specific Plan in 2003, informed by an extensive community visioning effort. The plan called for a dramatic redesign of the downtown's primary pedestrian street, First Street, as a catalyst for further revitalization.

When the specific plan was adopted, First Street was designated as State Highway 84. As a state highway and Livermore's primary east-west arterial, the street received heavy truck traffic. In order to transform First Street into a pedestrian-oriented main street, the City worked with Caltrans to decommission First Street as a state highway and divert traffic to nearby Railroad Avenue and Isabel Avenue (the new Route 84), which were widened to serve truck and other highway traffic. This realignment allowed the City to narrow First Street from four lanes to two. The City also widened sidewalks on First Street to accommodate more pedestrians, and built a large public plaza to create more gathering space. Around the same time, the City also invested in a new parking garage with 500 spaces, substantially increasing parking availability in the downtown.

PROJECT SUMMARY

SUMMARY

Where: First Street between M Street and Maple Street, in Livermore

What: Streetscape improvements included street trees, street narrowing, sidewalk expansion, improved lighting, street furniture, new plazas, new sewers and electrical repairs.

When: Construction began in 2005, completed in 2006

Project Cost: $12 million (estimated)

Mitigating the Impacts of Construction

Construction of the streetscape and utility repairs was planned to take a little over a year and ended before the holidays in 2006. The City of Livermore's mitigation efforts included community and business outreach, business promotion and events, and business support services.

Community and business outreach: The extensive community visioning process – including five communitywide workshops and multiple conversations with civic groups – that was conducted during preparation the Downtown Specific Plan process helped to build support and consensus around the eventual redesign of First Street. Additionally, the City undertook extensive outreach to businesses on First Street both prior to and during construction. During the planning stages before construction, the City reached out to local businesses to solicit feedback on construction phasing. During construction, the City conducted weekly briefings with businesses to ensure they understood the ongoing steps of the process. The City also maintained an onsite community construction manager to act as a liaison between the contractors, the City, and the community.

Flexible construction management: Based on early business feedback, the City began construction with a phased approach, building one block at a time. In the middle of construction, however, the City changed its approach and stopped the phasing, in response to a request from businesses that the City focus on completing construction as quickly as possible.

Business support and promotions: In addition to City staff's own outreach efforts, the City partnered with Downtown Livermore, Inc., a non-profit Main Street organization focused on supporting the economic health and vitality of downtown, to support promotions, events, and business assistance before, during, and after construction. Downtown Livermore, Inc. was very active during construction, promoting events to

draw people to the downtown. The organization also provided small grants to businesses for purchases of outdoor furniture, marketing, and façade improvements.

Impacts on Businesses

As a result of the redesign of First Street and the City's other downtown revitalization efforts (including the new parking garage, a cultural center, and mixed-use development), the types of businesses located on First Street have transitioned over time. Prior to construction, the businesses on the corridor consisted primarily of space-intensive retailers, such as furniture stores and antique malls. Foot traffic on the corridor was relatively limited, and the businesses relied on easy street parking and convenient store access to draw customers. Although there were no reports of businesses closing during construction, existing retailers on First Street struggled to maintain sales despite the City's efforts to support and promote customer activity.

After construction was completed in 2006, vehicle traffic on First Street declined significantly as highway traffic was diverted to Railroad Avenue (Figure 7). At the same time, however, First Street experienced significant increases in foot traffic due to the increased sidewalk width and improved pedestrian environment, and retail sales increased. Within 12 months of the completion of the street improvements, vacancy on First Street had dropped and rents increased dramatically, from about $0.50 a square foot to almost $2.00 a square foot. The higher prices led to the displacement of many of the original, space-intensive businesses. Furniture and antique stores were gradually replaced by boutiques, food and wine stores, restaurants, and arts and crafts stores as First Street became a dining and shopping destination.

Figure 6: Average Daily Traffic Counts Before and After Downtown Livermore Streetscape Improvements: First Street and Railroad Avenue

	Before (2005)	After (2007)
First St	20,500	10,780
Railroad Ave	13,250	20,030

Source: City of Livermore, 2016.

Lessons Learned

Altering a retail environment can lead to changes in a district's business mix. Prior to the streetscape improvements, Livermore's First Street was dominated by low-cost, space-intensive businesses like furniture and antique stores. Some of these types of businesses were unable to stay after the streetscape project was completed, due a variety of factors, including revenue losses during construction, reduced auto traffic, and increased rents post construction. In contrast, even prior to construction, Burlingame Avenue and California Avenue in Palo Alto were more similar to Castro Street, in that they had a more dining- and service-oriented business mix that drew significant foot traffic to begin with. This may have positioned businesses on Burlingame Avenue and California Avenue to better withstand both construction and the rent increases that followed completion of the streetscape projects, with less business turnover.

Lower vehicle traffic counts may not lead to reduced retail sales, especially if offset by increased pedestrian traffic. Vehicle traffic on First Street declined by nearly half after the street was decommissioned as State Route 84. However, the City's investments in wider sidewalks and an improved pedestrian environment helped support an overall increase in retail sales along the corridor.

Business outreach can help build consensus and provide an outlet for project feedback, although it does not guarantee that businesses will not be affected by construction. A strong public process, including both outreach and opportunities for feedback, can help citizens and business owners express their concerns and come to consensus about a project. However, community buy-in does not guarantee an

impact-free project. In Livermore, there was extensive public visioning, community feedback, business-led decision making, and efforts to bring customers downtown. Retailers on First Street were still affected; however, the public process helped the City mitigate the impacts as much as possible.

Sources

- City of Livermore, Livermore Downtown Specific Plan, adopted 2003, http://www.cityoflivermore.net/citygov/cd/planning/dsp.asp.
- Marc Roberts, "Transforming Downtown Livermore" http://www.pcl.org/projects/2011symposium/proceedings/Roberts.pdf, accessed April 5, 2016.
- Interview with City staff, April 2016.

STRATEGIES

The literature review and the case studies suggest several strategies for both mitigating the short-term construction impacts of whichever grade-separate alternative the City selects, and designing the project to support the long-term success of businesses in the study area. These strategies are discussed below.

Strategy #1: Develop a Plan for Mitigating Short-Term Construction Impacts to the Business Community

By developing a clear plan for mitigating construction impacts that reflects business input, the City can help address business owners' concerns and demonstrate a commitment to keeping Castro Street and Moffett Boulevard open for business. The construction mitigation plan should draw on the best practices identified in the literature review and case studies. For example, during project planning the City could consider the following best practices:

- Begin business engagement early, and continue to keep business owners updated throughout construction. The City has already begun to reach out to businesses as part of the analysis of the potential grade-separation alternatives.
- Design the bid process to select contractors that demonstrate a commitment to staying on schedule and mitigating business impacts, and consider providing incentives for finishing construction early.
- Consider scheduling and phasing strategies to make construction less disruptive. For example, this could include completing any changes to the sidewalks first in order to restore pedestrian access as soon as possible; scheduling construction activity to take place at night; and/or pausing construction for the holidays and other, particularly busy shopping periods.

When construction begins, potential strategies could include:

- Maintain visibility and circulation as much possible.
- Ensure customers can continue to park within walking distance.
- Work with businesses to implement marketing efforts, events, wayfinding, and signage to let customers know Castro Street is "open for business."
- Technical or financial assistance (grants or loans) for small businesses in the areas most affected by construction.

Strategy #2: Design the Project to Support Castro Street's Long-Term Success

Castro Street's success as a thriving retail and restaurant district is largely due to the excellent pedestrian atmosphere, attractive outdoor dining, and the availability of nearby parking. Foot traffic from customers who park nearby drives retail and restaurant sales more than drive-by vehicle traffic. This is consistent with findings from studies of downtowns and other "Main Street" retail districts, which have found that that the most successful places prioritize pedestrian access, safety, and comfort, while providing easily accessible parking within walking distance. Maintaining vehicle access is also important, but improvements that give preference to pedestrians and bicyclists – such as reduced speed limits, narrowed lanes, and new bike lanes – have been shown to improve retail sales.

The grade separation project should be designed to maintain and reinforce the elements of the street that make Castro Street attractive for pedestrians. In particular, the project should:

- Preserve wide sidewalks and attractive outdoor seating for restaurants.
- Maintain strong pedestrian connections across Castro Street. This includes preserving midblock crosswalks, so that shoppers can continue to easily cross back and forth as they browse among different restaurant and shopping options, and to help customers more easily access nearby public parking facilities.

Strategy #3: Maintain and Expand Convenient Access to Parking

Easily accessible parking within walking distance of businesses is a critical component of Castro Street's success as a pedestrian-oriented retail and restaurant and destination. Ensuring that customers who arrive by car continue to have convenient access to parking both during and after construction will help mitigate the impacts of a grade-separation project. Potential strategies for maintaining and expanding access to parking include:

- Monitor parking utilization in and around Downtown before, during, and after construction.
- Expand signage to assist customers in finding parking quickly and conveniently. For example, this could include electronic signs that dynamically show the number of available spaces in nearby garages and lots.
- Explore opportunities for expanding shared parking with existing private property owners and new development projects. Shared (public) parking opportunities at private facilities could expand needed capacity during special evening and weekend events, and/or throughout the day.
- Adjust parking policies as needed to maximize efficient use of existing parking spaces, and ensure that customers can always find parking within easy walking distance of their destinations. For example, this could include adjusting time limits for on- and off-street parking spaces, shifting the mix of daily versus hourly parking spaces, working with businesses to manage employee parking demand, and considering pricing strategies help manage demand, location, and duration of parking.

Strategy #4: Enhance Pedestrian and Bicycle Connectivity across the Tracks

Brokers report that pedestrian activity across the railroad tracks between Castro Street and Moffett Boulevard is currently limited. The grade separation project should be designed to improve the pedestrian and bicycle connection – for example, by reducing wait times and providing additional pedestrian refuges across Central Expressway, and making it easier and faster to cross the rail tracks.

Improving the pedestrian and bicycle connection across the tracks will benefit businesses on Moffett Boulevard by enabling residents and workers from north side of Central Expressway to more easily access Downtown on foot. Indeed, increased foot traffic may offset the impacts of any potential reductions to vehicle traffic on Castro Street. In addition, creating a stronger pedestrian connection to Downtown could help increase activity on Moffett Boulevard, especially if combined with pedestrian improvements on Moffett.