Appendix: Case Studies Memo

ARUP

To	Rachel Factor and Shannon Dodge, BART	Date December 31, 2020
Copies		Reference number 6M6136 -WP 04
From	Martha Koch and Autumn Bernstein, Arup	File reference 4-05
Subject	Case Study Research Findings	

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1   Introduction

BART and the City of El Cerrito identified the off-street parking lots surrounding El Cerrito Plaza BART station as an opportunity site for transit-oriented development (TOD). In November 2020, BART selected a developer to construct 750+ residential units and potentially replace a limited amount of existing off-street parking for BART riders. Arup is undertaking a feasibility analysis to assess the value and efficacy of an on-street parking management system for El Cerrito, a city that presently has no parking management program or staff and conducts only sporadic enforcement of existing regulations (e.g., no parking zones).

BART's goals for TOD at the El Cerrito Plaza station include contributing to limited Bay Area housing stock, growing system ridership, and providing a comfortable customer experience. Efficient management of parking supply and demand near the station can enable a harmonious relationship between BART and its El Cerrito neighbors, while modeling best practices in sustainable, healthy, and lively urban development. The level of replacement parking at the new TOD is yet to be determined. Some of it may be reserved for disabled placards, carpools, or electric vehicles.

This memo describes three different approaches to municipal parking management in Walnut Creek, California; Evanston, Illinois; and Aurora, Colorado. These case studies aim to offer a high-level snapshotof how efforts to manage semi-urban parking operate elsewhere in the region and country. Revenue and expense data from these case studies informs the on-street parking management feasibility analysis conducted concurrently by Arup. This feasibility analysis examines potential costs and revenues from implementation of a new on-street parking management system near BART.

2   Approach

The planned TOD at El Cerrito is adjacent to high-frequency regional rail, largely surrounded by lower-density residential and commercial development, proximate to steep terrain that presents challenges to walking or biking, and plans minimal replacement parking. While projects of similar scale and aims have been proposed elsewhere (e.g., Washington, D.C., Greater Toronto Area), we were unable to locate any that have been completed. Consequently, this memo takes a 'quilting' approach, stitching together lessons learned from three different cities that each resemble (at least) one facet of El Cerrito Plaza station's context, as noted in Table 1, below.

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Table 1: Area or Parking Characteristic

Area or Parking Characteristic	Walnut Creek (downtown)	Evanston (Main St Metra Station)	Aurora (Ilif Station)
All-day parking management (6-12 hours)	x	x	x
Small- to mid-sized city	x	x	x
Bay Area location (for cost/expense calibration)	x		
Mostly single-family residences, with some multifamily		x	x
Minimal off-street parking for transit riders		x	
Regionally significant attractor	x	x	
Enforcement, from scratch			x

3 Case Studies

3.1 Walnut Creek, California

3.1.1 Overview

Walnut Creek, a major regional retail attractor and East Bay employment hub located 13 miles from El Cerrito as the crow flies and eight BART stations east, operates a sophisticated downtown parking program. The Walnut Creek BART station is located near, but not immediately adjacent to, the downtown core. Several parking garages and surface lots – both private and public – serve BART patrons arriving by car. The parking management program covers three areas: on-street parking in the downtown core, on-street parking outside the downtown core, and parking in three publicly owned garages.

The city first installed parking meters in the 1940s – costing just a nickel an hour.70 years later, the City Council adopted a comprehensive Parking Management Plan (2011) and the first parking ordinance (2014). The ordinance includes:

- An 85% on- and off-street occupancy goal, following industry best practices

- Methods for managing parking supply to achieve that 85% goal, including rate and time-limit adjustments

- Creation of a Parking Enhancement Fund

The city manages 30% of available parking spaces downtown (around 3,000 spaces), primarily metered on-street or garage parking. Private operators manage the other 70% (7,000+ spaces). There are few free parking spaces downtown.

Three downtown zones structure the parking management system:

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- 'Green Zone'– on-street parking where demand is highest in the downtown core; three-hour limit, $2 per hour. Applies to 500 metered spaces.

- 'Purple Poles'– on-street parking on the periphery of downtown, where demand is lower; no time limit, $1 per hour. Applies to 1,000 metered spaces.

- Parking garages – three garages, no time limit, $1.25 per hour, allows monthly permits.

In 2017, Walnut Creek's data, drawn from its third-party data analytics services, indicated overoccupancy in the Downtown Core, and underutilized spaces on the downtown periphery. At this time, all metered on-street spaces were subject to two-hour time limits. First, the city reduced rates on the periphery to induce people to park further out, but this did not result in a no significant change in behavior. Subsequently the city then removed the two-hour time limit for spaces on the periphery. Data in the months following the removal of time limits indicated that more downtown employees were parking on the periphery. The number of people parking on the periphery increased 14% from the previous year, indicating a more efficient balance of supply and demand.

2009 • Parking identified as City Council priority issue

2011 • Parking Management Plan adopted

2014 • Parking Ordinance adopted
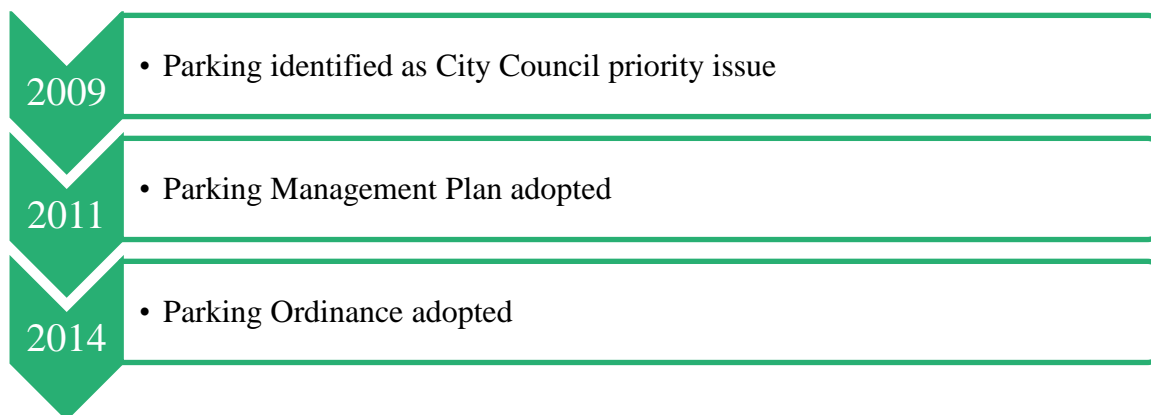
3.1.2   Community Perceptions and Engagement

Walnut Creek's current parking program got its start in 2009, when the City Council identified parking as a priority focus area. The Council formed a task force comprised of commissioners, councilmembers, members of the public, and representatives from the Chamber of Commerce and Downtown Business Association. The task force declared their goal to make parking easier for residents, businesses and employees, and visitors.

The city kicked off a public outreach campaign in 2009, with continual programming and workshopping throughout development of the Parking Management Plan (adopted 2011) and until the adoption of the new parking ordinance in 2014.

It took two years for the task force to develop the 2011 Parking Management Plan, which laid out six strategies that were adopted into the ordinance:

1. Effective use of Garages (public and private) & Improvement of Garage Experience

2. Successful Employee Parking Management

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3. Effective Inventory Management and Establishment of an 85% on-street occupancy goal

4. Effective communication about downtown parking options

5. A plan for residents

6. Effective alternative modes of getting around downtown

Although all strategies work to make the case to the public about the value of parking management, Walnut Creek identified inventory management and an 85% occupancy goal as particularly important. To facilitate this strategy, Walnut Creek invests in robust data analytic services from a third party, enabling clearer communication about the program's benefits with the public. The wealth of data enables the city to make data-driven policy changes – avoiding the appearance of political influence in parking regulations – and illustrate that parking management increases convenience for people parking downtown.

Walnut Creek finished a draft Transportation Strategic Plan in early 2020 (Rethinking Mobility) which includes six parking-specific strategies. As part of plan development, the city conducted extensive public outreach, which offered another means to educate people about the impact and success of the parking program. Outreach included a joint workshop with the Planning and Transportation Commissions, social media outreach, newsletters, a project website for sharing information and collective feedback, and activities soliciting input and feedback at different public events (e.g., farmers' markets).

Parking is a hotly political topic in Walnut Creek, and the continued success of the program relies on continual engagement with city leaders and the business community. The data collected and analyzed through the parking system allows the city to tell a thorough, data-driven narrative when engaging with the public.

3.1.3 Program structure, costs and revenues

Walnut Creek primarily staffs parking operations in-house. Exceptions include parking garages, data analytics, and citation administration (e.g., mailings, second-level appeals). Revenues funnel into a dedicated Parking Enterprise Fund, which covers operations, capital, and downtown improvement expenses. City staff includes 10 Public Service Officers who write tickets (represented by the Teamsters), one enforcement supervisor, and one enforcement lead. Two full-time employees manage meter operations. Almost 11 full-time employees staff downtown services and enhancement projects supported by the Enterprise Fund. Local transit agency County Connection runs the free downtown trolley service, so requires no additional Walnut Creek staffing. Around $100,000 moves from the Enterprise Fund to the city's General Fund to cover administrative costs to help run the program. Office staff supporting the program include internal administration, and a communication team that relays data analytics and policy change information to the public. Table 2 outlines the staffing and associated costs for line items in the parking fund.

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Table 2: Walnut Creek FY19 Parking Enterprise Fund Overview

Division	FY 19 Budget	Salary & Benefits	Services & Supplies	FTE
Operations				
Parking Enforcement	$2,411,745	$1,583,228	$828,517	12.00
Parking Garages	$1,169,981	$102,454	$1,061,701	0.60
Meter Operations	$929,107	$260,548	$668,559	2.00
Total Operations	**$4,510,833**	**$1,946,230**	**$2,558,777**	**14.60**
Downtown Enhancements				
Public Safety	$918,861	$918,861	$0	4.25
Downtown Landscaping	$725,485	$459,097	$266,388	4.00
Downtown Trolley	$437,415	$15,916	$421,499	0.00
Street Sweeping + Maintenance	$92,843	$92,843	$0	2.15
Code Enforcement	$61,514	$59,987	$1,527	0.50
Downtown Events	$37,000	$9,200	$34,800	0.00
Total Downtown Enhancements	**$2,273,118**	**$1,555,904**	**$724,214**	**10.90**
Capital Investment	$716,450			
Grand Total	**$7,500,401**	**$3,502,134**	**$3,282,991**	**25.50**

Prior to the 2014 parking ordinance, all parking revenue collected in the General Fund. As of 2014, all revenue collects in a Parking Enterprise Fund, which covers operations (including some disbursement back to the General Fund for administration) and downtown enhancements. Pre-covid, the Enterprise Fund realized around $9 million in revenue, with operations costing around $8 million. Expenses include transaction costs, garage operation, nine enforcement staff and other enforcement costs, and garage maintenance. Downtown enhancements include: a free downtown shuttle, three public service offices, and a downtown maintenance crew. In years with additional net revenue, the Enterprise Fund may make contributions to the Downtown Business Association, or a direct transfer to the city's capital budget to cover major enhancement costs (e.g., garage elevator upgrades, crosswalk enhancements).

Annually, around $350,000 of the budget supports capital projects, which may include major parking garage or sidewalk repair, garage elevator replacement, and technology systems replacement. Following a pilot to test multi-space pay stations against smart parking meters, the city spent around $500,000 installing dual-space smart parking meters for all 1,500 on-street parking spaces (illustrated in

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Figure 1**Error! Reference source not found.**).

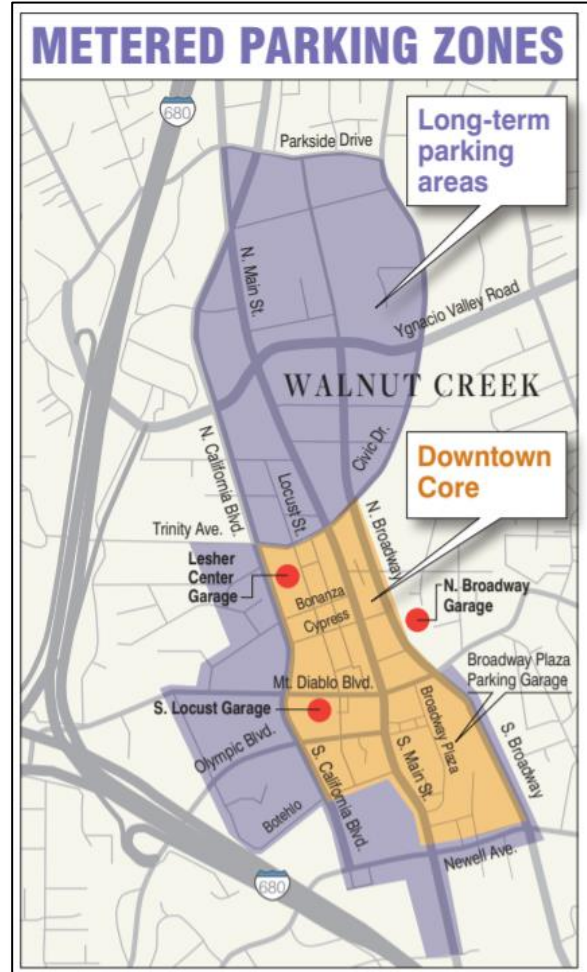Figure 1: Dual-Space Smart Parking Meter in Walnut Creek

Figure 2: Map of "Green Zone" (3-hr time limit) and "Purple Poles" (no time limit)

In 2017, due to low demand, the city re-evaluated the pricing and time limits of its meters outside the downtown core. Guided by data collected from parking sensors and the city's stated goal of 85% occupancy, a new zone was created – "Purple Poles" – to indicate lower hourly rates and the absence of time limits. Now, the city on-street parking system includes two zones, tiered by pricing and time limits based on demand. Figure 2 illustrates the layout of these two zones.

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3.1.4 Technology & systems

A suite of technologies support Walnut Creek's on-street parking system. The city uses smart meters and contracts with multiple digital services to provide improved customer service and robust analytics. These services help guide decisions about the parking program, policies, and rates –which improves public acceptance of the program.

- ParkMobile provides mobile and online payment; users can receive mobile phone notifications about parking expiry and choose to extend their payments remotely (as long as they will not exceed the posted time limit).

- ParkMe / Inrix use their location-based data to allow people parking in Walnut Creek to share (via Walnut Creek's website or the mobile app) real-time parking occupancy data. Parking availability is filterable by monthly, reservable, or daily parking spaces.

- smarking pulls data from parking sensors installed throughout the city into an internal analytic dashboard, centralizing parking data to help the city understand supply, demand, and needed rate adjustments. For an annual cost of around $75,000, smarking maintains a dashboard for the city, presents on analytics results to City Council and the Transportation Commission, conducts some revenue modeling, and provides public-facing information, among other services.

- ParkSmart runs the city's 7,000+ private parking spaces; the city's partnership with ParkSmart includes sharing ParkSmart's data with smarking, so all data analytics cover all parking in the city, not just publicly operated spaces.

Sensors installed throughout the city – at both paid and unpaid on-street spaces – provide detailed information about supply and demand. Crucially, this information allows the city to make a rational, data-driven argument to the public around rate-setting. The combination of sensors and smarking's analytics replaces the city's previous expenses of an annual or biannual two-week parking study (approximately $50,000 per study), which produced limited benefits when compared with the new system.

The city hopes to move towards more technology-based enforcement – perhaps using LPR instead of manual ticketing – to reduce operation costs.

3.1.5 Key Takeaways from Walnut Creek

- Building a system with room for feedback – whether that includes pilot projects or flexible rate-setting policies – allows for ongoing system improvement. Walnut Creek pilots multispace pay stations before determining that smart meters best support the city's needs. Review of data and the parking program's flexibility allowed creation of the Purple Pole program, with cheaper parking rates and no time limit to better balance supply and demand.

- Invest in occupancy sensors and back-end data analytics to optimize occupancy and revenue, and to tell a data-driven story to the public.

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- A multi-zone approach allows the city to charge a premium for the most desirable spaces (the Downtown Core), while still managing parking through a lower price and higher time limit on the periphery.

- While the Parking Enterprise Fund is costly to administer, it provides transparency to the public about how parking revenues are reinvested by identifying costs as either "operations" or "public enhancements."

- Local businesses, formerly resistant to increasing rates and enforcement, now support charging for parking because they understand the relationship between paid parking and increased turnover and parking availability.

3.2 Evanston, Illinois

3.2.1 Overview

A city of 75,000 on Chicago's northern border, Evanston runs in-house operation of metered on-street parking, residential parking permits, surfaces, and three downtown parking garages. Single-family homes predominate in the city, though multifamily apartment buildings are common near Northwestern University (21,000 students) and along denser commercial corridors. Following national trends over the past decade and a half, recent development in the city clusters near transit stations, includes reduced parking requirements relative to years past, and indicates a strong multifamily housing market. In 2017, Evanston amended its zoning ordinance to reduce parking requirements in designated TOD areas, from 2 spaces per multifamily unit to an average of 1 per unit.[1]

Of the three regional rail stations in Evanston, Main Street Station offers the closest similarity to El Cerrito Plaza Station:

- Abuts residential neighborhoods, with a mix of single- and multi-family residences

- Plentiful on-street parking in residential neighborhoods, with some areas designated for residential parkers only

- Rail station provides suburban access to Chicago's central business district

The Regional Transportation Authority (RTA) classifies land uses around the Main Street Station area as 37% single-family residential, 33% transportation and infrastructure (e.g., parking, train stations), 19% multi-family residential, 4% commercial, and 2% schools or other community uses.

There are approximately 294 on-street metered parking spaces within a half-mile of Main Street Station, primarily along the commercial strip of Chicago Ave (see **Error! Reference source not**

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[1] TOD Parking Requirements & Study summary presentation, September 2017, page 7. Available here. Study funded by a $105,000 grant in 2015 from the Regional Transit Authority's Community Planning Program. The zoning text amendment passed by the Plan Commission in a 7-0 vote.

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found.)[2]. Meters within a block of the station cost two dollars an hour, with a two-hour time limit. The remaining nearby on-street meters, on Chicago Ave and beginning a block south of the station, cost fifty cents an hour, with twelve-hour time limits. Most residential block faces are unregulated (marked in green in Figure 3), save for a northern portion managed by a residential parking permit program, as illustrated in yellow in Figure 4. Two nearby, privately-operated surface lots provide around 100 spaces total, at differing rates of fifty cents or two dollars an hour. There are three ADA parking spaces available on the Metra site itself; these run at $1.50 per day or $30 per month, per Metra's systemwide parking policy.
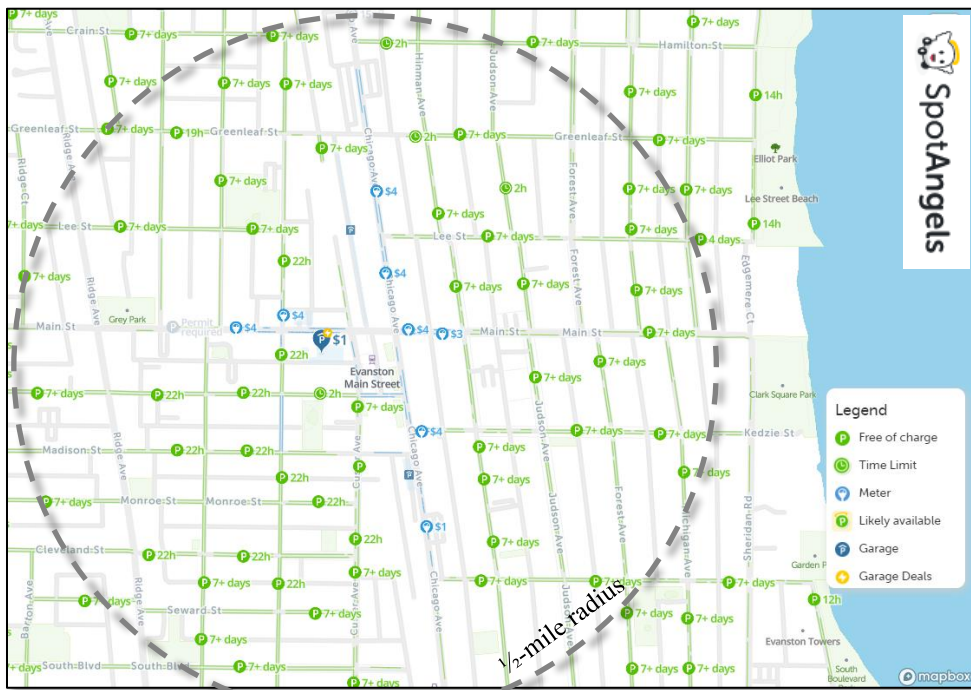

Figure 3: Paid on-street parking locations (indicated in blue) within 1/2-mile of the Main Street Metra Station, Evanston, IL

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[2] Location of on-street parking near Main Street Metra Station identified using SpotAngels map (see **Error! Reference source not found.**); quantity sourced via aerial imagery from Google Earth (2020).

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Figure 4: Extent of residential permit program within 1/2-mile of Main Street Metra Station, Evanston, IL

Conversation with Evanston's interim parking director indicated that few Metra passengers drive to the station. However, there may be some residents from neighboring Chicago or Skokie who drive and park near the station, as the drive is around five minutes and may provide more parking availability than in Chicago, or a shorter train ride than from Skokie.

3.2.2 Program structure, costs and revenues

All parking-related revenues go to either the Parking Fund or city General Fund. The Parking Fund receives revenues from garage receipts, meter collections, and surface lot monthly permits; its expenses include garage management, lot resurfacing, and maintenance. The General Fund receives parking citation payments as its sole parking-related revenue (payments are first routed to the Parking Fund, and then disbursed to the General Fund). Its expenses are citation-related, including parking enforcement staff and enforcement vehicles. All of the following information relates to the city's entire on- and off-street parking program, not just on-street meters near Metra Station; consequently, these numbers are for high-level illustration only.

Parking-related income fully covers all operating and capital expenses. The net revenue from citations goes to the General Fund; revenues produced by meters, lots, and garages feed into the parking fund. The parking fund disburses payments for most operations costs – utilities, vehicle expenses, administrative employee salaries, capital upgrades.

Evanston's rate structure must be approved by the nine-member City Council. Although the parking department suggests preferred, market-aligned rates, the Council's rates are currently significantly lower than market. One of the Councilmembers' concerns around increasing rates is the perception of adding more costs to residents' high rents and property taxes. This is compounded by the expectation

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that most people who park and pay will be residents, although the parking department indicated that there is a demonstrated willingness-to-pay by out-of-town visitors to Evanston's attractions (e.g., beaches, restaurants, shops, as well as commuter rail).

Nearly all parking operations are sourced and conducted in-house, with the exception of garage attendants and the technology provider of mobile phone/online meter payment (ParkMobile). Evanston employs 12 full-time parking enforcement officers, 25% of whose time is earmarked for crossing guard coverage and traffic control. Enforcement officers write around $350,000-$380,000 in citations annually – a gross amount of more than $4.5 million. After wages and benefits, each officer receives around $100,000 per annum. Enforcement is conducted by vehicles equipped with license plate recognition (LPR).

Four full-time staff conduct all on-street parking meter operations: collections, installations, repairs, and signage, among other tasks. These four staff, and associated vehicles and fuel costs, total approximately $650,000-$700,000 per year.

With the exception of parking garage attendants (contracted by Standard Parking) and maintenance (completed by other city departments – primarily Public Works and Parks), the Parking Department manages all operations. This includes contract negotiation (e.g., Capital Improvement Plans, fire suppression), planning and operations, enforcement, and back-office services (e.g., citations and data management).

3.2.3   Technology & systems

For the entire city of Evanston, on-street, daily parking payment options include: smart meters, multispace paystations, and mobile or online payment via Passport Parking. As Passport Parking generates service fees per transaction ($0.35), Evanston passes those fees on to people parking who opt to pay using the Evanston-branded Passport Parking app, Park Evanston. Both smart meters and multispace paystations accommodate cash or credit card payments.

Parking permits – whether monthly passes in surface lots or annual residential parking permits – are stickerless, and managed through a vehicle's license plate number. License plate readers used during enforcement rounds can cross-reference a vehicle with its permit; the system can also cross-reference whether vehicle owners have multiple citations and merit further enforcement action.

While single-use parking payments can be paid via app or at meters or paystations, the Park Evanston app, powered by Passport Parking, provides the following functionality:

- Pay for parking via mobile phone

- Extend parking sessions remotely (i.e., a mobile phone alert will appear offering the opportunity to pay up until the time limit, remotely)

- View parking history

- Receive Notifications and email receipts

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- Buy City parking permits

- Appeal or pay citations

- Load cash onto a mobile wallet (at the City Collector's Office)

Evanston conducts enforcement via license plate recognition systems appended to city vehicles. In addition to monitoring whether daily parkers have paid, LPRs can scan for the presence of permits. Drivers with monthly or residential parking permits do not have a physical permit. Instead it is linked to their license plate number, and monitored digitally via the LPR system.

3.2.4   Key Takeaways from Evanston

- Despite limited station-area parking, most residential neighborhoods abutting the Main Street Metra Station are not managed by the residential parking permit program and are not the source of overcrowded parking complaints.

- All parking rate adjustments, after recommendations by staff, must be approved by City Council, which limits the ability to balance supply, demand, and revenue. An alternative city policy that allowed the Parking Department to set rates without Council approval could increase revenue or better balance supply and demand, by bringing pricing in line with the market.

- Stickerless residential parking permits and monthly permits are manageable with an LPR system, reducing the need for additional layers of physical permitting (e.g., hang tags) associated with conventional long-term parking management.
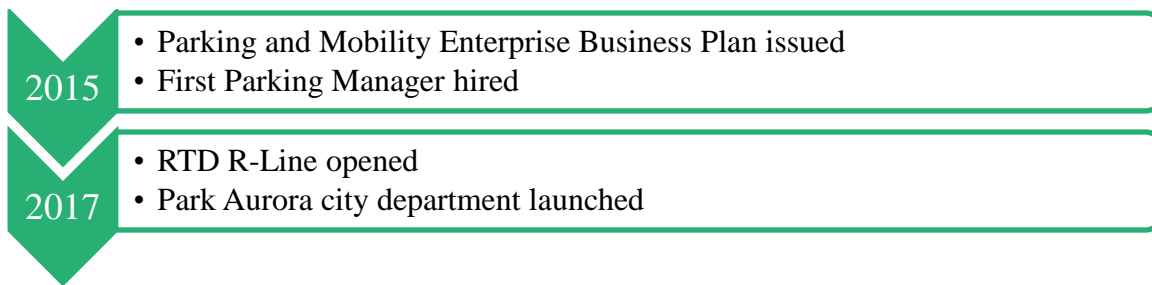
3.3   Aurora, Colorado

3.3.1   Overview

The third-most populous city in Colorado, Aurora abuts Denver's eastern border. The city experienced rapid growth in the 1970s and 1980s, and the spillover effects from Denver's recent tech boom continue to drive development. In 2015, the city adopted a Parking & Mobility Enterprise Plan to structure its parking system. In 2017, 10.5 miles and 10 stations of new regional light rail service opened in Aurora. The city's parking program was created in anticipation of demand generation by the light rail extension, along with a booming University of Colorado medical campus and continued development. The parking program began operations when the new light rail opened in 2017. However, ridership on the light rail is below projections, as is demand for the parking spaces managed by the City of Aurora. In the two full years of operations before the COVID-19 pandemic hit, Aurora's program did not cover its costs and it continues to operate 'in the red.'

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Figure 5: Timeline of Parking Management Program in Aurora, CO

2015
- Parking and Mobility Enterprise Business Plan issued
- First Parking Manager hired

2017
- RTD R-Line opened
- Park Aurora city department launched

3.3.2   Program structure, costs, and revenues

Prior to 2015, Aurora's parking management consisted of a small residential parking permit program, with limitations on a few streets around high schools and similar attractors – very similar to El Cerrito's current parking program. In anticipation of a new light rail opening in 2017, and in the face of continued residential development and a booming University of Colorado medical center, the city created a parking business plan. The business plan addressed four key topics: technology, branding, education, and ordinance adjustments. Upon completion of the business plan in 2015, Aurora held a two-day, 30-stakeholder roundtable to review the business plan and identify how to ramp up the program. This led to the hiring of the city's first parking manager.

The first step under the new plan was extending the RPP program to neighborhoods around light rail stops, and developing a plan for charging for non-residential street parking and at one public garage at the new Ilif Station. City ordinances were adjusted as necessary. .Included in ordinance adjustments to enable the parking program was the stipulation that Aurora's parking department may change rates at any time, without Council approval. Because no prior program could provide instruction in rate setting, the city sought to preserve the ability to adjust rates until they reached a desired demand/supply balance. Due to lower demand than expected – particularly for the approximately 600-space public garage at Ilif Station – the city lowered rates twice (pre-covid). Rates ranged from $0.50 to $1 when the program began, and have since shifted every 18 months by about fifty cents.

Most of the program operations are performed by third-party vendors. This allowed Aurora to minimize creation of new staff roles for a fledgling program, and allows more nimble scaling of staffing in operations due to vendors' larger staff rosters.

Aurora deployed multiple tools to manage public reception of the program. For the first few months of the program, courtesy notices were given instead of citations. Although no-parking zones (e.g., in front of fire hydrants) and the residential parking program predate the 2017 program, prior to 2017, the city conducted no parking enforcement.. Consequently, the city undertook an extensive citywide education campaign to alert residents to the advent of enforcement – this included large commercial banners and homeowners' association meetings along the new light rail line.

In 2020, three years into the program, the city "rarely" tows or boots vehicles, although it has the legal authority to do so. Instead, the city is continuing to emphasize public education over enforcement.

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3.3.3   Technology & systems

Per the city's Parking & Mobility Enterprise plan, initial technology systems include multispace pay stations, mobile app payment, and LPR enforcement. The management program, as laid out in Aurora's 2015 Parking Business Plan, identified "the use of integrated technologies" as a "cornerstone of creating a 'data-driven' management plan." To allay the initial cost impact of the relatively expensive license plate recognition system (and accompanying laptops), the enforcement vendor purchased them and billed the cost back to Aurora monthly, spreading the investment over two years. T2 PARC's T2 Flex system – a permit management and enforcement software – supports back-office services.

Relative to other case studies, Aurora manages few parking spaces; the mobile application ParkMobile allows for off-street parking management, but not on-street parking payment.

3.3.4   Key Takeaways from Aurora

- Start small and scale up over time – Aurora anticipated increased parking demand as a result of a new light-rail line. When ridership was far lower than expected, parking demand never materialized. As a result, the current parking management system struggles to earn parking revenue. Prioritize realistic expectations of demand.

4   Technology: Parking Management Systems

Any single parking management system includes layers of technology platforms, system processes, and operational staff. The following two systems mimic real-world examples, drawn from the above case studies, and offer two different routes to parking management. The first, demand-oriented parking management, represents a highly modern system, with systems designed to allow for best practices in parking management. The second, a standard parking management system, represents a more traditional parking system and may include fewer components, reducing cost but possibly limiting system management. Neither system proposed uses physical hang-tags or manual ticket-writing, as more efficient technology-driven counterparts are considered best practice.

All systems must include:

- Payment

- Enforcement

- Program analysis

- Permitting

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System Features	Parking Management System	
	Standard	*Demand-Oriented*
Smart meters and/or multispace pay stations (payment by cash or credit card)	x	x
Mobile app for payment of parking, citations, and citation appeals	x	x
LPR-based enforcement	x	x
Stickerless RPP management and monthly permits	x	x
Market-driven rates; regular rate assessments		x
Sensors and data analytics contract for demand/occupancy assessment		x
Citation revenue to Enhancement Fund		x
Citation revenue to General Fund	x	

Benefits of the two systems depend on a city's primary concerns and goals. A demand-oriented parking management system trades additional operating expense for the ability to dive deeply into parking utilization – occupancy rates by hour or day, duration, and associated graphics – and clearly tracking parking revenues in an Enterprise Fund. A standard system implements modern technology to manage the basics of parking.

In Walnut Creek, where keeping a close eye on parking utilization is important in proving the most convenient access to parking, characterized by an 85% occupancy goal, the benefits of additional data analytics were clear. The city previously spent $50,000 every two years for a parking survey to provide a limited snapshot-in-time of their parking utilization and drive any policy changes – like rate increases or time limit reductions. Installing sensors and spending $75,000 per year on detailed data analytics allows parkers to see real-time parking availability, and allows the city to monitor utilization continuously.

In Evanston, City Council takes a conservative approach to parking policy changes, setting parking prices below the market rate. The city forgoes spending on rigorous data analytics and earmarking citation revenue for site-specific "enhancements."

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SubAppendix: Summary Characteristic Tables from El Cerrito and Case Study Cities

	El Cerrito	Walnut Creek	Evanston	Aurora
Population within ½-mile of parking site[3] (people)	4,100	4,900	8,800	4,000
Population density within ½-mile of parking site (people per mi^2)	5,220	6,239	11,204	5,010
City population (people)	25,000	69,000	75,000	364,000
City density (people per mi^2)	6,812	3,490	9,615	2,363
On-street parking spaces (within ½-mile radius)	1,973	n/a	~294 spaces	Garage only
Daily ridership at nearby station	4,802 (Plaza[4])	6,698 (Walnut Creek[5])	1130 (Metra Main) 1169 (L[6] Main)	n/a
Annual on-street parking revenue	n/a	$3.6 million (meters) $2.9 million (enforcement)[7] *$8.3 million (total)*	$4.7-$4.8 million[8]	n/a
Annual on-street parking operating expenses	n/a	$4.8 million	n/a	n/a
On-street parking rates	$0/day for short-term or unregulated $7/year for RPP	$1 - $2/hour	$0.50 - $4/hour	$1.50/day $45/month

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[3] All population estimates throughout report come from ACS 2018 data at the census tract level (Table B01003).

[4] BART Average Weekday Exits by Station. Downloaded from BART.gov on 11/24/2020. Data is for 2019.

[5] BART Average Weekday Exits by Station. Downloaded from BART.gov on 11/24/2020. Data is for 2019.

[6] CTA - Ridership - 'L' Station Entries - Daily Totals. 2018. Downloaded from data.cityofchicago.org on 12/1/2020

[7] 2016 actuals, as seen in Walnut Creek's "2018-2027 Long Term Finance Forecast (conservative)" document. Available here.

[8] November 17 2020 Conversation with Mike Rivera, Interim Parking Manager, Parking Services Division; City of Evanston, IL

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Sub Appendix B2: Full List of Considered Case Study Cities

To select case study cities most instructive for the On-Street Parking Feasibility Study and understanding different parking management systems, the project team reviewed 23 American and Canadian cities. These cities are listed and mapped below.

1. Acadia, CA
2. Aurora, CO
3. Babylon, NY
4. Berkeley, CA
5. Century City, CA
6. Decatur, GA
7. Evanston, IL
8. Fort Totten, D.C.
9. La Jolla, CA
10. Madison, NJ
11. Markham, ON
12. Medford, MA
13. Monrovia, CA
14. Morristown, NJ
15. New Brunswick, NJ
16. Oak Park, IL
17. Pasadena, CA
18. Houston, TX
19. Santa Monica, CA
20. South Pasadena, CA
21. Takoma Park, MD
22. Upper Arlington, OH
23. Walnut Creek, CA

Figure 6: Map of Considered Cities for Case Studies

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