Memorandum

To: Anne Hersch and Aleida Andrino-Chavez, City of Albany

From: Terri O’Connor, David Chew, and Ted Huynh, CDM Smith

Date: September 17, 2015

Subject: Task 3.1 Existing Conditions – Albany Parking Management Plan

This technical memorandum summarizes the findings from the data collection efforts conducted for the primary commercial corridors in the City of Albany.

Study Areas

There are two main study areas as part of this analysis. The first study area is defined to encompass the San Pablo Avenue commercial district between the El Cerrito/Albany and Berkeley/Albany city limits (called the San Pablo Avenue Study Area). It is located between Jackson Street to the west, Cerrito Creek (El Cerrito city limits) to the north, Stannage Avenue to the east, and Harrison Street (roughly the Berkeley city limits) to the south. The second study area contains the Solano Avenue commercial area from San Pablo Avenue eastward to the Berkeley city limits (called the Solano Avenue Study Area). The precise boundaries are Washington Avenue to the north, the Berkeley city limits to the east, Marin Avenue to the south, and San Pablo Avenue to the west. The study areas are shown in Figure 1.

These study areas coincide with the defined study areas used for the MTC Value Priced Pilot Parking (VPP) Study and was determined in coordination with City of Albany staff. They focus on the commercial corridors in the City.
Figure 1
Study Area

Legend
- **On-Street**
  - Regulated Parking
  - Unregulated Parking
  - No Parking
- **Solano Avenue Study Area**
- **San Pablo Study Area**
- **BART**
Data Collection and Methodology

Weekday data was collected across three weekdays to capture parking behavior for a typical weekday. Occupancy data was collected bi-hourly from Tuesday, May 19th, 2015 to Thursday, May 21st, 2015 between 9 AM and 7 PM.

Vehicle-mounted mobile License Plate Recognition (LPR) devices were used every two hours during the same weekday bi-hourly time periods throughout the study area in order to track vehicle length of stay. With mobile LPR devices, data was collected using routes to ensure that all blockfaces were passed by at least once during each period of data collection. In total, three routes were used to collect a complete data set of the study areas that identified vehicle parking behavior throughout the day.

When utilizing LPR devices to track vehicle behavior, it is important to know that vehicles without license plates or with dealer plates could not be tracked, while vehicles located in “bumper-to-bumper” parking conditions could not be detected with great precision by the LPR devices.

Weekend parking occupancy data was collected in October 2014 for the MTC VPP Parking Project. This data was included to understand occupancy trends during the weekend time period. Parking occupancy data was manually collected during five time periods for the VPP Project: early morning (5-6 AM), late morning (9:30-10:30 AM), midday (12-1 PM), late afternoon (4-5 PM), and evening (8-9 PM) time periods on both Tuesday, October 7th and Saturday, October 4th, 2014.

The analysis and findings from these data collection effort are described below.

Parking Inventory

Inventory data was provided from the previously conducted MTC VPP Parking Project. The data only included on-street parking spaces and omitted any off-street public and private facility within the study areas. Overall, there is a total of 4,632 on-street parking spaces within the study area, including 2,508 spaces in the San Pablo Avenue Study Area and 2,124 spaces in the Solano Avenue Study Area. The breakdown of parking inventory by time-limited space types for the study areas are shown below in Table 1.

<table>
<thead>
<tr>
<th>Table 1 – Overall Parking Inventory</th>
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</thead>
<tbody>
<tr>
<td><strong>Space Type</strong></td>
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<tr>
<td></td>
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<tr>
<td>On-Street</td>
</tr>
<tr>
<td>San Pablo Avenue Study Area</td>
</tr>
<tr>
<td>Solano Avenue Study Area</td>
</tr>
<tr>
<td>Overall</td>
</tr>
</tbody>
</table>
Parking Occupancy Analysis

The parking occupancy analysis paints a detailed picture of how public parking is utilized in Albany. The following terms are used when discussing parking occupancy.

- **Occupancy**: The number of cars parked in a specific blockface during one period of observation. It is often expressed as the percentage of the total supply of spaces that is occupied by parked cars.

- **Parking Event**: A parking event refers to each instance where a single, unique vehicle is observed parked in a single, unique space.

- **Peak**: The time period associated with the highest observed level of occupancy in a specific area.

- **Practical Capacity**: The occupancy level or number of vehicles that can be parked in a facility or area before it becomes difficult for a driver to find a space without having to circle or “cruise” for parking. Practical capacity is typically set at an 85 percent occupancy level. For on-street parking this equates to roughly one vacant space per blockface.

Weekday Occupancy Analysis

City of Albany parking occupancies are shown in Table 2 for a typical weekday; occupancies are graphically shown in relation to practical capacity (85 percent) in Figure 2.

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Total Spaces</th>
<th>AM</th>
<th>PM</th>
<th>9*</th>
<th>11</th>
<th>1</th>
<th>3</th>
<th>5</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Street</td>
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<td></td>
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</tr>
<tr>
<td>San Pablo Avenue Study Area</td>
<td>2,508</td>
<td>52%</td>
<td>54%</td>
<td>54%</td>
<td>54%</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Solano Avenue Study Area</td>
<td>2,124</td>
<td>42%</td>
<td>57%</td>
<td>61%</td>
<td>57%</td>
<td>56%</td>
<td>56%</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>4,632</td>
<td>49%</td>
<td>55%</td>
<td>57%</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
<td>59%</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 – Typical Weekday Occupancy

Table: Typical Weekday Occupancy

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Total Spaces</th>
<th>AM</th>
<th>PM</th>
<th>9*</th>
<th>11</th>
<th>1</th>
<th>3</th>
<th>5</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Street</td>
<td></td>
<td></td>
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<td>60%</td>
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<td>61%</td>
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<td>56%</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
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<td>49%</td>
<td>55%</td>
<td>57%</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
<td>59%</td>
<td></td>
</tr>
</tbody>
</table>

Note: “Some streets were closed for street sweeping during the 9 AM data collection period. As such, these streets’ inventories were omitted for this time period. The resulting occupancy percentages reflect the occupancy with the available supply at that time period.

Typical weekday occupancy levels are relatively constant throughout the day, with occupancies ranging from 49 to 60 percent. In general, the Solano Avenue Study Area exhibits slightly higher occupancy levels than the San Pablo Avenue Study Area, beginning at 11 AM and including a midday peak (1 PM) and an evening peak (7 PM); the San Pablo Avenue Study Area remains fairly constant throughout the day until the late afternoon, where occupancy increases at 5 PM going into the evening.

Additional comparisons of weekday data from the MTC VPP Parking Project are included in a subsequent section to discuss recent historical trends in parking occupancy behavior within the City’s commercial corridors.
### Weekday Overall Occupancy

<table>
<thead>
<tr>
<th>Study Area</th>
<th>9a</th>
<th>11a</th>
<th>1p</th>
<th>3p</th>
<th>5p</th>
<th>7p</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Pablo Ave Study Area</td>
<td>52%</td>
<td>54%</td>
<td>54%</td>
<td>54%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Solano Ave Study Area</td>
<td>42%</td>
<td>57%</td>
<td>61%</td>
<td>57%</td>
<td>56%</td>
<td>59%</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>49%</td>
<td>55%</td>
<td>57%</td>
<td>55%</td>
<td>55%</td>
<td>60%</td>
</tr>
</tbody>
</table>

- **Midday Peak**
- **Practical Capacity (85%)**

**Figure 2: Weekday Overall Occupancy**

*CDM Smith*
Peak Hour Occupancy Analysis - Weekday

Peak hour occupancy levels provide a look at the local parking conditions during the busiest times of the day throughout the study areas. The midday peak hour and evening hour occupancy levels by blockface are shown in Figures 3 and 4 for a typical weekday.

The midday peak hour occupancies on a block-by-block level are exhibited in Figure 3 between 1 PM and 3 PM, when overall occupancy reaches 57 percent.

The Solano Avenue Study Area observes relatively higher parking demand than the San Pablo Study Area, with the blockfaces to the east of Key Route Boulevard exhibiting high concentrations of parking demand, reflecting the commercial character of the area. Many of the adjacent side streets with no parking regulations clearly have higher occupancies than the nearby regulated streets. Within the San Pablo Avenue Study Area, blockfaces to the east of San Pablo Avenue, particularly between Washington Avenue and Marin Avenue, experience a high amount of parking demand when compared with other areas of the study area. Again, it is apparent that higher occupancy streets typically have no parking regulations versus the metered main corridors. This reflects the parking demand shift to free spaces due to their relevant proximity to paid or time-limited spaces.

Among the two major retail corridors, San Pablo Avenue observes lower parking occupancy while Solano Avenue exhibits high parking demand throughout the corridor. More of the retail establishments along San Pablo Avenue provide their own off-street parking for their patrons, while shops and restaurants along Solano Avenue are located more densely together.

The evening occupancy levels are graphically shown in Figure 4 for the 7 PM time period, when overall occupancy reaches 60 percent. This occupancy is the maximum observed for the study areas during the entire day.

Similar to the midday peak hour, occupancy levels for the San Pablo Avenue Study Area are higher around the Solano Avenue intersection, with lower parking demand in the northern and southern ends of this study area particularly as streets transition to residential areas. For the Solano Avenue Study Area, the evening parking hot spots continue to be focused to the east of Key Route Boulevard and is also observed to the west of the BART tracks, along the north side of Solano Avenue. These areas are primarily residential, but likely experience higher parking demand as people arrive to eat dinner and visit local shops along Solano Avenue, in combination with residents returning home for the evening after work.
ALBANY PARKING MANAGEMENT PLAN

Figure 3
Weekday Midday Occupancy (1:00PM)

On-street

Percent Occupied

0 - 50%
50 - 70%
70 - 85%
85 - 95%
95 - 100%

Occupy Summary

Total
2,659/4,632 (57%)
San Pablo Ave Study Area
1,362/2,508 (54%)
Solano Ave Study Area
1,297/2,124 (61%)

Legend

Solano Avenue Study Area
San Pablo Avenue Study Area
BART

North
Weekday Evening Occupancy (7:00PM)

Legend

Percent Occupied
On-street
- 0 - 50%
- 50 - 70%
- 70 - 85%
- 85 - 95%
- 95 - 100%

Occupancy Summary
Total
2,763/4,632 (60%)
San Pablo Ave Study Area
1,505/2,508 (60%)
Solano Ave Study Area
1,258/2,124 (59%)
Hours Over Capacity Analysis - Weekday

The hours over capacity analysis shows locations where parking demand is sustained throughout the day, particularly at levels above practical capacity, and where parking may be underutilized.

Figure 5 presents areas where parking demand was observed to have sustained occupancies above 85 percent occupancy (i.e. at or above practical capacity) throughout the day for a typical weekday. The San Pablo Avenue Study Area around the Solano Avenue intersection is observed to have sustained high occupancy levels in the area along some of the nearby side streets for at least 6 hours a day. Within the Solano Avenue Study Area, sustained parking demand is apparent throughout the day along Solano Avenue to the east of the BART tracks and alongside street blockfaces to the north and south of Solano Avenue between the Berkeley city limit border and the BART tracks. These areas are located in areas with both substantial residential housing and dense commercial/office land use developments with limited off-street parking options. With this density of land use, sustained on-street parking demand occurs as a result.
Figure 5
Weekday Hours Over Capacity

Legend

<table>
<thead>
<tr>
<th>Hours per day facility at or above practical capacity (85% occupied)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-street</td>
</tr>
<tr>
<td>0 hours</td>
</tr>
<tr>
<td>2 - 4 hours</td>
</tr>
<tr>
<td>4 - 6 hours</td>
</tr>
<tr>
<td>6 - 8 hours</td>
</tr>
<tr>
<td>8 hours and up</td>
</tr>
</tbody>
</table>

- Solano Avenue Study Area
- San Pablo Avenue Study Area
- BART

Legend

- Solano Avenue Study Area
- San Pablo Avenue Study Area
- BART
Duration Analysis - Weekday

Occupancy data is a key metric describing how parking is used by providing a series of snapshots of how parking facilities are utilized throughout the day. However, to understand current parking behavior and usage in the City, it is equally important to develop insight into how long individual users stay and the frequency of parking turnover. This allows us to recognize how the parking system in total is being used.

The parking duration analysis is presented in terms of observed distribution of “parking events” by length of stay. A parking event is defined as when a vehicle is observed to occupy a single space during one time period of data collection. Please note that license plate data was not collected for the weekend period.

Table 3 examines the duration (length of stay) by study area from 9 AM to 7 PM; individual durations by blockface are also shown graphically in Figure 6.

The average length of stay throughout the study areas vary somewhat, but range between approximately 2½ to 3 hours for an average vehicle; the San Pablo Avenue Study Area had a slightly higher length of stay (2.82 hours versus 2.39 hours) and had more vehicles parked for at least 6 hours (23 percent versus 17 percent) than when compared to the Solano Avenue Study Area.

Location-wise, areas of longer durations were observed along many side streets to the west and east of San Pablo Avenue in the San Pablo Avenue Study Area. These longer lengths of stay correspond to the residential portions of the area and could also have employees who park there to avoid paying for parking along San Pablo Avenue. Within the Solano Study Area, extended durations were observed along Key Route Boulevard and some side streets adjacent to Solano Avenue.

Among the main street segments, Solano Avenue and San Pablo Avenue both exhibited parking durations below two hours. The low parking durations along San Pablo and Solano Avenues combined with the sustained high occupancy throughout the day (discussed above) suggest a high amount of turnover is occurring along the corridor which reflects the parking demand in the areas in tandem with the effect of parking meters and time limits on these streets.

Table 3 – Parking Duration - Weekday

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Total Spaces</th>
<th>Parking Duration (Hours)</th>
<th>Average Stay (Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>On-Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Pablo Avenue Study Area</td>
<td>2,508</td>
<td>61%</td>
<td>17%</td>
</tr>
<tr>
<td>Solano Avenue Study Area</td>
<td>2,124</td>
<td>67%</td>
<td>15%</td>
</tr>
<tr>
<td>Overall</td>
<td>Total 4,632</td>
<td>64%</td>
<td>16%</td>
</tr>
</tbody>
</table>
Average duration of vehicles per blockface

On-street
- 0 - 1 hour
- 1 - 2 hours
- 2 - 3 hours
- 3 - 4 hours
- 4 or more hours

Legend

- Solano Avenue Study Area
- San Pablo Avenue Study Area
- BART

Figure 6
Weekday Duration
Weekend Occupancy Analysis

The weekend data collection efforts for the MTC VPP Parking Project were summarized in this memorandum in order to provide a complete overview of commercial corridor parking behaviors in the City of Albany throughout the week. Data was collected in October 2014 on a Saturday to represent a typical weekend day. Occupancy data was collected for five time periods (5 AM, 9 AM, 12 PM, 4 PM, and 8 PM) throughout the day. The 9 AM time period represents the morning period, 12 PM represents the midday, 4 PM represents the afternoon, and 8 PM represents the evening period.

Typical weekend occupancy levels (shown below in Table 4) remain relatively constant throughout the day. The San Pablo Avenue Study Area exhibits a gradual increase in occupancy throughout the day, starting at 55 percent occupancy in the morning and ending around 60 percent occupancy in the evening. The Solano Avenue Study Area observes a small midday and afternoon peak but declines in the evening period. In comparison with weekday occupancies, weekend occupancies display relatively more consistent parking behavior, reflecting the different activities that would occur on a weekend rather than on the weekend.

Table 4 – Typical Weekend Occupancy

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Total Spaces</th>
<th>Morning</th>
<th>Midday</th>
<th>Afternoon</th>
<th>Evening</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Pablo Avenue Study Area</td>
<td>2,508</td>
<td>55%</td>
<td>58%</td>
<td>57%</td>
<td>60%</td>
</tr>
<tr>
<td>Solano Avenue Study Area</td>
<td>2,124</td>
<td>49%</td>
<td>54%</td>
<td>55%</td>
<td>51%</td>
</tr>
<tr>
<td>Overall</td>
<td>4,632</td>
<td>52%</td>
<td>56%</td>
<td>56%</td>
<td>56%</td>
</tr>
</tbody>
</table>

Typical weekend midday and evening occupancy levels by blockface are shown in Figures 7 and 8. The midday block-by-block occupancies display 12 PM data and the evening block-by-block occupancies display 8 PM data.

While the two study areas observe relatively similar occupancies in the midday, the Solano Avenue Study Area observes a hot spot concentration of demand. This concentration was observed to the east of the BART tracks particularly along Carmel Avenue, Santa Fe Avenue, and Ramona Avenue. These areas are primarily residential, but likely experience higher parking demand as local residents are home during the weekend in addition to the parking demand generated by visitors to nearby restaurants and local shops along Solano Avenue. The San Pablo Study Area observes high demand along Stannage Avenue north of Solano Avenue, and south of Solano Avenue between Marin Avenue and Dartmouth Street.

In the evening, the San Pablo Avenue Study Area observes a higher parking demand (60 percent) than the Solano Avenue Study Area (51 percent). These higher parking demands in the San Pablo Avenue Study Area are primarily observed north of Solano Avenue. Within the Solano Avenue Study Area, the higher parking demand is located in the north east section of the study area along Solano Avenue and Curtis Street.
Weekend Midday Occupancy

**Occupancy Summary**

- **Total**: 2,601/4,632 (56%)
- **San Pablo Ave Study Area**: 1,448/2,508 (58%)
- **Solano Ave Study Area**: 1,153/2,124 (54%)

**Legend**

- **Percent Occupied**
  - 0 - 50%
  - 50 - 70%
  - 70 - 85%
  - 85 - 95%
  - 95 - 100%

- **On-street**
- **Solano Avenue Study Area**
- **San Pablo Avenue Study Area**
- **BART**

Figure 7
Figure 8
Weekend Evening Occupancy

Legend

Percent Occupied
On-street

- 0 - 50%
- 50 - 70%
- 70 - 85%
- 85 - 95%
- 95 - 100%

Occupancy Summary

- Total
  - 2,590/4,632 (56%)
- San Pablo Ave Study Area
  - 1,517/2,508 (60%)
- Solano Ave Study Area
  - 1,073/2,124 (51%)

Solano Avenue Study Area
San Pablo Avenue Study Area
BART

NORTH
Weekday Occupancy Comparison

Weekday data collection efforts from the MTC Value Priced Pilot Parking Project were compared with the current 2015 data to examine any recent changes in parking behavior. These two data sets are compared across four time periods: morning, midday, afternoon, and evening.

For comparison purposes, the following data points from the October 2014 MTC Value Priced Pilot Parking Project and the recent 2015 data are used to represent the four time periods. For the October 2014 MTC Value Priced Pilot Parking Study data, 9 AM data is used for the morning period, 12 PM data is used for the midday period, 4 PM data is used for the afternoon period, and 8 PM data is used for the evening period. Among the 2015 dataset, the 9 AM time period represents the morning period, 11 AM represents the midday period, 3 PM represents the afternoon period, and 7 PM represents the evening period.

Existing weekday 2015 data with changes in occupancy since October 2014 are shown below in Table 5. Overall, occupancies remain relatively consistent, with no more than a seven percent difference between the two data sets. This seven percent difference was observed with the morning period while all other time periods observed less than a five percent difference. Overall, this suggests that occupancy behaviors have remained generally consistent in the past year.

Table 5 – Weekday Occupancy Comparison

<table>
<thead>
<tr>
<th>Space Type</th>
<th>Total Spaces</th>
<th>Morning</th>
<th>Midday</th>
<th>Afternoon</th>
<th>Evening</th>
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<tr>
<td><strong>Existing 2015 Data</strong></td>
<td></td>
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<tr>
<td>San Pablo Avenue Study Area</td>
<td>2,508</td>
<td>52%</td>
<td>54%</td>
<td>54%</td>
<td>60%</td>
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<td>Solano Avenue Study Area</td>
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<td>42%</td>
<td>57%</td>
<td>57%</td>
<td>59%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,632</strong></td>
<td><strong>49%</strong></td>
<td><strong>55%</strong></td>
<td><strong>55%</strong></td>
<td><strong>60%</strong></td>
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<tr>
<td><strong>October 2014 Data</strong></td>
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<tr>
<td>San Pablo Avenue Study Area</td>
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<td>54%</td>
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<td>58%</td>
<td>53%</td>
<td>55%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,632</strong></td>
<td><strong>52%</strong></td>
<td><strong>56%</strong></td>
<td><strong>53%</strong></td>
<td><strong>56%</strong></td>
</tr>
<tr>
<td><strong>Change in Occupancy since October 2014</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Pablo Avenue Study Area</td>
<td>2,508</td>
<td>-2%</td>
<td>-1%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Solano Avenue Study Area</td>
<td>2,124</td>
<td>-7%</td>
<td>-1%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,632</strong></td>
<td><strong>-3%</strong></td>
<td><strong>-1%</strong></td>
<td><strong>3%</strong></td>
<td><strong>4%</strong></td>
</tr>
</tbody>
</table>

Note: * Some streets were closed for street sweeping during the morning data collection period. As such, these streets' inventories were omitted for this time period. The resulting occupancy percentages reflect the occupancy with the available supply at that time period.