MTC Parking Toolbox & Demand Model
October 29, 2008

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Presentation Overview

- **Parking Toolbox**
  - Define Community Typology
  - Define community goals
  - Select appropriate management policies
  - Implementation guidelines

- **Parking Model**
  - Typology Case Study – Suburban Center
  - Parking Model Inputs
  - Model Rates, Estimating Future Parking Demand
  - Model Features (Analytics & Reports)
  - Case Study calibrated parking by land use
Defining Your Community

What is your typology?

1. Focus Area Characteristics
2. Transit Access (Modes and Availability)
3. Land Use Types and Mixes
4. Characteristics of Retail
5. Major Planning and or Development Challenges
# Community Typologies

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Regional Center</th>
<th>City Center/Urban Neighborhood</th>
<th>Suburban Center/Town Center</th>
<th>Transit Neighborhood</th>
<th>Rural/Small Town</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Transit</strong></td>
<td>BART, LRT/Streetcar</td>
<td>BART, LRT/Streetcar; BRT, Commuter Rail</td>
<td>BART, Commuter Rail, Regional Bus Hub, LRT/Streetcar, Ferry</td>
<td>LRT/Streetcar, BRT, Commuter Rail, Bus, Potentially Ferry</td>
<td>Commuter Rail, Local/Regional Bus Service</td>
</tr>
<tr>
<td><strong>Land Use/Density</strong></td>
<td>High-density mix of residential (25+ du/acre), commercial, employment, and civic/cultural uses.</td>
<td>Moderate-to-high-density mix of residential (15-25 du/acre), commercial, employment, and civic/cultural uses, or mid-high density residential uses with supporting commercial and employment uses.</td>
<td>Moderate-to-high-density (12-25 du/acre) mix of residential, commercial, employment, and civic/cultural uses.</td>
<td>Low-to-moderate density (8-12 du/acre), predominantly residential uses with supporting commercial and employment uses.</td>
<td>Low to Moderate-density mix of residential (5-12 du/acre), commercial, employment, and civic uses.</td>
</tr>
<tr>
<td><strong>Retail</strong></td>
<td>Regional-serving destination retail opportunity; need for local-serving retail</td>
<td>Regional-serving destination retail opportunity; neighborhood local serving retail opportunity; need for local-serving or community-serving retail</td>
<td>Regional or community-serving destination retail opportunity; need for local-serving retail</td>
<td>Primarily local-serving retail opportunity.</td>
<td>Local serving retail destination; need for community-serving retail.</td>
</tr>
<tr>
<td><strong>Planning Challenges</strong></td>
<td>Integrating dense mix of housing and employment into built-out context.</td>
<td>Integrating high-density housing into existing housing &amp; employment supports local-serving retail.</td>
<td>Introducing housing and increasing density into predominantly employment uses, improving connections/access to transit.</td>
<td>Integrating moderate-density housing and supporting local-serving retail into existing context.</td>
<td>Increasing densities and improving transit access.</td>
</tr>
<tr>
<td><strong>City Examples</strong></td>
<td>Downtown San Francisco, Oakland &amp; San Jose</td>
<td>Downtown Hayward, Berkeley &amp; Santa Rosa</td>
<td>Pleasant Hill BART, Union City BART, Walnut Creek, Downtown San Mateo, Vallejo, Menlo Park, Downtown Petaluma</td>
<td>Whisman Station (Mountain View), Freshnall, Hercules</td>
<td>Downtown Morgan Hill, Fairfield</td>
</tr>
</tbody>
</table>
Focus Area Characteristics

**Example: Suburban Center/Town Center**

- Center of community & cultural activity
- Act as both origin & destination settings
- Less density compared to urban downtowns
- Contain a mix of land uses
- Ample surface parking lots
- Good mix of transit service
Transit Characteristics

*Example: Suburban Center/Town Center*

- **Primary Modes:**
  - BART
  - Commuter Rail
  - Streetcar
  - Regional Bus Hub

- **Reduced Off-peak service**
Land Use Characteristics

Example: Suburban Center/Town Center

- Types: Residential, commercial, employment, civic/cultural uses

- Density: Moderate to High (12-25 DU/acre)
Retail Characteristics

Example: Suburban Center/Town Center

- Retail Type
  - Regional Retail
  - Local-serving Retail

Center of economic, community and cultural activity with regional-scale destinations.

BART, Commuter Rail, Regional Bus Hub, LRT/Streetcar, Ferry

Moderate-to high-density (12-25 du/acre) mix of residential, commercial, employment, and civic/cultural uses.

Regional or community serving destination retail opportunity; need for local-serving retail

Introducing housing and increasing density into predominantly employment uses, improving connections/access to transit.

Pleasant Hill BART, Union City BART, Walnut Creek Downtown San Mateo, Vallejo, Menlo Park Downtown Petaluma
Planning/Development Challenges

**Example: Suburban Center/Town Center**

- Introducing land uses
  - Integrate new and existing
  - Increasing Density
- Providing Transit
  - Improving connections and access
Typology Examples
Suburban Center/Town Center

- Walnut Creek
- Menlo Park
- Union City BART
- Palo Alto
- Vallejo
Parking Model

- Case study examples for Suburban Center Typology
  - Menlo Park, CA
  - Union City BART
Parking Demand Estimation Methodology

Objective: Estimate downtown parking demand based on

- Existing & Future Land Uses
- Parking Availability
- Parking Costs
- Shared Parking Opportunities
- Transit Availability
- Pedestrian/Bicycle Accessibility
- Auto Ownership Characteristics
Parking Demand Model Inputs

Data used for model calculations and calibration:

- Current and Expected Land Uses
- Existing Parking Supply (both on & off-street)
- Peak Hour Parking Occupancy (on & off-street)
- Current Parking Zoning Requirements
Model Start-up Page

- Provides navigation between model components
- Walks user through data entry steps
- Links to results & analysis
Data Entry 1: Land Use Categories

- **Category ID numbers** prevent duplication
- **Land Use Category** changes take immediate effect
Data Entry 2: Existing & Future Parcel Use

- Land use data entered by type, amount & block

- Land use types are linked from previous entry form

- Pipeline check codes the parcel as a future project
Data Entry 3: Reduction Factors & Demand Rates

- Reduction factors are summed, subtracted from 100% then multiplied with:
  - Peak Parking Rate
  - Short/Long Term demand ratio
  - Peak hour adjustment

- Rates calculated instantly, allowing users to observe the effect of factor adjustments.
Total Demand Calculation

- **Short Term, Long Term and Total Need** calculated by multiplying
  - Each parcel’s land use amount (entered previously at Entry Form 2), and
  - The parcel’s corresponding land use Demand Rates (from Entry Form 3)
Analysis: Interactive Chart

- Displays parking demand data by block number, land use category, existing or future, etc.
- Select Chart Type
- Fields window holds data types
Analysis: Filter Fields

By clicking on ‘Filter Fields’ the user can narrow the dataset being analyzed.
Analysis: Existing vs. Pipeline Projects

- Select InFuture field and uncheck 'False' to observe the pipeline projects' effect on demand.
Analysis: Pie Chart

- Current uses Analysis

- Category-specific information appears when the cursor hovers over a category
Analysis: View Demand by Block

- Summation data for parking demand accessed from the Main Page
- Records can be sorted, reduced, or exported to other formats
Database Reports

- This report template displays and summarizes block-by-block parking demand derived by the model.
- Different summary, calculation, and display options can be specified by the user.
- Automatically reflect any data or rate changes.
## Modeled Parking Rates: Office

<table>
<thead>
<tr>
<th>Case Study Area</th>
<th>Land Uses</th>
<th>Demand Rate</th>
<th>Existing Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Short Term</td>
<td>Long Term</td>
</tr>
<tr>
<td>Union City</td>
<td>Office/R&amp;D</td>
<td>0.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Vallejo (DT)</td>
<td>Office (Gen)</td>
<td>0.6</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Office (Govt)</td>
<td>0.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Vallejo (WF)</td>
<td>Office</td>
<td>0.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>Office</td>
<td>0.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Menlo Park 2</td>
<td>Office (Gen)</td>
<td>0.7</td>
<td>1.7</td>
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<tr>
<td></td>
<td>Office (Govt)</td>
<td>0.4</td>
<td>1.5</td>
</tr>
<tr>
<td>Hercules 3</td>
<td>Office</td>
<td>0.7</td>
<td>1.6</td>
</tr>
</tbody>
</table>

http://www.mtc.ca.gov/planning/smart_growth/parking_study.htm
## Modeled Parking Rates: Retail & Restaurant

<table>
<thead>
<tr>
<th>Case Study Area</th>
<th>Land Use</th>
<th>Demand Rate</th>
<th>Existing Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Short-Term</td>
<td>Long-Term</td>
</tr>
<tr>
<td>Union City</td>
<td>Retail</td>
<td>1.0</td>
<td>0.1</td>
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<tr>
<td></td>
<td>Bank</td>
<td>1.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Vallejo (Downtown)</td>
<td>Retail</td>
<td>1.1</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Restaurant/Bar</td>
<td>1.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Vallejo (Waterfront)</td>
<td>Retail</td>
<td>1.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Morgan Hill</td>
<td>Retail</td>
<td>1.2</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Restaurant/Bar</td>
<td>2.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Menlo Park</td>
<td>Retail</td>
<td>1.2</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Restaurant/Bar</td>
<td>1.4</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Bank</td>
<td>1.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Hercules</td>
<td>Retail</td>
<td>1.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

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