Forum Agenda

- Commercial Vehicle Model
- Regional Count Database
- Integrated Corridor Management
Commercial Vehicle Model

Rick Curry
Commercial Vehicle Model (CVM) Overview

- Difference Between Personal and Commercial Travel
- Commercial Travel Importance
- Commercial Travel Survey
- Modeling Commercial Travel
- SANDAG Model Suite
- Project Schedule
Person Tours

Zone 1
Origin

Zone 2
Intermediate Stop

Zone 3
Primary Destination

Zone 4
Primary Destination

Work Tour

At Work Sub-Tour

Commercial Tours
What is Commercial Travel?

- **Travel Not for Personal Purposes**

- **Personal:**
  - Going to work
  - Going to school
  - Running errands on lunch break
  - Visiting a friend
  - Shopping

- **Commercial:**
  - Delivering goods
  - Performing a service
  - Traveling to a meeting
  - Picking up supplies
  - Refueling a work vehicle
How are Commercial Trips Made?
Concept of Commercial Movement Tour

Establishment -> Client

Client <-> Client

Return to Establishment

Refuel Vehicle
Commercial travel is a subcomponent of all travel

Freight travel is a subcomponent of commercial travel
Time of Day Distribution

Commercial

Personal
Work-Related Travel Survey

- **Survey Time Period**
  - Full Survey Beginning in December 2012
  - Expected to be complete in May 2013

- **Survey Size**
  - San Diego region
  - Over 600 establishments
  - Over 2500 Vehicle Tours
  - Over 4000 Worker Forms

- **Randomly Selected**
  - Industry strata (7)
  - MSA (Major Statistical Areas) geographic subregion (7)
  - Company size: 1-29, 20-159, 160+ employees
# Industry Strata

<table>
<thead>
<tr>
<th>Industry Class</th>
<th># of Establishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture / Mining</td>
<td>592</td>
</tr>
<tr>
<td>Construction / Manufacturing</td>
<td>12,595</td>
</tr>
<tr>
<td>Government / Office</td>
<td>35,921</td>
</tr>
<tr>
<td>Wholesale</td>
<td>5,536</td>
</tr>
<tr>
<td>Retail</td>
<td>16,315</td>
</tr>
<tr>
<td>Service</td>
<td>35,699</td>
</tr>
<tr>
<td>Transportation / Utility</td>
<td>2,085</td>
</tr>
<tr>
<td><strong>ALL</strong></td>
<td><strong>108,743</strong></td>
</tr>
</tbody>
</table>

Source: 2010 InfoUSA
Survey Information

- Single Day’s Travel (24 hours)
Survey Information

- Occupation Title and Code
- Vehicle Information (If Drove)
  - Configuration – FHWA 13 Vehicle Classes
  - Make, Model, Year
  - Fuel Type
  - Gross Vehicle Weight
  - Transponder
Survey Information

- All Stops on All Tours Over 24-hour Period
- Work Start Location
- Travel to Stop
  - Mode
  - Odometer
  - Freeways and toll facilities used
  - Arrival Time
  - Location
- Stop Information
  - Purpose (e.g. pick up, service visit, return to establishment)
  - Duration
- Departure Time from Stop
Tour-Based MicroSimulation Model

Generates aggregate tours by industry

Ship and/or Travel

Tour Generation Rate

Tour Start Time Period

Mode & Tour Purpose

Tour Exact Start Time

Next Stop Purpose

Next Stop Location

Stop Duration

Disaggregate simulation of attributes for each tour

Iterates to ‘grow’ tour
Interim CVM Draft Results: Tours Generated

Key Locations

- Otay Mesa
- Port of San Diego
- Kearny Mesa
- El Cajon / Santee
- Miramar / Sorrento Valley
- Poway Business Park
- Palomar Airport RD
Interim CVM Draft
Results: Service Tour
Micro-simulation Details
(Vehicle Tour #24735)

- **Depart From Establishment**
  - Depart Time: 8:03 AM
  - Travel Time: 11 min

- **Stop 1**
  - Arrival Time: 8:14 AM
  - Stop Duration: 1 hr 33 min
  - Depart time: 9:47

- **Stops 2-6**

- **Return to Establishment**

- **Total Tour Duration**
  - 4 hrs 11 minutes
Model Suite

- Transportation Policy
- Transportation System
- Land Use Models
- ABM
- Traffic Assignment
- CVM
- Ext. HDTM
- Environmental Impact
- System Performance
- Economic Analysis

Border Model
Visitor Model
Special Models
**CVM & HDTM**

- **CVM**
  - Internal only

- **HDTM**
  - Heavy Duty Truck Model
  - External Trips

*I* = Internal

*E* = External

IE and EI

I = Internal

E = External
# CVM Project Schedule

## Survey Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Method and Sampling Plan</td>
<td>Complete</td>
</tr>
<tr>
<td>Survey Instrument and Pre-Test</td>
<td>Complete</td>
</tr>
<tr>
<td>Conduct Survey</td>
<td>March-April 2013</td>
</tr>
<tr>
<td>Validate, Weight, Expand Data</td>
<td>May 2013</td>
</tr>
<tr>
<td>Final Report</td>
<td>May-June 2013</td>
</tr>
</tbody>
</table>
## Model Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interim Model</td>
<td>January 2013</td>
</tr>
<tr>
<td>Prepare Survey Data</td>
<td>June 2013</td>
</tr>
<tr>
<td>Final Model Estimation</td>
<td>September 2013</td>
</tr>
<tr>
<td>Final Model Calibration and Validation</td>
<td>January 2014</td>
</tr>
<tr>
<td>Final Model Scenario Test and Integration</td>
<td>February 2014</td>
</tr>
<tr>
<td>Final Report</td>
<td>March 2014</td>
</tr>
</tbody>
</table>
For Additional Information

Please contact SANDAG’s Project Managers:

Rick Curry, PM
(619) 699-1949 rick.curry@sandag.org

Brian Lane, Survey PM
(619) 699-7331 brian.lane@sandag.org

www.sandag.org/wrts
www.sandag.org/models
Regional Count Database

Steve Hossack
San Diego Regional Count Database

- Brief overview of Concept
- Project Status and Schedule
- Application
- Integration with the San Diego ICMS
- Demonstration
- Next steps
San Diego Regional Count Database

- Concept
  - An historical central repository for all arterial road traffic count data in San Diego County
  - An online interactive mapping application
  - A new way of conducting traffic count business
San Diego Regional Count Database

- Current Traffic Count Data Resources
  - SANDAG Website “Average Daily Traffic Volumes”
  - PDF files of major arterials from 2006 through 2010

### City of Poway

<table>
<thead>
<tr>
<th>Primary Street</th>
<th>1st Cross Street</th>
<th>2nd Cross Street</th>
<th>Average Weekday Traffic Volumes</th>
</tr>
</thead>
</table>

### City of Solana Beach

<table>
<thead>
<tr>
<th>Primary Street</th>
<th>1st Cross Street</th>
<th>2nd Cross Street</th>
<th>Average Weekday Traffic Volumes</th>
</tr>
</thead>
</table>
San Diego
Regional Count Database

- Why do we need a Regional Count Database?
  - Existing data collection is sparse, vague and often estimated
  - Existing data acquired in multiple formats
  - Special study traffic count data is not represented
  - Data standardization
San Diego Regional Count Database

- Benefits of a Regional Count Database

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal Traffic Engineers</td>
<td>- Central store of historical traffic data</td>
</tr>
<tr>
<td></td>
<td>- Easier access to special traffic studies</td>
</tr>
<tr>
<td>Traffic Engineering Consultants</td>
<td>- Research for studies</td>
</tr>
<tr>
<td>SANDAG</td>
<td>- Model calibration</td>
</tr>
<tr>
<td></td>
<td>- Fed and State reports</td>
</tr>
</tbody>
</table>
Project Status

- Currently under contract
- Developed high-level user requirements and interface
- Developed beta system based on requirements

Project Schedule

- Install and test on SANDAG infrastructure
- Prepare documentation for end users and administrators
- Prepare and conduct a training session for end users
### Discussions with San Diego Regional Traffic Engineers Council (SANTEC)

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Discussion Topics</th>
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</thead>
<tbody>
<tr>
<td>September 2008</td>
<td>- Concept and Abstract</td>
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<tr>
<td>April 2012</td>
<td>- Project Status</td>
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<tr>
<td></td>
<td>- Workflow diagrams and mockups</td>
</tr>
<tr>
<td>November 2012</td>
<td>- Project Status</td>
</tr>
<tr>
<td>December 2012</td>
<td>- Project Status</td>
</tr>
<tr>
<td></td>
<td>- Application Demo</td>
</tr>
</tbody>
</table>
San Diego Regional Count Database

- **Application**
  - count point stations
  - pre loaded with historical data
  - annual traffic census
  - manual traffic counts
    - supports JAMAR PRN format
  - automated pull from ICMS services

- **Workflow and mock ups**
Home Page

Traffic Counts Portal

Application Dashboard
The tabs below provide access to the various Regional Traffic Counts tools. The tools that are available are based on your login account.

Portal Access
Regional Traffic Counts Portal access: Login using your SANDAG approved User ID.
If you do not have an account you can sign up for one or use the Guest account for read only access to traffic count information.

Regional Counts Login
Enter your User ID and Password.
Your User ID is your email address. If you do not have a registered account you can sign in as Guest. There is no password.

Existing Users or Guest
User ID:
Guest
Password:
Login

New Users
If you do not have an account, you can signup for one by clicking the button below.
Signup for an Account

San Diego Association of Governments
Review Counts

Application Dashboard
The tabs below provide access to the various Regional Traffic Counts tools. The tools that are available are based on your login account.

View Counts Data
Search for and review traffic count information.

To select stations on the map, click the Select Stations button, left-click on the map keeping the button pressed, and drag a rectangle around the desired station or stations.

Review Counts
Traffic count results for the selected station.

Traffic Count Selected Stations
<table>
<thead>
<tr>
<th>ID</th>
<th>Station Name</th>
<th>Jur Station</th>
<th>City</th>
<th>Num Resn</th>
<th>Total Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>5290</td>
<td>Test on 13th St</td>
<td>4</td>
<td>6778</td>
<td>Del Mar</td>
<td>2</td>
</tr>
</tbody>
</table>
### Review Counts Detail

**Summary data for selected station.**

<table>
<thead>
<tr>
<th>ID</th>
<th>Station Name</th>
<th>Jur</th>
<th>Station</th>
<th>City</th>
<th>Num Recs</th>
<th>Total Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>5290</td>
<td>Test on 13th St</td>
<td>4</td>
<td>6778</td>
<td>Del Mar</td>
<td>2</td>
<td>23108</td>
</tr>
</tbody>
</table>

**Traffic Count Summary Data**

<table>
<thead>
<tr>
<th>ID</th>
<th>Organization</th>
<th>Jur</th>
<th>Station</th>
<th>City</th>
<th>StartDate</th>
<th>EndDate</th>
<th>Interval</th>
<th>Derivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>City of Del Mar</td>
<td>4</td>
<td>6778</td>
<td>Del Mar</td>
<td>05/11/2007</td>
<td>05/13/2007</td>
<td>60 Minutes</td>
<td>Actual</td>
</tr>
<tr>
<td>1</td>
<td>City of Del Mar</td>
<td>4</td>
<td>6778</td>
<td>Del Mar</td>
<td>04/16/2007</td>
<td>04/16/2007</td>
<td>60 Minutes</td>
<td>Actual</td>
</tr>
<tr>
<td>4</td>
<td>City of Del Mar</td>
<td>4</td>
<td>1301</td>
<td>Del Mar</td>
<td>04/16/2007</td>
<td>04/16/2007</td>
<td>60 Minutes</td>
<td>Actual</td>
</tr>
<tr>
<td>3</td>
<td>City of Del Mar</td>
<td>4</td>
<td>1302</td>
<td>Del Mar</td>
<td>04/16/2007</td>
<td>04/16/2007</td>
<td>60 Minutes</td>
<td>Actual</td>
</tr>
</tbody>
</table>

**Detail (raw) data for selected count.**

**Traffic Count Detail Data**

<table>
<thead>
<tr>
<th>ID</th>
<th>Direction</th>
<th>StartTime</th>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 3</th>
<th>Lane 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>19</td>
<td>49</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>21</td>
<td>174</td>
<td>28</td>
<td>46</td>
</tr>
<tr>
<td>7</td>
<td>Southbound</td>
<td>3:00 AM</td>
<td>22</td>
<td>174</td>
<td>28</td>
<td>46</td>
</tr>
</tbody>
</table>
- Manage Count Data

Manage Counts Data
Search for and review traffic count information. Upload and approve count data.

To select stations on the map, click the Select Stations button, left click on the map keeping the button pressed, and drag a rectangle around the desired station or stations.

Traffic Route Links for CLAIREMONT MESA

<table>
<thead>
<tr>
<th>Link</th>
<th>From</th>
<th>To</th>
<th>Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RECENTS</td>
<td>MORAGA</td>
<td>6451</td>
</tr>
<tr>
<td>2</td>
<td>MORAGA</td>
<td>3511</td>
<td>6450</td>
</tr>
<tr>
<td>3</td>
<td>3511</td>
<td>POCAHONTAS</td>
<td>6450</td>
</tr>
<tr>
<td>4</td>
<td>POCAHONTAS</td>
<td>CLAIREMONT</td>
<td>6450</td>
</tr>
<tr>
<td>5</td>
<td>CLAIREMONT</td>
<td>ONONDAGA</td>
<td>6452</td>
</tr>
<tr>
<td>6</td>
<td>ONONDAGA</td>
<td>ROUTE</td>
<td>6452</td>
</tr>
</tbody>
</table>

Find a Route
Enter a route number and click the Find Route button to search for the route and zoom to its location.
The route will be searched for in the selected jurisdiction.

Route Number: 394

CLAIREMONT MESA
Segments: 62
Stations: 19

Find Route
Approve Count Data

Application Dashboard

The tabs below provide access to the various Regional Traffic Counts tools. The tools that are available are based on your login account.

Manage Counts Data

Area of Interest
Select a jurisdiction. This will be the default location used by address searches.

Jurisdiction:
Del Mar

Find an Address
Find a Station
Find a Route

Manage Users
Edit My Account

(SANDAG Administrator)
San Diego Regional Count Database

- **ICMS integration**
  - Application performance vs. temporal data fidelity
    - Pull traffic count data from RAMS at reported intervals
    - Aggregate and report traffic count data at 15 minute intervals
    - Archive the data after a period of time
  - Develop and test beta service to subscribe to IMTMS data
  - Develop reporting services to allow users to view and analyze aggregated counts
San Diego Regional Count Database

- **Next steps**
  - Implementation and user training in early 2013
- **Future application enhancements**
  - Intersection turn movements
  - Non-Motorized counts
  - Multiple upload format compatibility
- **Demonstration**
Integrated Corridor Management (ICM)

Mike Calandra
Integrated Corridor Management Overview

- Background
- Corridor
- Vision
- Stages
- Strategies
- AMS
- Stage 3
- Aimsun Demonstration
Integrated Corridor Management

Background

- USDOT Pilot Project

- Eight regions competed for pilot funding
- San Diego awarded $8 million for implementation
Integrated Corridor Management Corridor

- I-15 between SR-163 and SR-78
  - Multi-modal
    - Freeway
    - Arterial
    - Managed (HOT) Lanes
    - Bus Rapid Transit
  - Interregional commuting patterns
Integrated Corridor Management Vision

- Utilize technology and partnerships
- Manage corridor as a system
- Provide travelers decision quality information
- Maximize corridor person throughput
Integrated Corridor Management Vision

- Partnerships and Challenges
  - Institutional
    - Prescriptively Operate / Manage across disciplines, across jurisdictions
  - Operational
    - Able to provide travelers seamless and convenient shifts among modes based on ‘real-time’ predictive capabilities
  - Technical
    - Enhance existing interoperability between field and functional/institutional environments
Integrated Corridor Management Vision

- Maximize person throughput via a Decision Support System (DSS)
  - Recurrent congestion
    - Proactively avoid recurrent congestion via use of a real time Network Predictive System
  - Non-recurrent congestion
    - Proactively reroute people and vehicles around planned events and incidents
Integrated Corridor Management
Recurrent Congestion

Continuous monitoring of the system
Current network status compared to historical traffic flow by location and time of day
Network Prediction System forecasts a near-term breakdown into recurrent congestion
Response Plan lengthens the upstream ramp meter flow rates
Integrated Corridor Management
Non-Recurrent Congestion

- Incident detected by system
- Information disseminated
- Detour route identified
- Signals along detour route changed to ‘flush’ to accommodate the additional flow of traffic
- Ramp meter turned off
Integrated Corridor Management
Corridor Field Assets

- CMS
- I-15 Managed Lanes
- Direct Access Ramp (DAR)
- SR 56/Ted Williams Parkway
- Sabre Springs/Peñasquitos Transit Center
**Integrated Corridor Management Stages**

- **Stage 1**
  - Concept of Operations
  - System Requirements

- **Stage 2 – Analysis, Modeling & Simulation**
  - *TransModeler micro-simulation model*

- **Stage 3 – Demonstration Site**
  - Systems Engineering and design
  - *Aimsun micro-simulation model*
  - Go live in Spring of 2013
Integrated Corridor Management Strategies

- En-route traveler information
- Pre-trip traveler information
- Corridor ramp metering
- Arterial signal coordination with ramp meters
- I-15 express lanes
- Congestion pricing
- Bus priority
- Changeable message signs
Integrated Corridor Management Analysis, Modeling and Simulation

- **TransCAD regional travel demand model**
  - Study area sub-zoning

- **TransModeler micro-simulation model**
  - Local Customizations
    - Ramp meters and congestion pricing
  - AM Peak Period
    - 6am – 9am expanded to 5am – 11am
  - Focus on incident management
    - Without ICM: 5% of drivers react to information
    - With ICM: 30% of drivers react to information
Integrated Corridor Management Analysis, Modeling and Simulation

- **Understanding model output**
  - Statistical: travel times and speeds
  - Graphic: simulating the movements of vehicles through the network

- **Model calibration criteria**

<table>
<thead>
<tr>
<th>Calibration Criteria and Measures</th>
<th>Calibration Acceptance Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hourly Flows, Model vs. Observed</strong></td>
<td></td>
</tr>
<tr>
<td>• Traffic flows within 15% of observed volumes for links with peak-period volumes greater than 2,000</td>
<td>• For 85% of cases for links with peak-period volumes greater than 2,000</td>
</tr>
<tr>
<td>• Sum of all link flows</td>
<td>• Within 5% of sum of all link counts</td>
</tr>
<tr>
<td>• Travel times within 15%</td>
<td>• &gt;85% of cases</td>
</tr>
<tr>
<td><strong>Visual Audits</strong></td>
<td></td>
</tr>
<tr>
<td>• Individual Link Speeds: Visually acceptable Speed-Flow relationships</td>
<td>• To analyst’s satisfaction</td>
</tr>
<tr>
<td>• Bottlenecks: Visually Acceptable queuing</td>
<td>• To analyst’s satisfaction</td>
</tr>
</tbody>
</table>
### Integrated Corridor Management Analysis, Modeling and Simulation

- **06:00-09:00 Southbound Observed Speed Contours at 5-Minute Intervals (PeMS, 2003)**

<table>
<thead>
<tr>
<th>Time Period (a.m.)</th>
<th>Smallest Speed (mph)</th>
<th>Largest Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:00-6:05</td>
<td>12.4</td>
<td>65.6</td>
</tr>
<tr>
<td>6:05-6:10</td>
<td>17.3</td>
<td>65.1</td>
</tr>
<tr>
<td>6:10-6:15</td>
<td>23.0</td>
<td>65.1</td>
</tr>
<tr>
<td>6:15-6:20</td>
<td>24.0</td>
<td>65.0</td>
</tr>
<tr>
<td>6:20-6:25</td>
<td>24.0</td>
<td>66.6</td>
</tr>
<tr>
<td>6:25-6:30</td>
<td>25.0</td>
<td>66.6</td>
</tr>
<tr>
<td>6:30-6:35</td>
<td>27.0</td>
<td>65.6</td>
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<tr>
<td>6:35-6:40</td>
<td>29.0</td>
<td>66.6</td>
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<tr>
<td>6:40-6:45</td>
<td>31.0</td>
<td>66.6</td>
</tr>
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<td>6:45-6:50</td>
<td>33.0</td>
<td>66.6</td>
</tr>
<tr>
<td>6:50-6:55</td>
<td>35.0</td>
<td>66.6</td>
</tr>
<tr>
<td>6:55-7:00</td>
<td>37.0</td>
<td>66.6</td>
</tr>
<tr>
<td>7:00-7:05</td>
<td>39.0</td>
<td>66.6</td>
</tr>
<tr>
<td>7:05-7:10</td>
<td>41.0</td>
<td>66.6</td>
</tr>
<tr>
<td>7:10-7:15</td>
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<td>7:15-7:20</td>
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<td>66.6</td>
</tr>
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<td>7:20-7:25</td>
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<td>7:25-7:30</td>
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<td>7:30-7:35</td>
<td>51.0</td>
<td>66.6</td>
</tr>
<tr>
<td>7:35-7:40</td>
<td>53.0</td>
<td>66.6</td>
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<td>8:00-8:05</td>
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<td>8:55-9:00</td>
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#### Southbound I-15 PeMS Speed Contours at 5-Minute Intervals

<table>
<thead>
<tr>
<th>Segment</th>
<th>PeMS Detector Stations</th>
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</thead>
<tbody>
<tr>
<td>Miramar Way</td>
<td></td>
</tr>
<tr>
<td>Pomerado Rd</td>
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</tr>
<tr>
<td>Carrol Canyon Rd**</td>
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</tr>
<tr>
<td>Mesa Blvd</td>
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</tr>
<tr>
<td>WB Mira</td>
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</tr>
<tr>
<td>Mercy Rd</td>
<td></td>
</tr>
<tr>
<td>WB Rancho</td>
<td></td>
</tr>
<tr>
<td>Ted Williams Pkwy</td>
<td></td>
</tr>
<tr>
<td>Carmel Mountain Rd</td>
<td></td>
</tr>
<tr>
<td>Camino Del Norte</td>
<td></td>
</tr>
<tr>
<td>Bernardo Center Dr</td>
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</tr>
<tr>
<td>Rancho Bernardo</td>
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</tr>
<tr>
<td>Pomerado/Highland</td>
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<tr>
<td>Via Rancho Pkwy</td>
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</tr>
<tr>
<td>Center City Pkwy</td>
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</tr>
<tr>
<td>Cibdacado Pkwy</td>
<td></td>
</tr>
<tr>
<td>9th Ave</td>
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</tr>
<tr>
<td>Valley Pkwy</td>
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**Integrated Corridor Management Analysis, Modeling and Simulation**

- **06:00-09:00 Southbound Simulation Model Speed Contours at 5-Minute Intervals**

### Southbound I-15 Calibrated Simulation Model Speed Contours at 5-Minute Intervals

<table>
<thead>
<tr>
<th>Segment</th>
<th>Mira-Mira</th>
<th>WB Pomerado Rd</th>
<th>WB Mira Mesa Blvd</th>
<th>Mercy Rd</th>
<th>WB Rancho</th>
<th>Ted Williams Pkwy</th>
<th>Carmel Mountain Rd</th>
<th>Camino Del Norte</th>
<th>Bernardo Center Dr</th>
<th>Rancho Bernardo</th>
<th>Pomerado/Hi ghland</th>
<th>Via Rancho Pkwy</th>
<th>Center City Pkwy</th>
<th>Cibiracado Pkwy</th>
<th>9th Ave</th>
<th>Valley Pkwy</th>
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<td>13.8</td>
<td>12.3</td>
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<td>11.9</td>
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<td>11.4</td>
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</tbody>
</table>

**Note:** The table above provides a summary of speed contours at 5-minute intervals for various segments of the Southbound I-15 corridor. The data includes speeds in miles per hour (mph) for each detector station at 6:00 to 9:00 a.m. on specific days. The segments listed are: Miramar Way, WB Pomerado Rd, Carrol Canyon Rd, WB Mira Mesa Blvd, Mercy Rd, WB Rancho, Ted Williams Pkwy, Carmel Mountain Rd, Camino Del Norte, Bernardo Center Dr, Rancho Bernardo, Pomerado Hill, Via Rancho Pkwy, Center City Pkwy, Cibiracado Pkwy, 9th Ave, and Valley Pkwy.
Integrated Corridor Management
Stage 3

- Aimsun micro-simulator

**Aimsun Offline**
- Historical O/D matrix data base
- Historical traffic pattern data base
- O/D Matcher
  - Pattern recognition module
- Selected O/D matrix

**Aimsun Online**
- Real time raw detection data
- Detection data filtering and processing
- Filtered detection pattern
- Parallel Simulations
- Aimsun Micro/Meso
- Forecast traffic data
- Best strategy selection
- Quality Manager module
- Quality Indicators

**Real time**
- Real time control plan data
- Real time event detection
- Traffic management strategies
- Traffic Management Operations

**Historical**
- Historical traffic pattern data base
- Historical O/D matrix data base
Integrated Corridor Management
Aimsun Online

- Continuous monitoring – Network Predictive System
- Incident responses are scored (no animation)
A combination of Action Plans defines an individual Response Plan based on agreed upon response posture responsiveness.
Integrated Corridor Management
Aimsun Offline

- Used to inform the DSS and optimize incident responses

- Aimsun Demonstration...
Open Discussion
Forum Agenda Recap

- Commercial Vehicle Model
- Regional Count Database
- Integrated Corridor Management

Next Transportation Modeling Forum:
June 12, 2013
Transportation Modeling Forum

December 12, 2012