Transportation Modeling Forum
Farewell to Wu Sun!

• 16 years of service and leadership to the Region.
• Led development and deployment of SANDAG’s Activity Based Model (ABM).
• Significant contributions to many SANDAG accomplishments.
• A wonderful and kind colleague.

Congratulations to Wu on his retirement from SANDAG!
Agenda

- Welcome
- ABM3 Development Update
- 2025 Regional Plan
- Service Bureau Modeling Update
ABM 3 Development Update
Status Update
Rapid Strategic Model

• Rough approximation to ABM
  — Currently uses ABM2+
• Runs in ~1/3 of the time
  — Two global iterations
  — Special market model demand fixed
  — Zones aggregated to larger zones
    • Speeds up traffic assignment
  — Simulate only 25% of households
    • Can be 100% in designated project area
• Allows planners to get general idea of impact of policy in less time
Rapid Strategic Model

• MVP released in April
  — Generally matched ABM with regional policies

• Beta version to be finished by end of month
  — Includes enhancements to ideally improve project-level policies
  — Currently running sensitivity tests

• Currently works with ABM2+, but planning on getting it to work with ABM3
ABM3 Estimation/Calibration/Validation

- Design: Dec 21
- Software Conversion to ActivitySim and Enhancements: Dec 22
- Model Estimation: May 23
- Model Calibration and Validation: Sep 23
- Sensitivity Testing: Dec 23
- Documentation and Training: Mar 24
# ABM3 Estimation Plan

<table>
<thead>
<tr>
<th>MODEL COMPONENT</th>
<th>ESTIMATE/CALIBRATE/ASSERT</th>
</tr>
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<tbody>
<tr>
<td>Work from home</td>
<td>Estimate</td>
</tr>
<tr>
<td>External worker choice</td>
<td>Estimate</td>
</tr>
<tr>
<td>External worker location choice</td>
<td>Estimate</td>
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<tr>
<td>Work location choice</td>
<td>Calibrate</td>
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<tr>
<td>Transit subsidy model</td>
<td>Estimate</td>
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<td>Transit pass model</td>
<td>Estimate</td>
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<tr>
<td>AV ownership</td>
<td>Assert</td>
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<tr>
<td>Auto ownership</td>
<td>Estimate</td>
</tr>
<tr>
<td>Vehicle type choice</td>
<td>Calibrate</td>
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<tr>
<td>Toll transponder ownership</td>
<td>Estimate</td>
</tr>
<tr>
<td>CDAP model</td>
<td>Estimate</td>
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<tr>
<td>Mandatory tour frequency</td>
<td>Calibrate</td>
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<thead>
<tr>
<th>MODEL COMPONENT</th>
<th>ESTIMATE/CALIBRATE/ASSERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory tour scheduling</td>
<td>Calibrate</td>
</tr>
<tr>
<td>School pickup/dropoff model</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Joint tour frequency</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Non-mandatory tour frequency</td>
<td>Estimate</td>
</tr>
<tr>
<td>Non-mandatory tour location choice</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Non-mandatory tour scheduling</td>
<td>Calibrate</td>
</tr>
<tr>
<td>At-work tour frequency</td>
<td>Calibrate</td>
</tr>
<tr>
<td>AV availability</td>
<td>Assert</td>
</tr>
<tr>
<td>Tour mode choice</td>
<td>Calibrate</td>
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<tr>
<td>Stop frequency</td>
<td>Estimate</td>
</tr>
<tr>
<td>Stop location</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Stop departure time</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Trip mode choice</td>
<td>Calibrate</td>
</tr>
<tr>
<td>Parking location choice</td>
<td>Calibrate</td>
</tr>
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**Finished**  **In-Progress**  **Pending**
• Model estimation
  – An iterative process
    • Need the data to be consistent within ActivitySim
    • Need desired terms in the estimation data bundle

• Model Calibration
  – Using the visualizer

• Model Validation
  – PowerBI for ABM validation
Commercial Vehicle Model (CVM) Heavy Truck Model (HTM)

- CVM update using recent establishment/driver surveys
  - Use new commercial vehicle surveys (2022)
  - Develop new application software
  - Represent first/last-mile pickups/deliveries, e-commerce

- HTM update to use FAF5

- CVM and HTM model update to be production ready by February 2024
2025 Regional Plan
Major Requirements

Equity

Air Quality

Greenhouse Gas Emissions
Equity Requirements

• **Title VI** prohibits discrimination on the basis of race, color, or national origin

• **Americans with Disabilities Act** prohibits discrimination on the basis of disability and requires equal opportunity to benefit from services in the implementation of programs and projects

• **Executive Order 12898** mandates a commitment to address environmental justice for people of color and low-income populations

• **Executive Order 13166** requires providing meaningful access to services for people with limited English proficiency

• **Executive Order 13175** requires consultation and coordination with Indian Tribal Governments

• **CA Assembly Bill 805** requires strategies that provide mode shift to public transportation and transportation strategies to reduce pollution exposure in disadvantaged communities
Air Quality Conformity

• Federal Clean Air Act mandates air quality standards for six criteria air pollutants, including ground level ozone

• San Diego region is currently non-attainment for ozone

• San Diego region must model ROG and NOx (i.e. smog) levels for 2026, 2029, 2032, 2040, and 2050 to demonstrate that projected regional ozone levels do not exceed the federal standards
California Senate Bill 375 and SCS

• **CARB sets regional targets** for cars and light trucks for reduction of GHG

• **CARB evaluates Regional Plan's SCS** to determine whether the strategies and investments support stated GHG emission reductions. This includes:
  — Trend analysis of performance indicators: mode split, auto ownership, VMT, transit ridership, non-auto travel time, seat utilization, trip length and GHG
  — Evaluation of any risks to not achieving the SCS GHG emission reductions

• **CARB tracks implementation** (SB 150) on whether VMT per capita is directionally tracking with reported GHG per capita
### Updated Vision and Goals

**Vision:**
The Regional Plan envisions a sustainable and resilient future for our region and economy – supported by a transportation network that is **convenient, equitable, healthy, and safe.**

<table>
<thead>
<tr>
<th>Goals:</th>
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</thead>
<tbody>
<tr>
<td><strong>Convenient</strong></td>
</tr>
<tr>
<td>and reliable movement of people and goods</td>
</tr>
<tr>
<td><strong>Equitable</strong></td>
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<tr>
<td>access to essential needs and opportunities</td>
</tr>
<tr>
<td><strong>Healthy</strong></td>
</tr>
<tr>
<td>communities and environment for everyone</td>
</tr>
<tr>
<td><strong>Safe</strong></td>
</tr>
<tr>
<td>transportation network for all users</td>
</tr>
</tbody>
</table>
Series 15 Forecast for the 2025 Regional Plan

Population

Housing

Jobs
What Will the Region Look Like in the Future?

Population will increase but then decrease
Population will be older
More households and houses
Jobs in the region will continue to grow
Key 2023-2024 Workplan

2023 Q2:
- Series 15 Regional Forecasts
- Vision, goals and performance measures
- Perform Network Sensitivity Tests
- Develop cost estimate methodology
- Initial revenue assumptions

2023 Q3:
- Develop Preliminary Networks (Unconstrained) - August
- Initial Cost Estimates - September
- Draft Revenue Assumptions - September

2023 Q4:
- Project Phasing/Prioritization
- Revenue Constrained Network(s)
- Draft Cost Estimates
- Develop policy assumptions
- Series 15 Subregional

2024 Q1:
- Off Model Calculators
- Submit CARB Technical Methodology memo
- ABM3 Beta Testing
- SCS Land Use Scenario
Key 2024-2025 Workplan Items

2024 Q2:
- ABM3 Production Model of Preferred Network(s) (model runs to meet targets) – May 2024*
- Begin Draft EIR

2024 Q3:
- Prepare RP technical appendices
- Social Equity Analysis
- Network Performance Measures Outcomes

2024 Q4:
- Continue RP and EIR technical appendices
- Draft Plan and EIR content development

2025:Q1
- Continue Draft Plan and EIR content development

2025 Q2:
- Draft Regional Plan (April)
- Draft EIR release (May)
- Public Comment Period (RP – 55 days and EIR – 45 days)

2025 Q3/4:
- Response to Comments (RP & EIR)
- Finalize and Adopt 2025 RP, Certify EIR (Dec 2025)

* Preferred network must be complete no later than July 2024 for a Dec 2025 RP adoption.
Model Application Update

• Auto Operating Cost Methodology
  – California Big 4 MPO Collaboration

• Network Performance Sensitivity Tests
  – Transit Leap
  – Complete Corridors – Managed Lane Analysis
  – Active Transportation
  – Support for Mobility Hubs Update

• TNED - Network Editing Tool Migration

• Arterial Network Online Review Tool
  – Local jurisdiction comments for 2022 and future years

• Base Year (2022) Network Ground Truth

• Off-Model Calculator Update
Service Bureau Update
2021 RP/SCS Amendment & Series 14

• 2021 RP/SCS
  – Status update on modeling
  – Data release policy

• Series 14 Forecast
  – Pre-SR14 review
  – New guide to Series 14 and the DS classification system
2021 RP/SCS Amendment

• All modeling was completed in early 2023
  – RP/SCS Amendment has been presented to the SANDAG board
  – Public comment period for plan: June 13 – August 8
  – Public comment period for SEIR: July 13 – August 28
  – Anticipated SANDAG board action late Summer or early Fall
  – If approved, amendment will be sent to the Air Resources Board for acceptance
2021 RP/SCS Data Release Procedure

• Model Run Data
  – Model run data is available for release
  – Data will be released in ‘as-is’ condition as a public record
  – No additional analysis may be conducted at this time

• RP/SCS Amendment Data Products
  – TFIC, SB-743, & CAP data products will not be produced until the amendment is approved by the SANDAG board

• Disclaimer
  – All model run data and any model run data products will not become official until approval/adoPTION from the California Air Resources Board. Any work conducted before this should be considered ‘at risk’.
Forecast Series Review

2011 RP/SCS
Series 12
ABM1
TransCAD

2015 RP/SCS
Series 13
ABM2
TransCAD

2019 Federal RTP
Series 14
ABM2+
Emme
14.1.1
DS-17

5 Big Moves (Build)
DS-38 Plan
DS-42 Amendment
SCS Land Use Assumptions
RP/SCS Projects & Policies

No Build
DS-39 Plan
DS-41 Amendment
Baseline Land Use Assumptions
No build Projects & Policies

Pre DS versioning

DS versioning implemented
DS Nomenclature & Versioning

• “DS” + [number] = “DS ID”
  – DS stands for “Data Source”
  – [number] represents the version number
  – Transition from “series” to “series + DS ID” nomenclature for correspondence and model run specifications

• RP/SCS Projects & Policies
  – It is recommended that DS forecast versions remain consistent with RP/SCS projects & policies
  – Roadway, transit, & bike/ped network procedure remains unchanged
  – Some polices may be modified
### Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>DS-41</th>
<th>DS-42</th>
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<tbody>
<tr>
<td>Aliases</td>
<td>• No Build</td>
<td>• Build</td>
</tr>
<tr>
<td></td>
<td>• Non-SCS</td>
<td>• Vision</td>
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<tr>
<td></td>
<td></td>
<td>• Sustainable Communities Strategy (SCS)</td>
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<tr>
<td>Related DS ID Used for December 2021 RP/SCS</td>
<td>DS-39</td>
<td>DS-38</td>
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<tr>
<td>Mobility Hubs</td>
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<td>Telework</td>
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<td>Toll Pricing Enhancements</td>
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<td>Microtransit Enhancements</td>
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<td>Micromobility Enhancements</td>
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<tr>
<td>Consistent with Jurisdiction General Plans</td>
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<tr>
<td>Central Mobility Hub (NAVWAR)</td>
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<tr>
<td>Full Buildout of SDSU West</td>
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<tr>
<td>Consistent with preferred alternative from 2021 Regional Plan</td>
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<td>✓</td>
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**Updated for new DS versions**

- **DS-41 succeeds DS-39**
- **DS-42 succeeds DS-38**
Thank you for attending the modeling forum!

See you in December!
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- Email: pio@sandag.org