Training Agenda

District 8 TransCAD Training, April 6th, 2017

1. **Administrative / Coordination**
   a. Approach to future training topics, frequency, and method
   b. TransCAD license and modeling computer status
   c. Role and needs of each Caltrans staff member

2. **TransCAD Layout Generation**
   a. Generating high resolution layouts
   b. Layout tips and tricks

3. **HOT Modeling with the SCAG Model**
   a. How to code HOV, HOT, and toll facilities in the network
   b. How the SCAG model processes tolls

4. **PostMile reporting tool development status update**

SCAG Model and TransCAD Training

presented to

Caltrans District 8 Staff

presented by

Xuan Liu and Sean McAtee

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Think Forward

WORKING WITH LAYOUTS

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Layouts

➤ Allow users to:
  » Create a page to be printed
  » Control font sizes for larger-than-screen output
  » Control output resolution
  » Create images for inclusion in reports

➤ Created from File → New

➤ Include maps, drawing items, tables, and insets

➤ Add titles, legends, etc.

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Layout Walkthrough (1)

➤ Start by creating a simple map

  » Open the highway network DBD file

  » Add the TAZ Layer and change the line style

  » Make centroids dashed lines (selection set)

  » Label with Lanes

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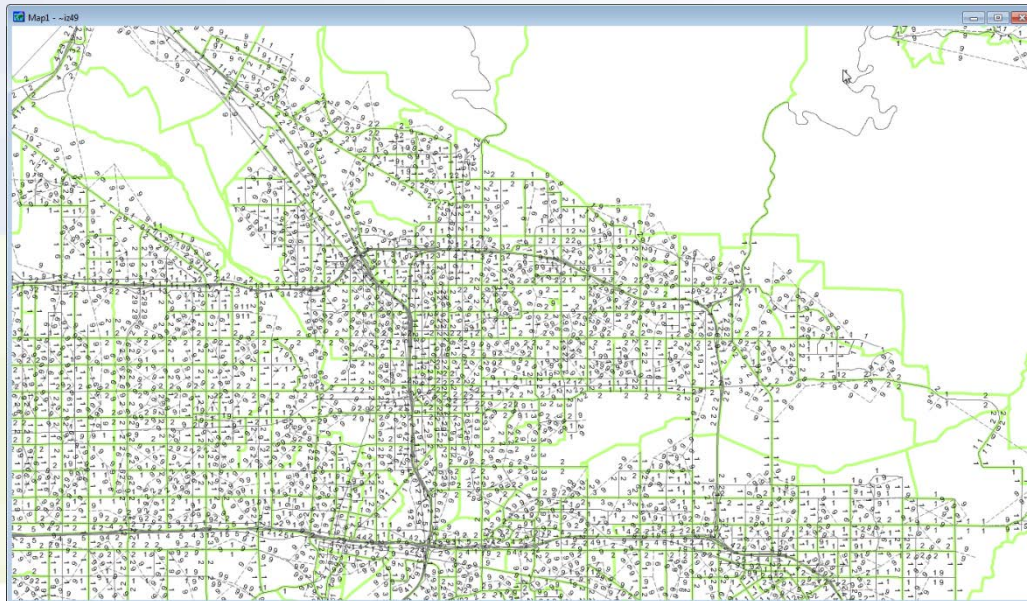
Layout Walkthrough (2)

→ Create a poster-size PDF

| Requires a PDF Printer (e.g., Acrobat Pro) |

  » Make it high resolution
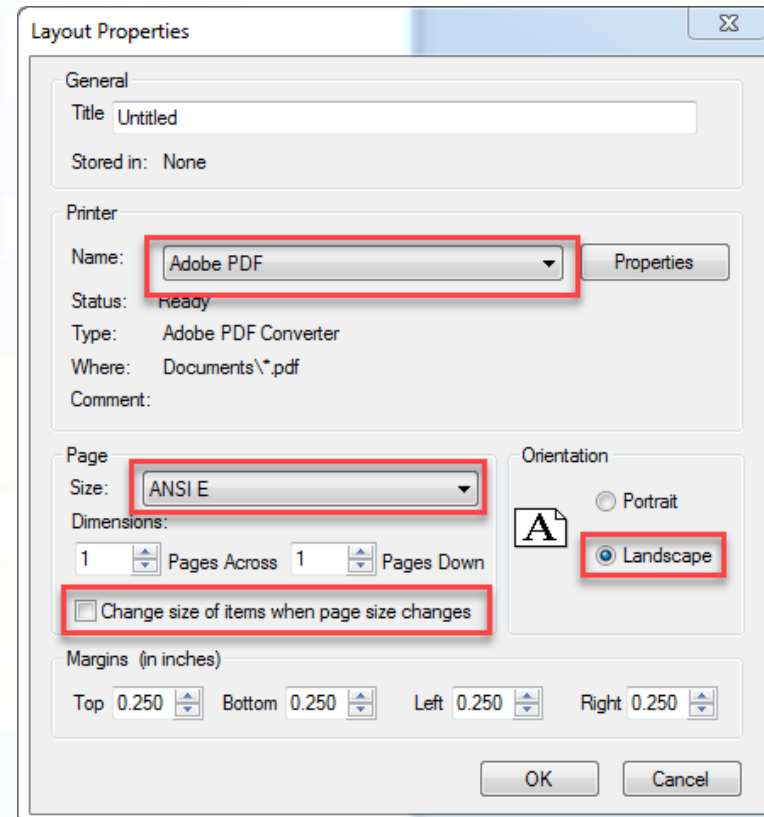 » Allow the user to zoom and see detail

→ New → Layout

→ File → Properties
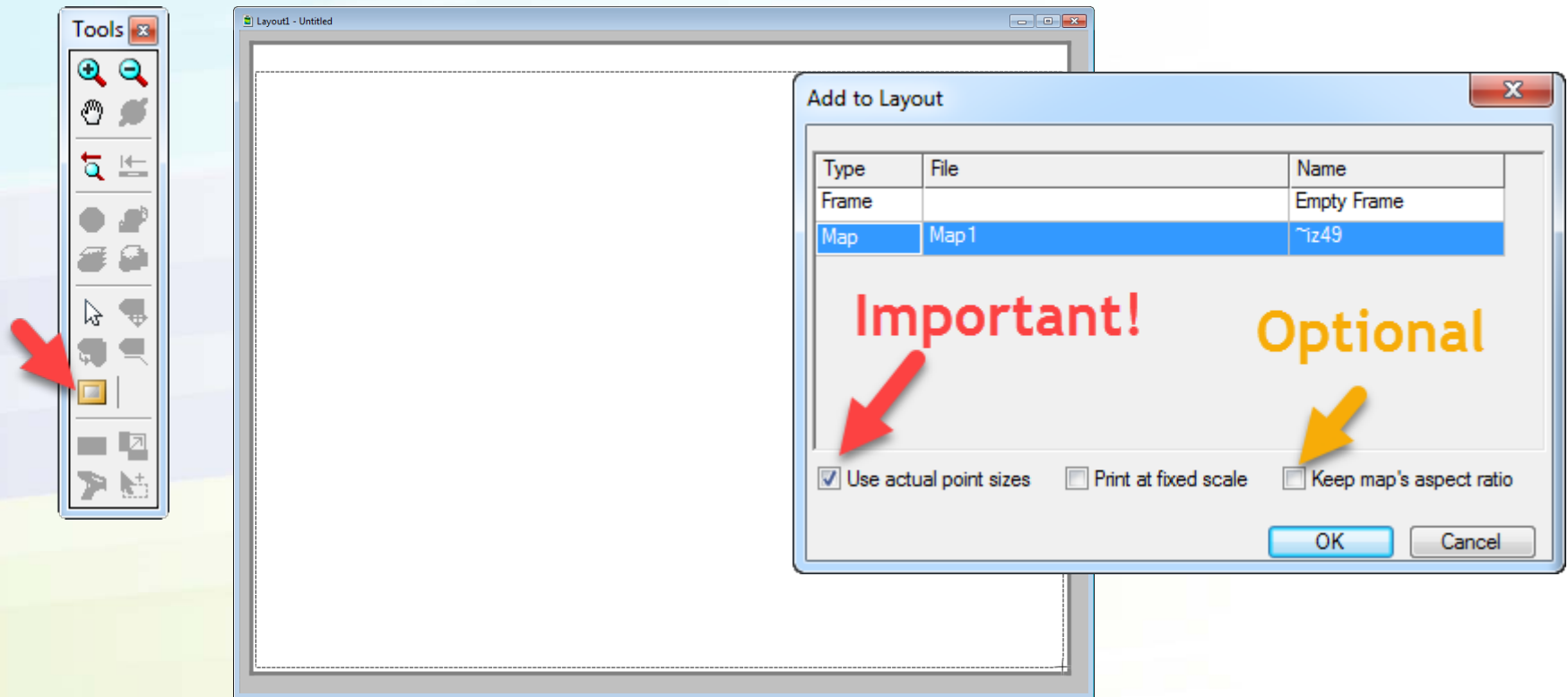 » Choose a PDF Printer
  » Choose a large page size (ANSI E, landscape)
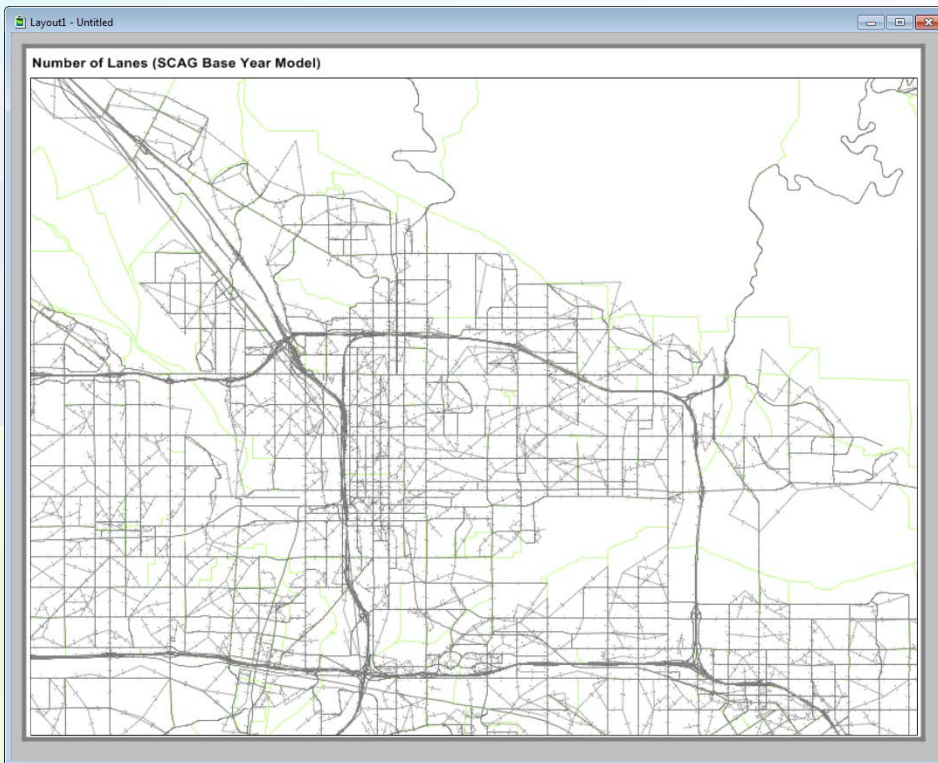 » Un-check "Change size of items when page size changes"

Layout Walkthrough (3)

➤ Add a map to the Layout

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Layout Walkthrough (4)

> Add a title to the layout if desired

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Layout Walkthrough (5)

→ Status Check:

» We have an ANSI-E layout set up

» "Use actual point sizes"

– If we set labels to be 12-point, they will print/export at 12-point

– This allows us to see many more labels on the exported figure

» The map window may look blurry, but don't worry!

– We will export to PNG or PDF to get a razor-sharp result

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Layout Walkthrough (6)

➤ Export to PDF

  » File → Print
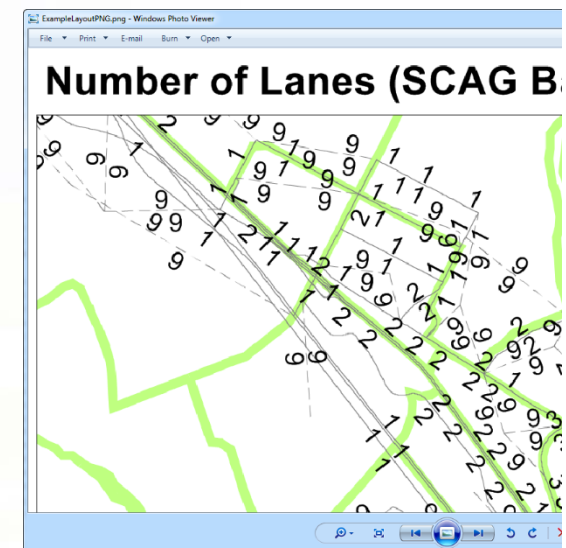
  » Do **<u>NOT</u>** optimize for transparency

  » Good for transmitting detailed information, or for creating large format plots

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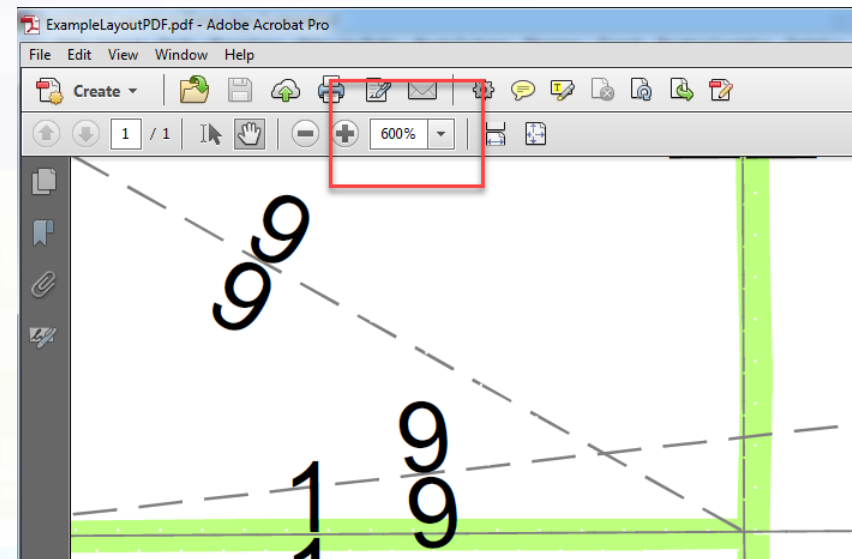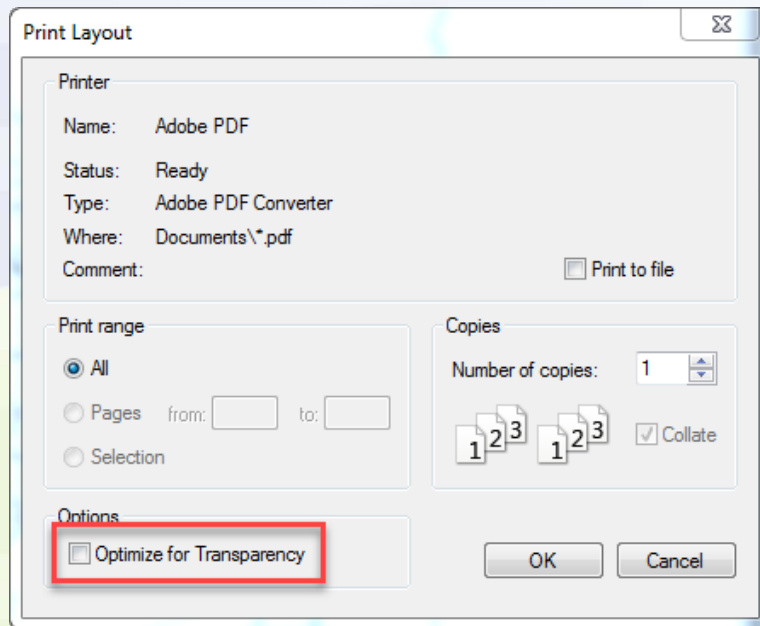
Layout Walkthrough (7)

➤ Image Export

  » Use a smaller page size (ANSI E may run out of memory)

  » Save as "PNG" (Not JPG)

  » Use the Options to set a higher DPI

  » Good for creating report figures

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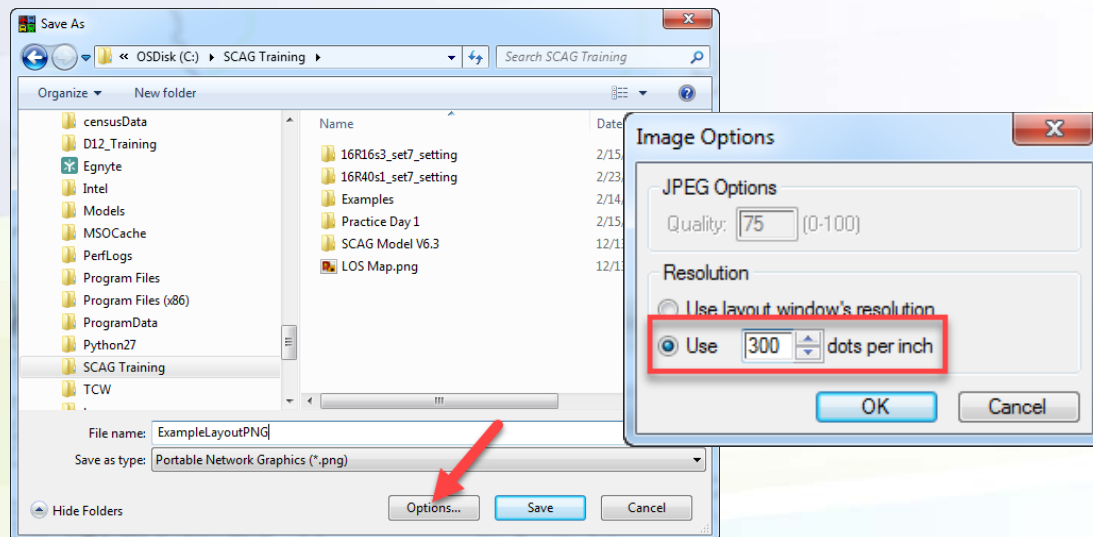
Layout "Tips and Tricks"

➤ Saving your work: **Save 3 Files**

  » Layout file (*.lay)

    – Won't work if files are moved/renamed

  » Map File (*.map)

    – May be more stable

  » PDF or PNG File

    – Will serve as a record of the file if it breaks later

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Layout "Tips and Tricks"

➤ Add a Legend

» Add and refine the legend in the map window

– Then save your MAP file

» Add your map to the layout

– A legend will be placed at the bottom-right corner

» Move the legend to a good location

» Resize the legend by double-clicking and increasing font size

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Layout "Tips and Tricks"

➤ Add an inset

   » Create your layout as usual

   » Zoom your map, possibly changing the window shape

   » Add a second map with the inste

   » Be Careful: Scales on legends may vary!

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Example with extras

Number of Lanes (SCAG Base Year Model)
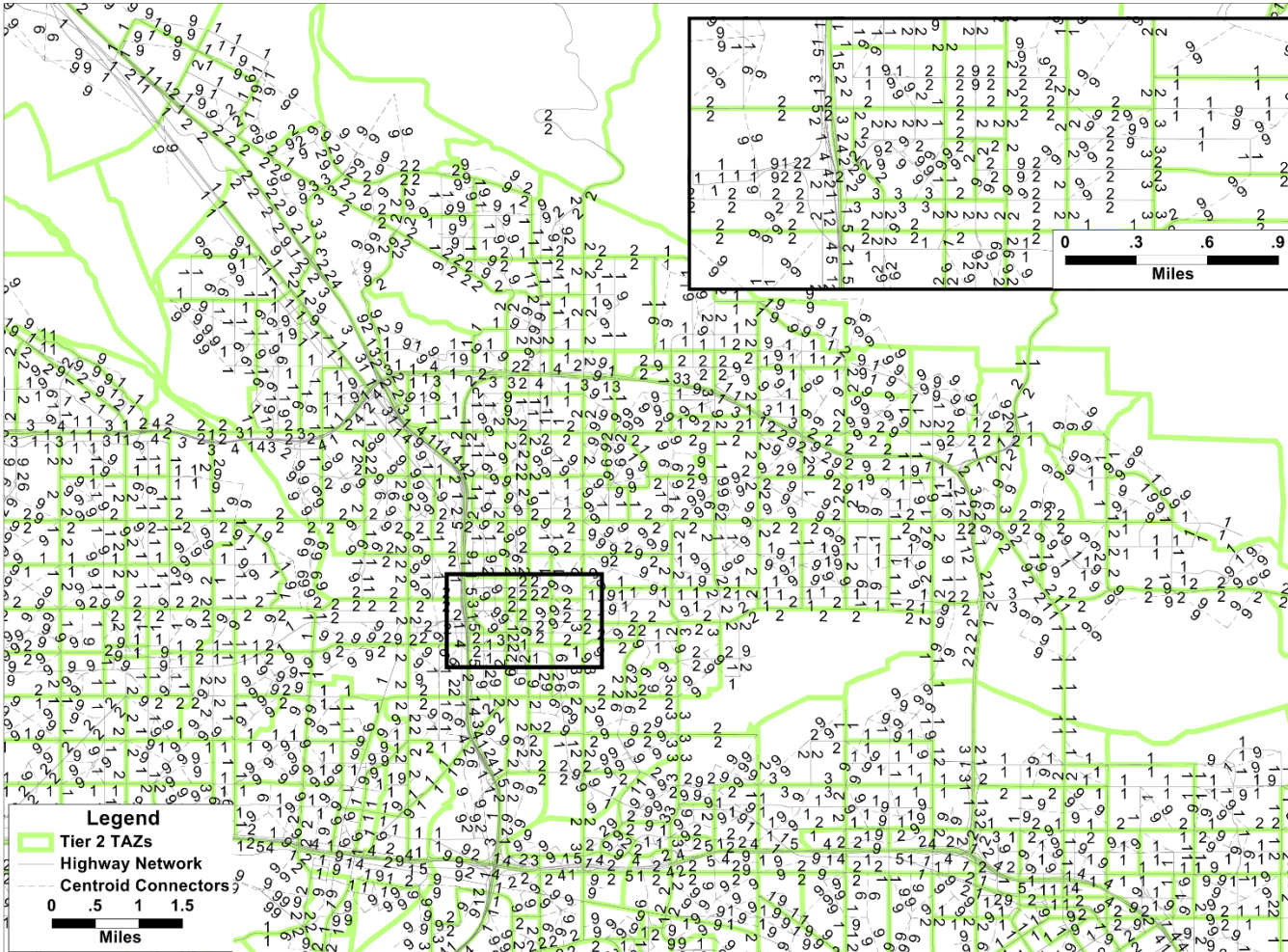
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MODELING HOT LANES

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Outline

➤ Ways to show tolls in the SCAG Model

➤ Adding tolls to the model
  » Network editing
  » Toll rate editing

➤ Run SCAG Model
  » Utility interface – calculate network tolls
  » Network initialization
  » Traffic assignment options

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SCAG Toll Types
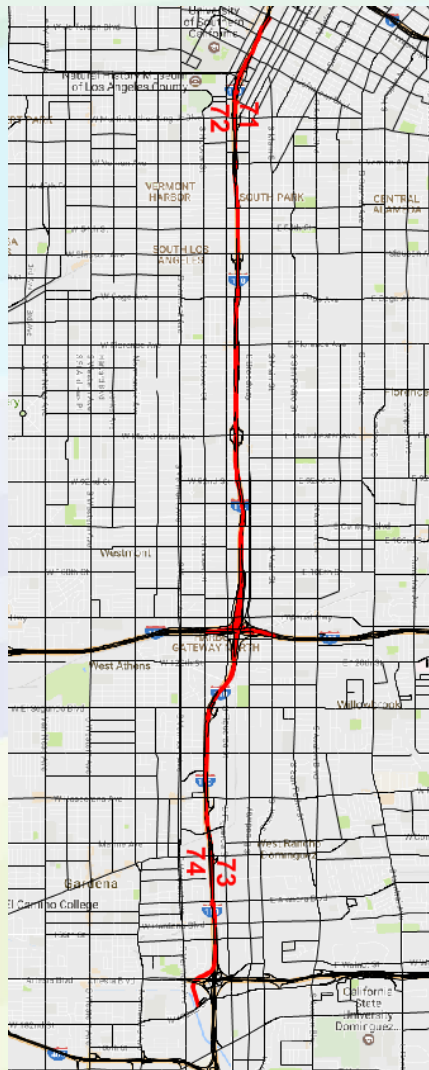
- Length Based Toll (e.g. HOT Lane Segment)
  - » Toll = [Toll Rate] x Distance
    - – Example: Existing toll lane on I-110 between LAX and downtown

- "Toll Gates" (e.g. Toll Plaza)
  - » Tolls charged at discrete locations
    - – Example: existing toll plaza on SR-91

Adding Tolls to the Model

➔ Network Editing

   » **Case 1: add new HOT lanes**
   - Draw new links *(similar to adding HOV lanes)*
   - [AB/BA]_Facility_Type = 10 *(freeway facility type)*
   - Toll_flag = 22 *(This indicates a per-mile toll)*

   » **Case 2: convert existing HOV Lanes to HOT Lanes**
   - Use existing links
   - [AB/BA]_Facility_Type = 10 *(original HOV facility type is 20)*
   - Toll_flag = 22

   » **Case 3: add toll gates (e.g. toll plaza)**
   - Identify the link
   - Do ***NOT*** change existing [AB/BA]_Facility_Type
   - Toll_flag = 11 *(This indicates a fixed toll)*

Review:
Adding HOV lanes has been covered in previous classes

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Adding Tolls to the Model

➤ Setting the Toll Rates
- » Length based toll facility
  - – Toll Group Attribute:
    - • [AB/BA]_Per_Mile_Toll_Group_[Auto/Truck]
  - – Update or review the toll group csv file
    - • [SCAG scenario folder]\TOD\Inputs\Toll_PerMile.csv
    - • Most toll group values are currently unused
- » Toll Gate
  - – Fill network layer attribute
    - • Location_ID
  - – Update or review the fixed toll csv file
    - • [SCAG scenario folder]\TOD\Inputs\Toll_Fix.csv

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Run the SCAG Model

- Utility - Calculate Network Tolls
  - » Updates network attributes
    - – [AB/BA] TOLLV [AM/MD/PM/EVE/NT] [DA/SR2/SR3]
    - – Uses Toll flag, group, and CSV files

- Network Initialization
  - » Transfer toll attributes to scag_network_working.net

- Run the remaining model as needed

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Run the SCAG Model

➤ Utility Interface - Calculate Network Tolls

  » Input files

   – Network DBD file

   – Length based toll rates: Toll_PerMile.csv

   – Location based toll rate: Toll_Fix.csv

Calculate Network Tolls

Highway DB	C:\...l Runs\16R40s1_set7_setting_NB\networks\Inputs\16r40bl_links.dbd
Per Mile Toll Schedule	C:\...Model Runs\16R40s1_set7_setting_NB\TOD\Inputs\Toll_PerMile.csv
Fixed Toll Links	C:\...6.3\Model Runs\16R40s1_set7_setting_NB\TOD\Inputs\Toll_Fix.csv

VMT TLG 0
Cordon TLG 0
Run Pricing Model NO

Do not change default values.

Calculate   Cancel

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Run the SCAG Model

	Feedback	One Loop	Assignment
Run Time	7-10 Days	1-2 Days	< 1 Day
When to Run	• To generate original SCAG model results • To test large system wide network changes • To test any SED changes • To produce a final model dataset after alternatives analysis	• To test the impacts of small to moderate changes **on mode choice** • This method will reduce but not eliminate oscillation noise • Usually only run when we need to understand transit changes	• To test the impacts of small to moderate changes on roadway volumes • This method will nearly eliminate oscillation noise

Training Notes

District 8 TransCAD Layouts and HOT Modeling, April 6, 2017

1. **Attendees**

   a. Training presented by Sean McAtee and Xuan Liu of CS.

   b. Training attended by James Camarillo, Rena Tang, and Paige, Montojo of Caltrans District 8.

2. **Topics and Discussion Items**

   a. Discussion began with an assessment of how well the current training approach is working, with more frequent shorter web conferences.

   ➢ The approach seems to be working well, but it will be important to schedule to include Joe, who was unable to attend this session.

   ➢ The idea of having some individual training as well as the group training was well received.

   ➢ We will continue the web based training for about one to two months, and then plan to have another classroom training session.

   b. The group discussed the group modeling computer.

   ➢ Caltrans is working on getting a community account on the machine

   ➢ During the discussion, it was determined that it may not be necessary to create a communal account. It may be possible to have individual users log into the machine with their own accounts and all access both TransCAD and relevant model data.

   c. Brief discussion of staff roles.

   ➢ All attendees have a strong interest in continuing to use TransCAD and build TransCAD skills.

   ➢ James needs to be able to use TransCAD, and understand files and data. He also needs to have a good conceptual understanding of the model, methods, and files.

   ➢ Paige will probably use the software most frequently, and would be interested in learning to run the SCAG model. She can potentially teach other Caltrans staff how to run the model in order to further solidify her understanding.

   ➢ Rena will use TransCAD to review projects, including verification of information provided by others. She is also interested in creating figures using TransCAD and making such figures high enough quality (and resolution) to include in reports.

   d. Presentation and discussion on using Layouts

   ➢ Caltrans staff has been able to successfully create layouts, but exported PDF files were not of sufficient resolution for use in reports or products.

➢ CS presented a step-by-step walkthrough on how to effectively create high resolution layouts. The slides from this presentation will be available on the project materials archive and will be provided to District 8 staff for reference.

➢ Caltrans staff asked for some clarification about the "use actual point sizes" option when creating layouts, and CS staff provided a demonstration and explanation.

➢ Caltrans indicated that they would more frequently create 11x17 PDF files rather than the ANSI E size used in the demonstration. CS staff confirmed that this works well.

➢ Caltrans indicated that the Layout information will be useful, and that they understood the topics in the training class.

e. Presentation on modeling HOT lanes

➢ CS presented a brief introduction of the toll types in the SCAG model. Caltrans staff asked how to come up with a toll rate per mile for a new HOT/toll lane. CS staff suggested by looking for a similar toll facility type and then perform the model run to see if the volume make sense. Next step would be adjusting tolls accordingly.

➢ CS presented a step-by-step walkthrough on how to code toll lanes in the SCAG model. Caltrans staff asked to check each related field on the network. CS staff demonstrated to them.

➢ CS presented a step-by-step walkthrough on how to run SCAG model on update tolling information. Caltrans staff asked if SCAG Utility functionality "Calculate Network Tolls" would update per mile toll rate and fixed toll rate to the network at the same time. CS staff demonstrated the input file requirements and confirmed they would be updated at the same time.

➢ CS presented a brief comparison on how to run traffic assignment by using SCAG model. Caltrans staff mentioned they would like to run SCAG model by different options of traffic assignment to see what's the difference on HOT lane volume.

3. **Action Items**

a. Setup one-on-one training with Paige for setting up SCAG model on her personal computer at 9 am on 4/10/2017.

b. Decided the topic of next training session as SR-60 alternatives with Ron.