From: Soundcast

To: SnoCast

Presented by:

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Using Soundcast to Build a Sub-regional model for Snohomish County

June 24, 2020

Model Users Group
(Presentation)

The Current Snohomish County Model

- Is based on PSRC's 4K model.
- It was initially developed to support the County's 2015 Comprehensive plan update.
- Uses 2010 and 2035 allocated land use data as input.

The Current Snohomish County Model

- 699 MAZs covering Snohomish County
- 750 aggregated TAZs and Park & ride lots

- *Definitions:*
- MAZ = Micro Analysis Zone
- TAZ = Traffic Analysis Zone

The Current Snohomish County Model

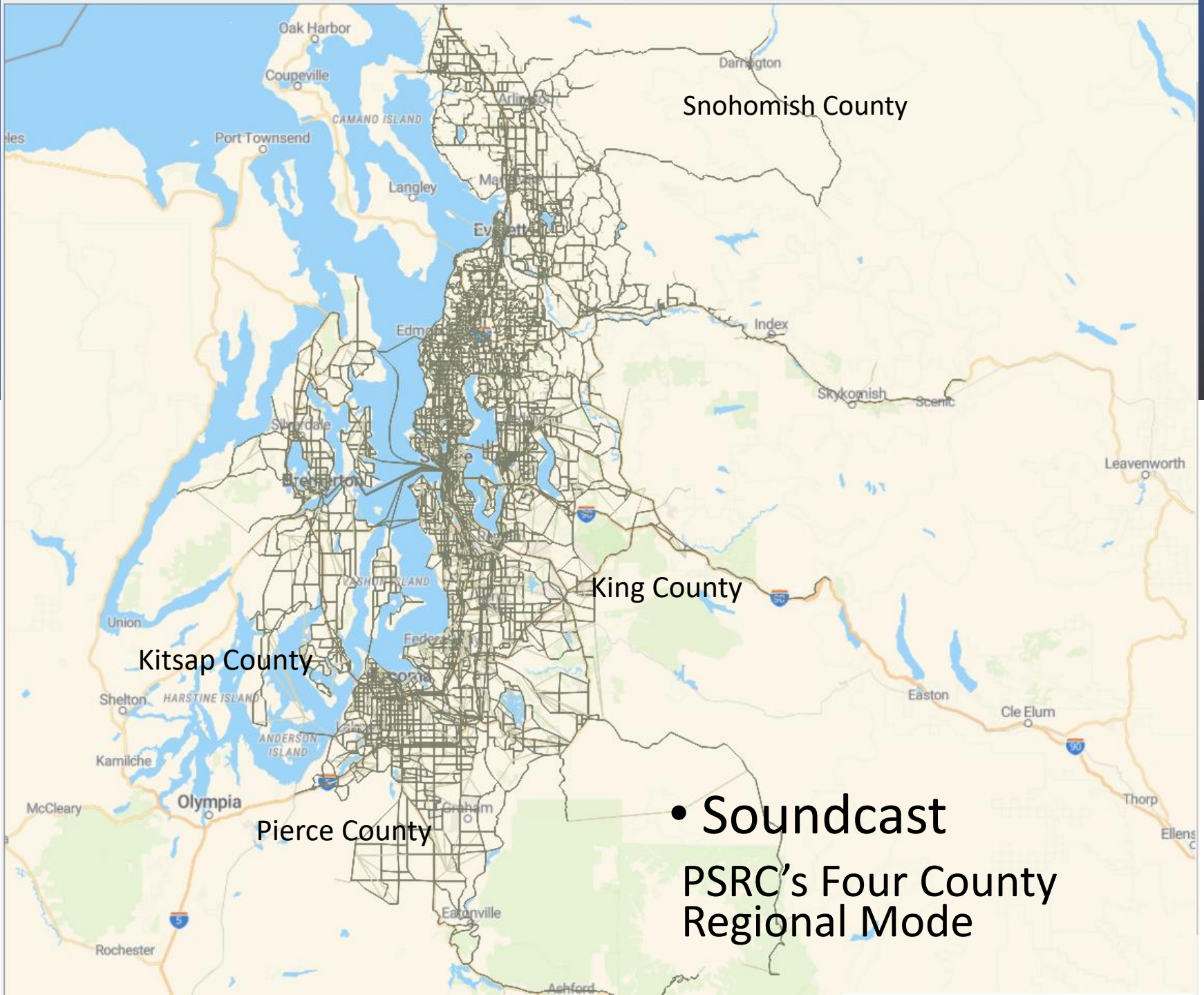
- The model is used to support
  - The County's comprehensive plan updates
  - Traffic mitigation and arterial concurrency analysis
  - Property development impacts determinations
  - Small area transportation studies
  - Inputs to Impact Fees models
  - Transportation system needs of the County
  - Travel demand forecasts requests from consultants

SoundCast

- PSRC has developed the Soundcast activity based model.
- We obtained the available Soundcast databanks for
  - Base year 2014 and Vision year 2040

Databank Components:

- Transit and auto networks
- Python scripts
- Daysim to EMME integration scripts
- Land use input data and
- Other miscellaneous supporting files


Oak Harbor
Coupeville
Port Townsend
CAMANO ISLAND
Langley
Snohomish County
Index
Skykomish
Scenic
Leavenworth
King County
Union
Kitsap County
Shelton
HARSTINE ISLAND
ANDERSON ISLAND
Kamilche
Olympia
McCleary
Pierce County
Easton
Cle Elum
Thorp
Rochester
Eatonville
Ashford
• Soundcast
PSRC's Four County Regional Mode

Set up Challenges

Getting the installed Soundcast model to run required a lot of support from PSRC staff.

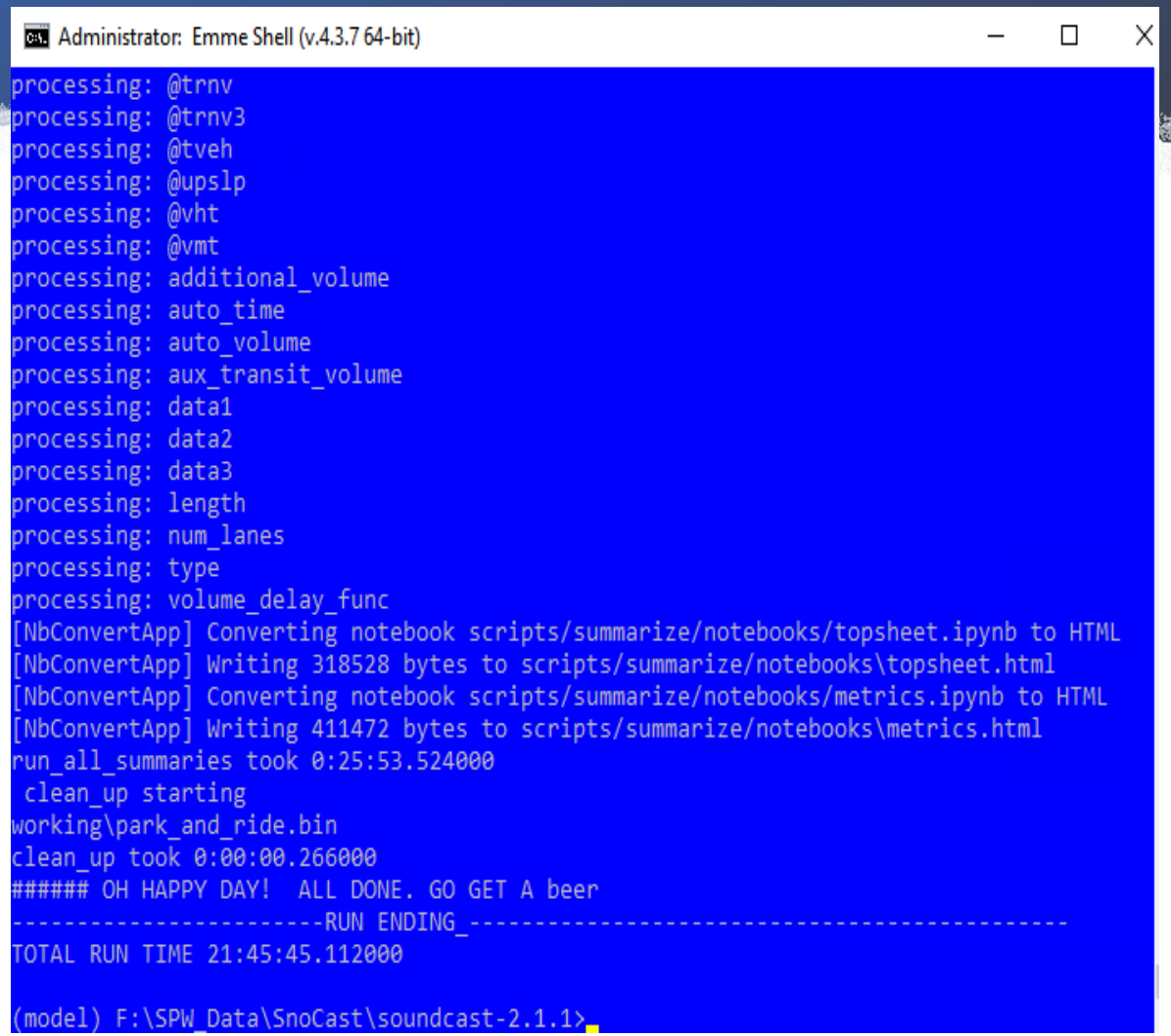
(Had great support from Stefan and Brice. Thanks, guys.)

- Some initial issues included
  - Getting the virtual environment call functions to work
  - Ensuring that the "*external_Work_NonWork_Inputs*" file was the latest update from PSRC and
  - Some accessibility calculation errors

Soundcast run time

- Run in Emme Shell
- Total run time:

  21:45:45



Developing the SnoCast Model

- General Steps
  - Using the subarea toolbox from Emme – Modeler
  - Extracting the SnoCast sub model from the Soundcast model
  - Adding network details to the SnoCast network
  - Split Soundcast TAZs to SnoCast MAZs
  - Modify the land use input data to match the County's land use allocations and buildable lands projections

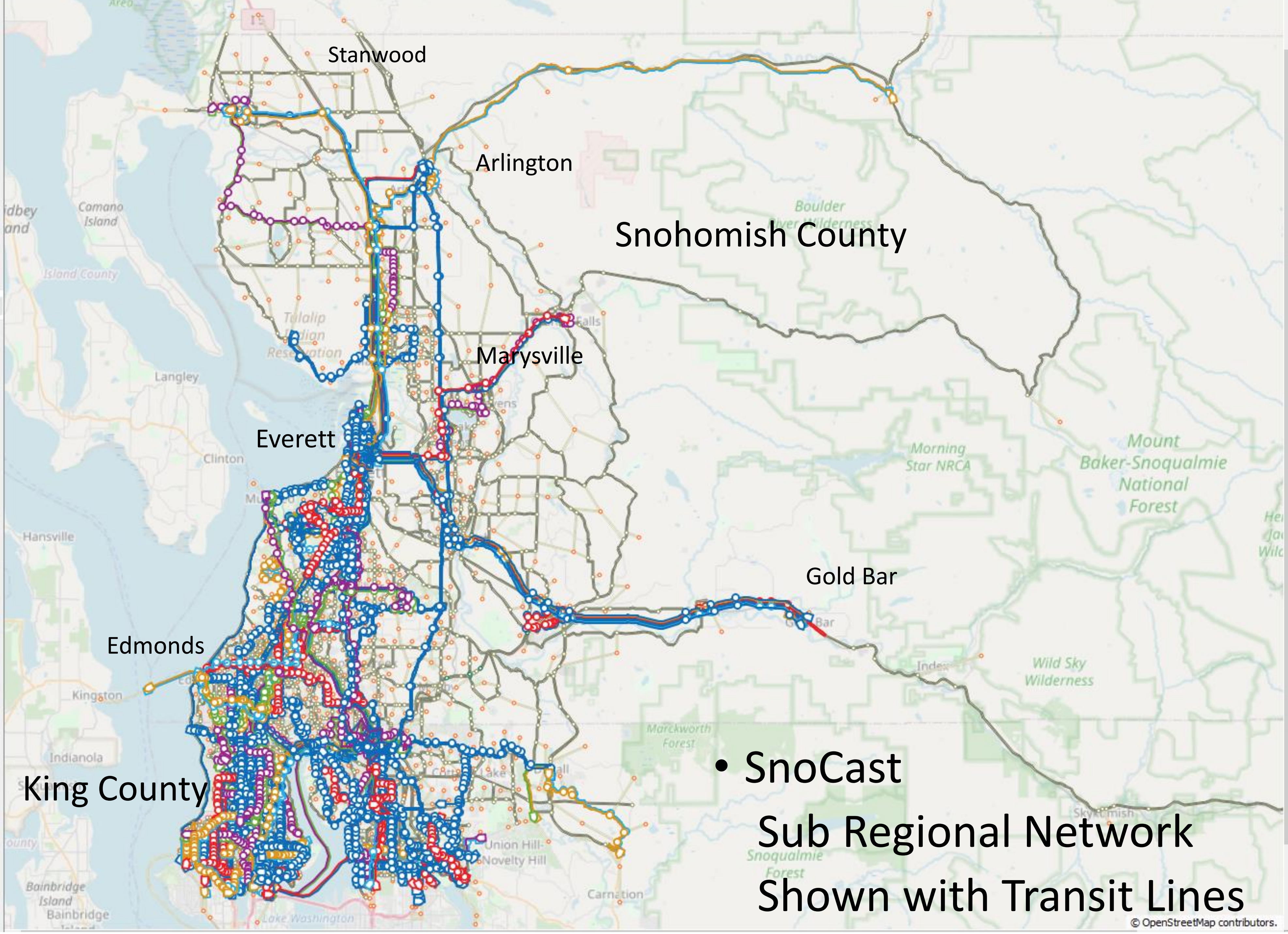
    (*this required modification of tazdata.in data input file*)
  - Run a SOLA assignment on the SnoCast network

Developing a SnoCast Network

- Some specifics

  - Create extra attributes to define the network representing Snohomish County
    - @snocastnodes==1 for nodes representing Snohomish County
    - @snocastlinks==1 for links representing Snohomish County
  - Prior preparation of a TAZ to MAZ correspondence file
  - Use the toolbox "*rezone_matrix_data*"** to split TAZs into MAZs
  - And then run a SOLA traffic assignment on the split-zoned network

*** this toolbox was provided to us by INRO*

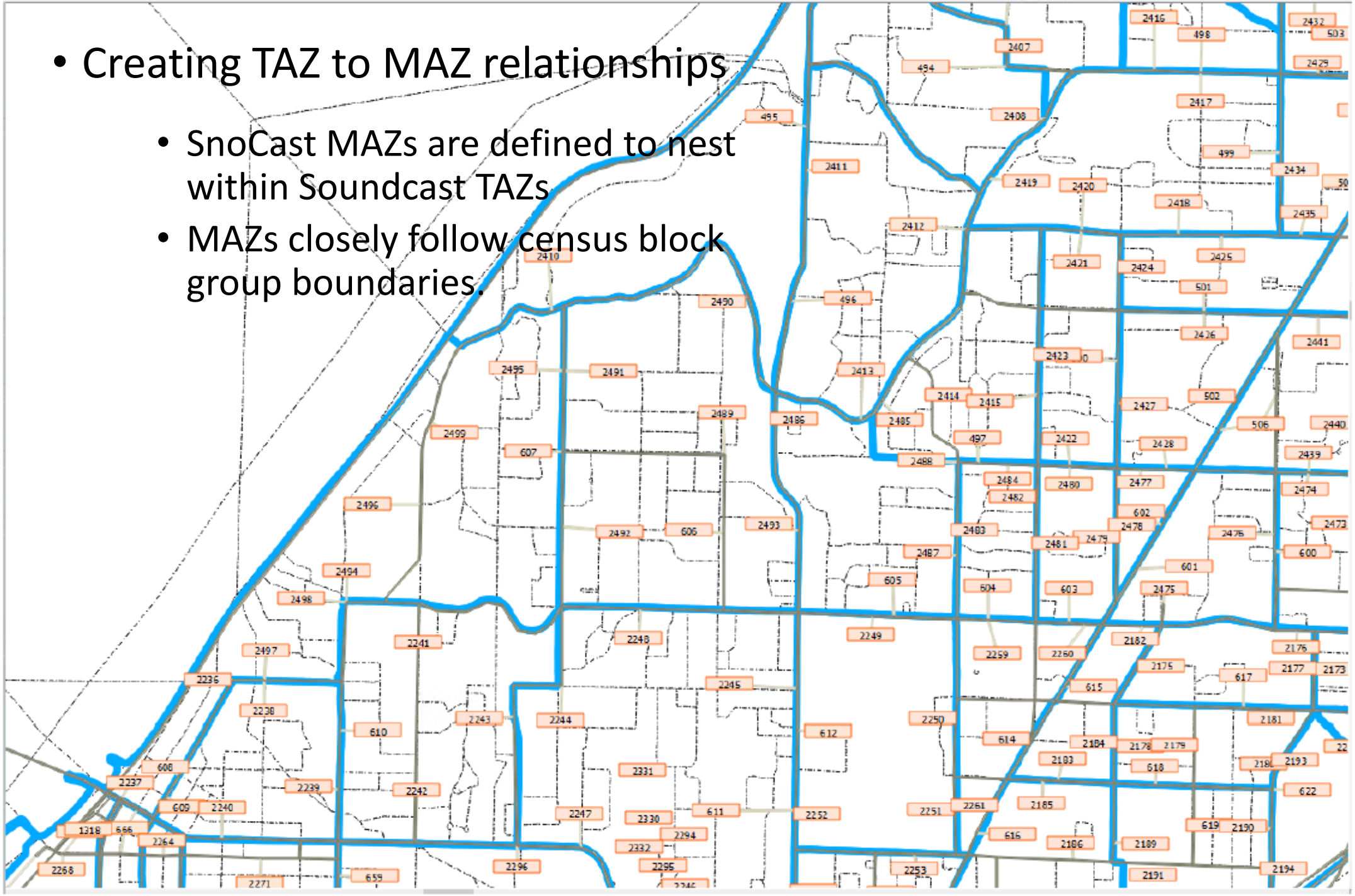


- SnoCast

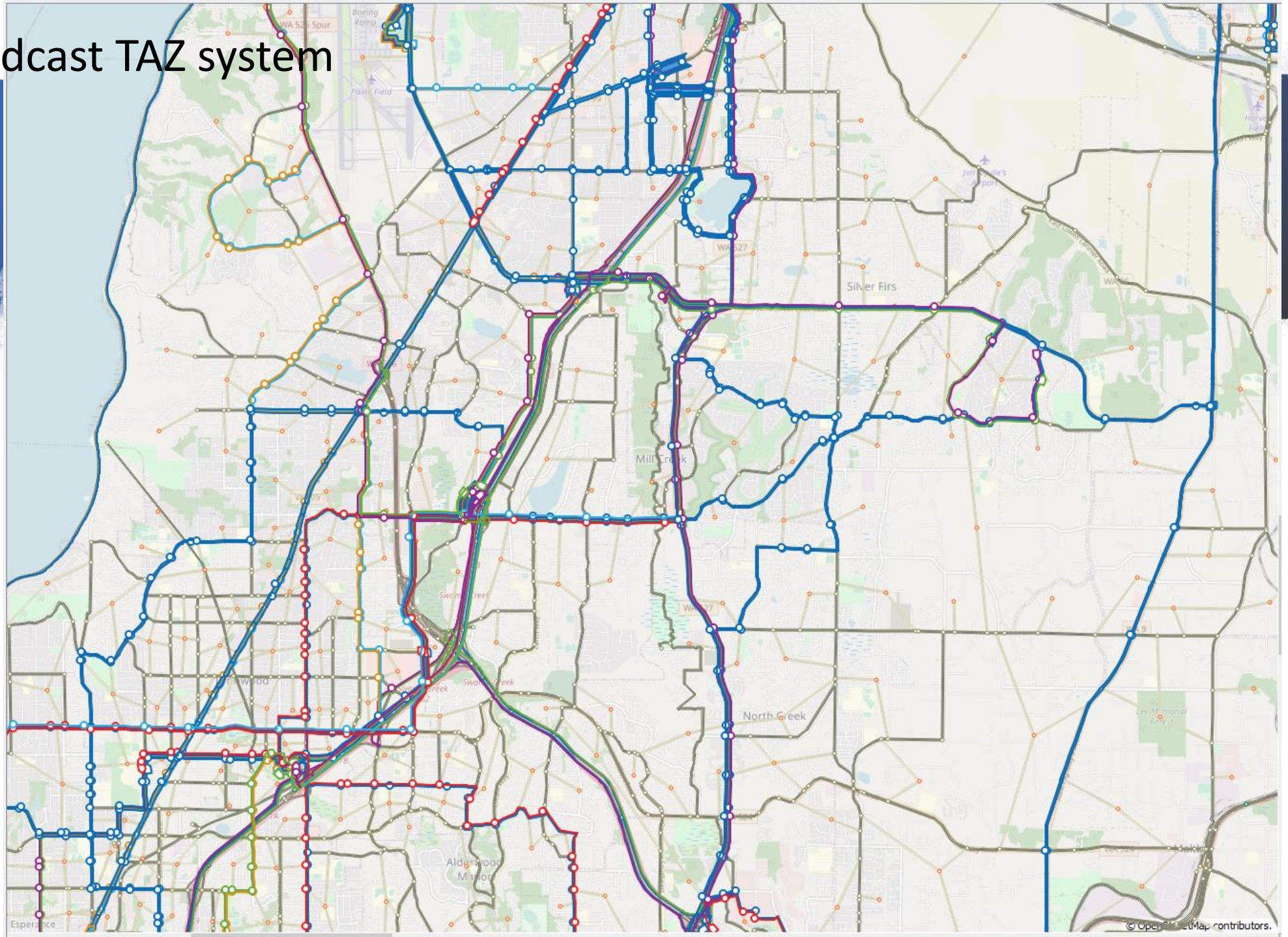
  Sub Regional Network

  Shown with Transit Lines

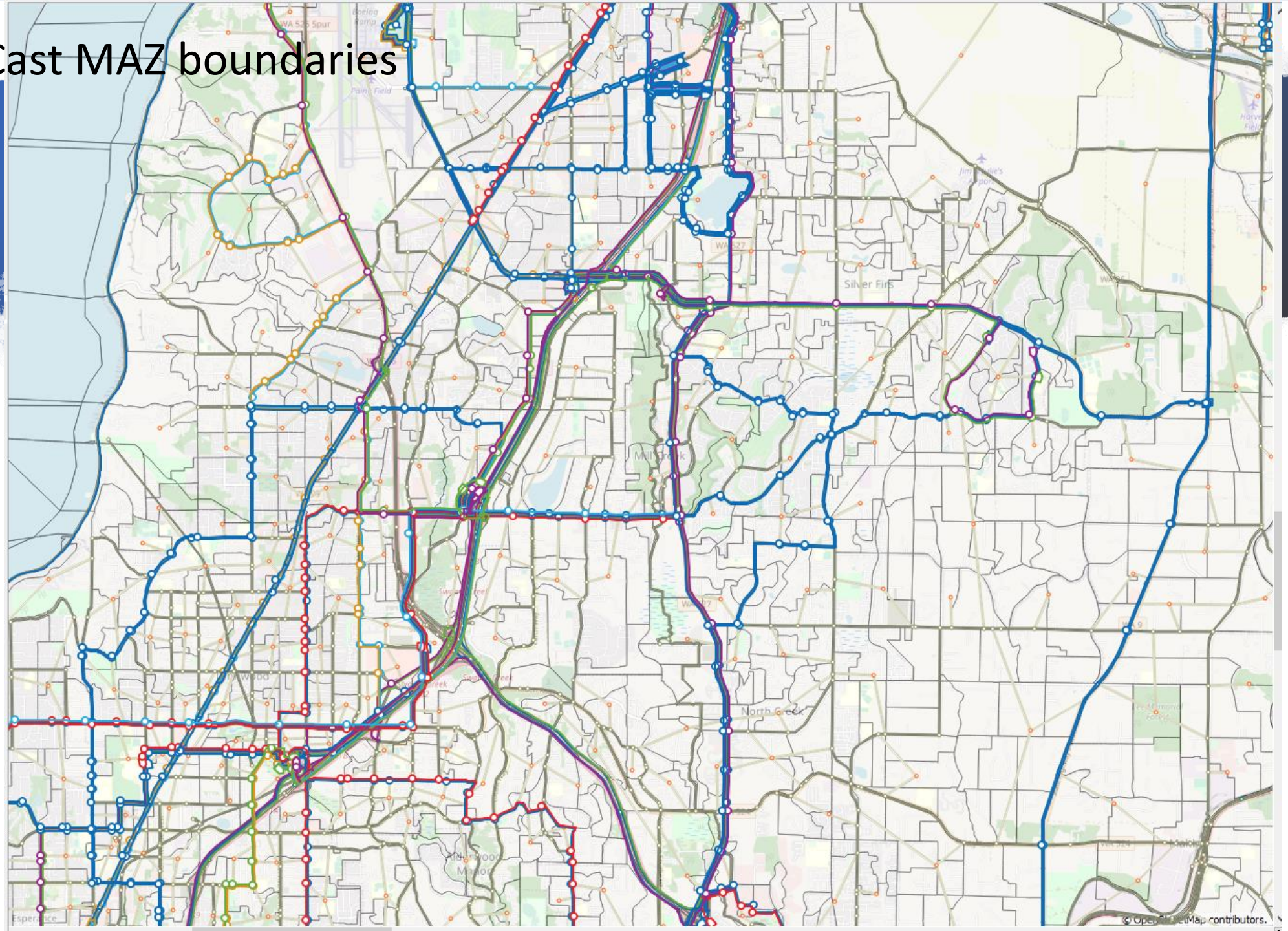
- Creating TAZ to MAZ relationships
  - SnoCast MAZs are defined to nest within Soundcast TAZs
  - MAZs closely follow census block group boundaries.



- Soundcast TAZ system



- SnoCast MAZ boundaries



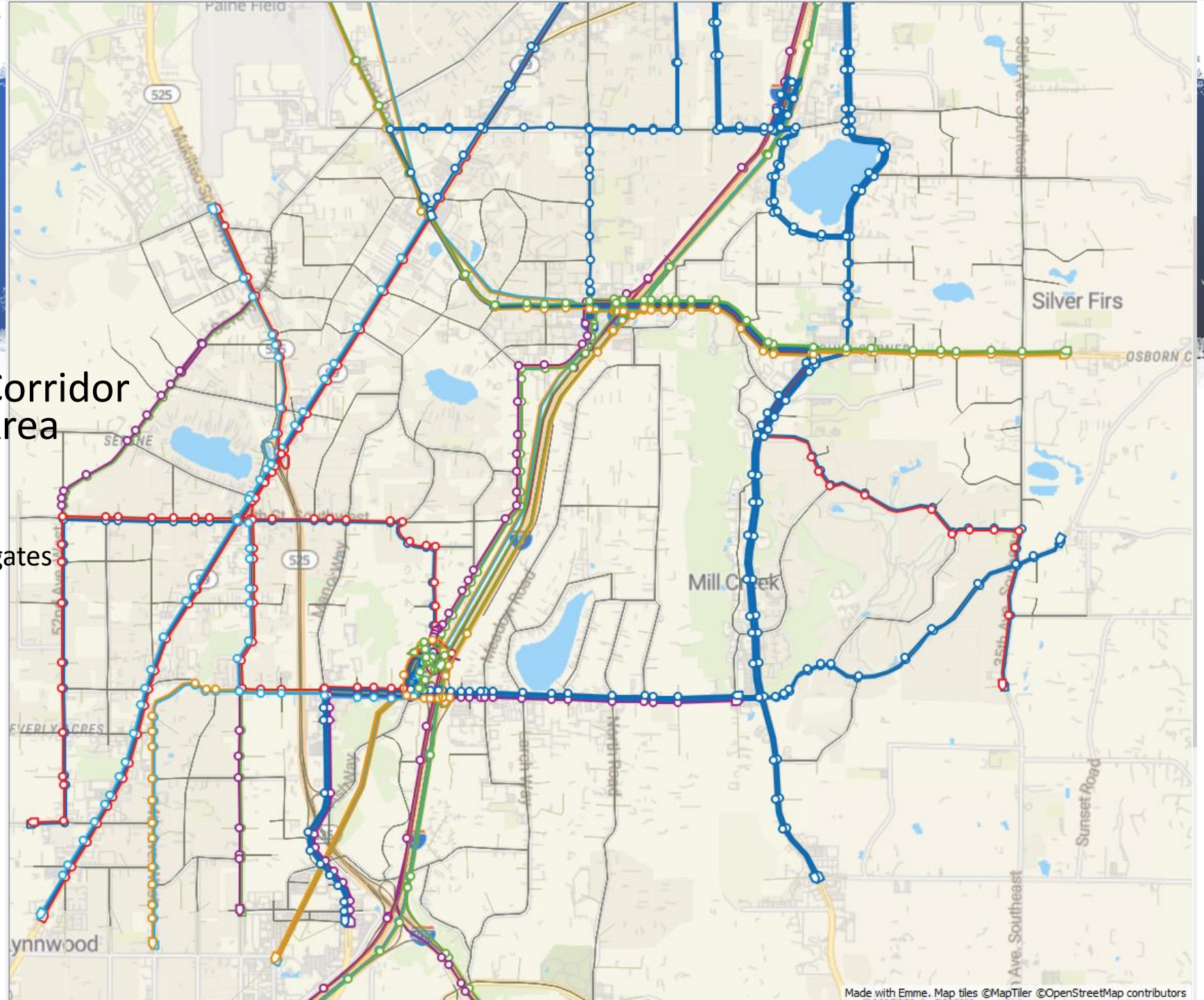
Comparing Model Networks

- Soundcast Model
  - 495 TAZs – to represent SC
  - Uses LODES data
  - Auto Network
    - Freeways
    - Arterials
    - Collectors
- SnoCast Model
  - 3500 MAZs – to represent SC
  - Uses refined LODES data
  - Expanded Auto Network
    - Freeways
    - Arterials
    - Collectors
    - Local roads
    - Access roads
    - Drive ways

A Recent Application of SnoCast.
East West Corridor Sub Area Study

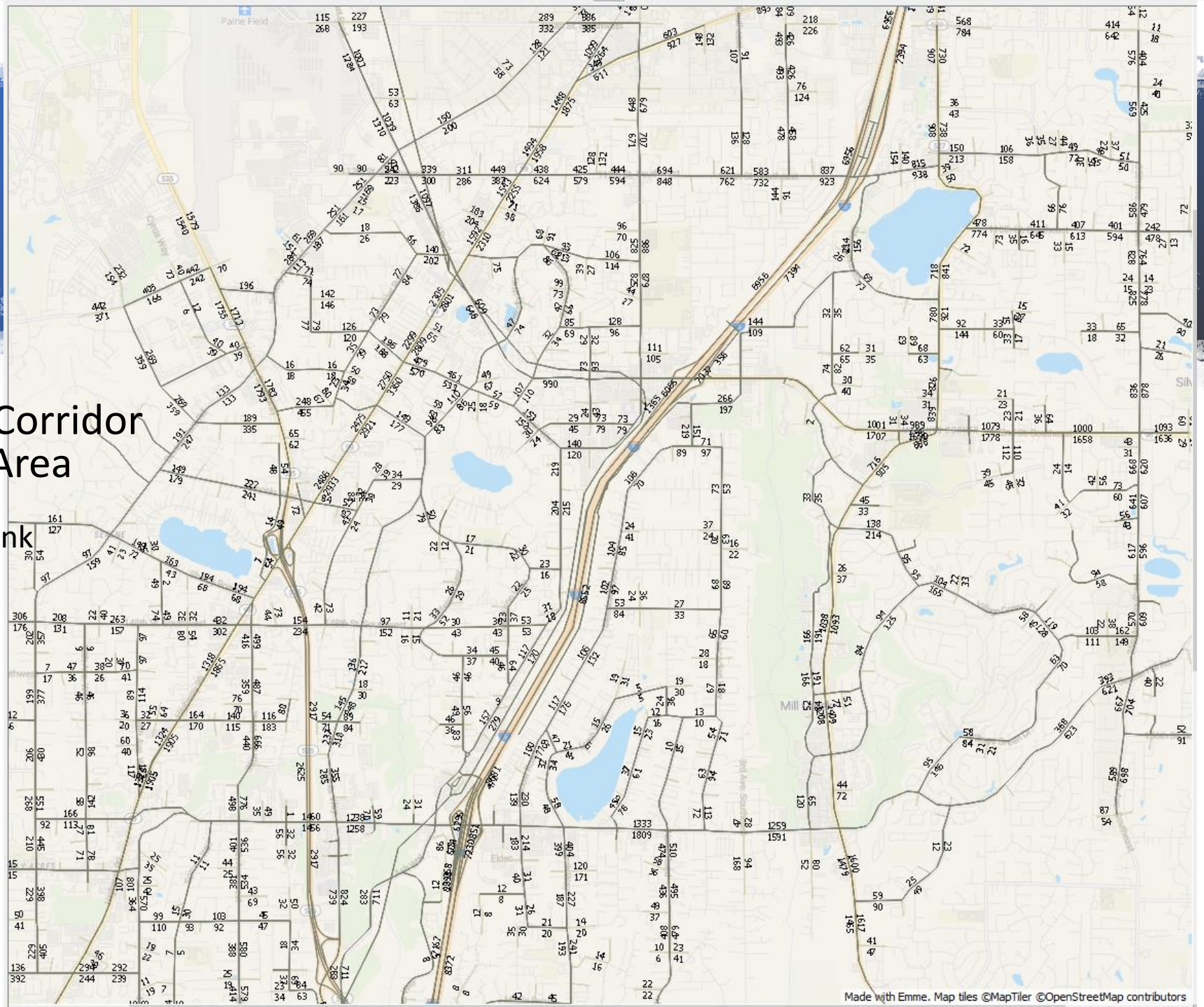
- Objective: To provide input data to a Dynameq mesoscopic model for the EWC study area
- Task: To output hourly trip tables for PM period
  - From 1:00 PM – 9:00 PM (8-hours duration)
  - Output trip tables for three modes from a SnoCast created sub area model
    - SOVs – drive alone vehicles
    - HOVs – sum of HOV2, HOV3 and Vanpools
    - Trucks – sum of light, medium and heavy trucks
- Use EMME-Modeler tools to export the created trip tables directly to Dynameq

- East West Corridor Study Area
  - 45 Transit lines
  - 490 MAZs and gates
  - 95 signalized intersections



- East West Corridor Study Area

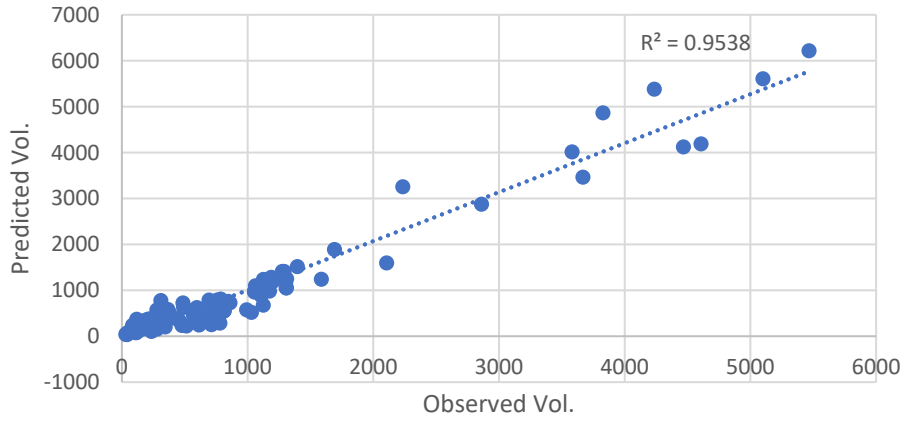
PM peak hour Link volumes



Calibrating the Sub Area Volumes

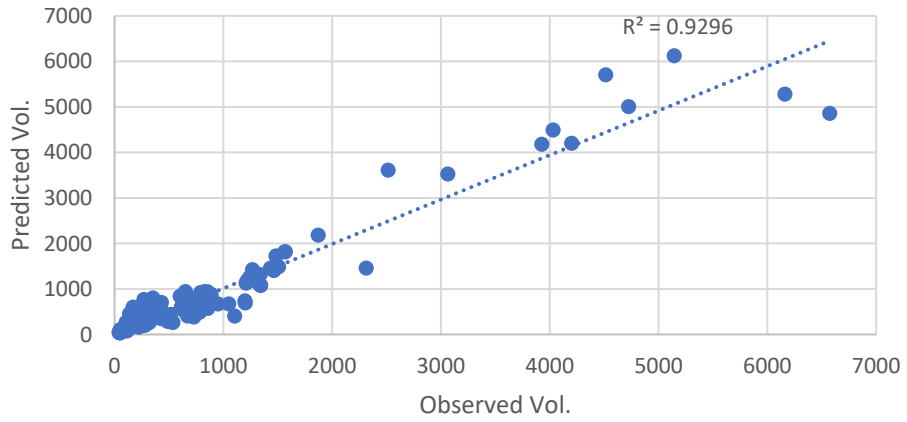
Calibration Statictics – Before Peak Travel

1:00 p.m. (TSH 0) CV/MV



- R-Squared = 0.9538
- Correlation Coeff = 0.977

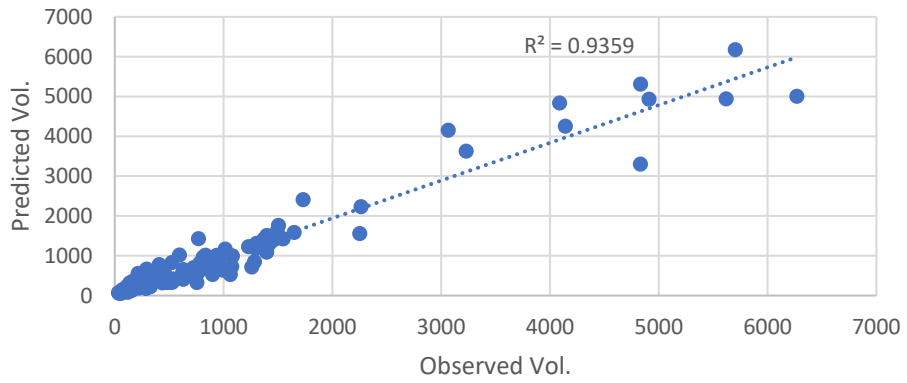
2:00 p.m. (TSH 1) CV/MV



- R-Squared = 0.9296
- Correlation Coeff = 0.964

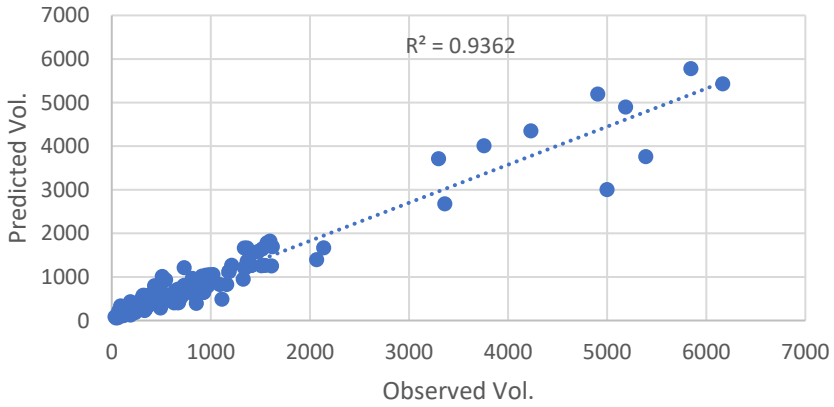
Calibration Statictics - Peak Travel 1

3:00 p.m. (TSH 2) CV/MV



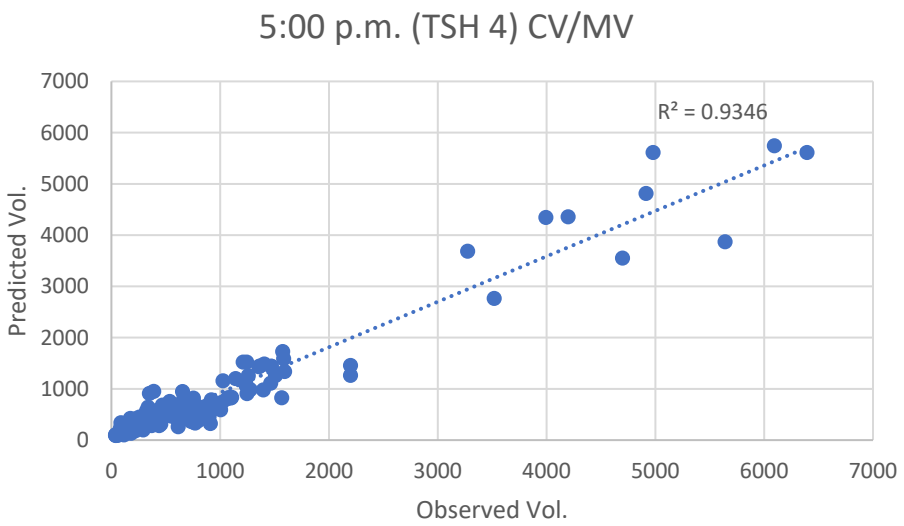
- R-Squared = 0.9359
- Correlation Coeff = 0.967

4:00 p.m. (TSH 3) CV/MV

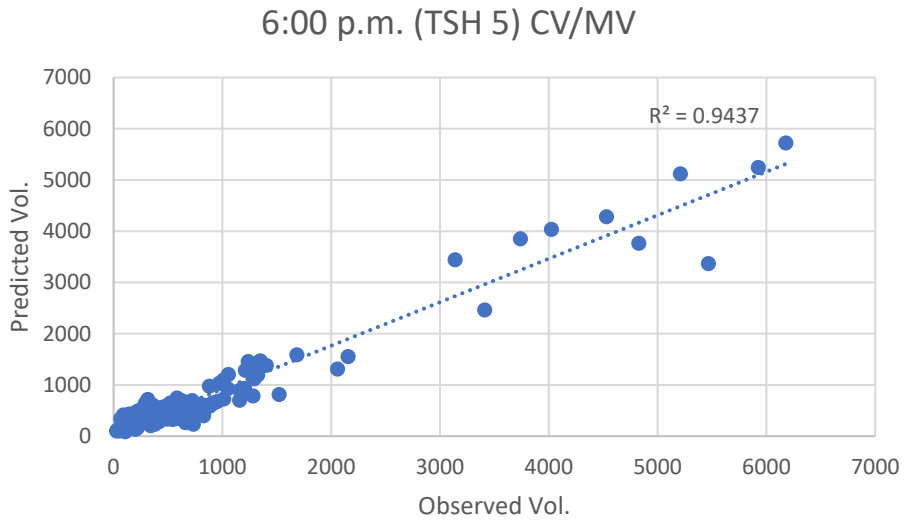


- R-Squared = 0.9362
- Correlation Coeff = 0.968

Calibration Statictics – Peak Travel 2

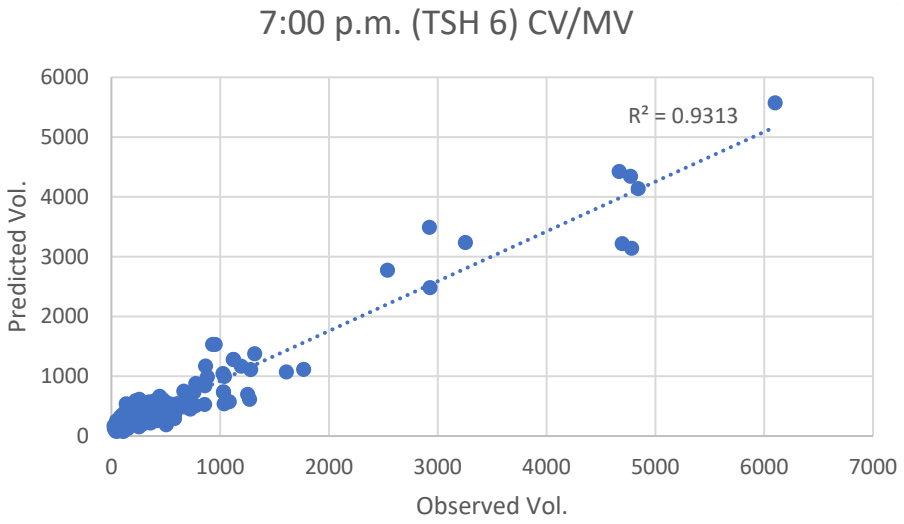


- R-Squared = 0.9346
- Correlation Coeff = 0.967

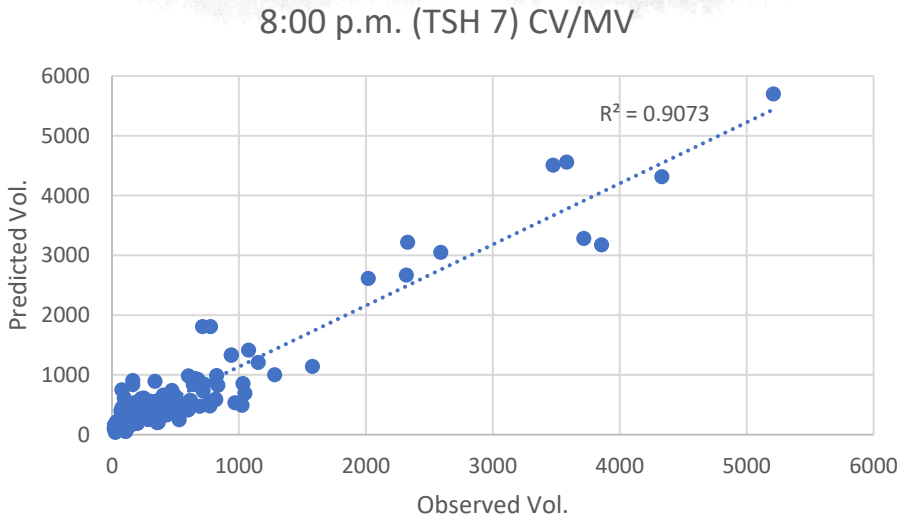


- R-Squared = 0.9497
- Correlation Coeff = 0.975

Calibration Statictics – After Peak Travel



- R-Squared = 0.9313
- Correlation Coeff = 0.965



- R-Squared = 0.9073
- Correlation Coeff = 0.953

Summary

- Excellent correlation between observed counts and model results for study area for all modeled periods

  Correlation Coefficient (R) > 0.95

- Hourly trip tables output from SnoCast eliminated the need for factoring peak period trip tables

Potential To Do Tasks

- Calibrate to corridor travel speed studies
- Develop output templates specific to Snocast
- Develop a non-motorized (bike) network for Snohomish county
- Coordinate with transit agencies on future transit networks
- Develop Topsheet output summaries - similar to that produced after each Soundcast run.


Thank You
Questions?

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