Big Data in Transportation

Utilizing Big Data for Transportation Management

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Background

- What is “Big Data”?
  - Obfuscated/Anonymized collected through:
    - Cellular – Carrier Data
    - Location Based Services (LBS) – App Data
    - Connected Vehicles (CVD) – Vehicle Data
- Can I benefit from Big Data?

Example Products/Services

- Streetlight Data: www.streetlightdata.com
- Replica: www.replicahq.com
- INRIX : www.inrix.com
- LOCUS: www.locusdata.io

Others are available…

Features

- Origin-Destination / Zone-Activity
- Average Annual Daily Traffic
- Speed / Delay / Congestion
- Turning Movement Counts
- Multi-Modal Data
- Road Closure Scenarios
- VMT

- APIs available

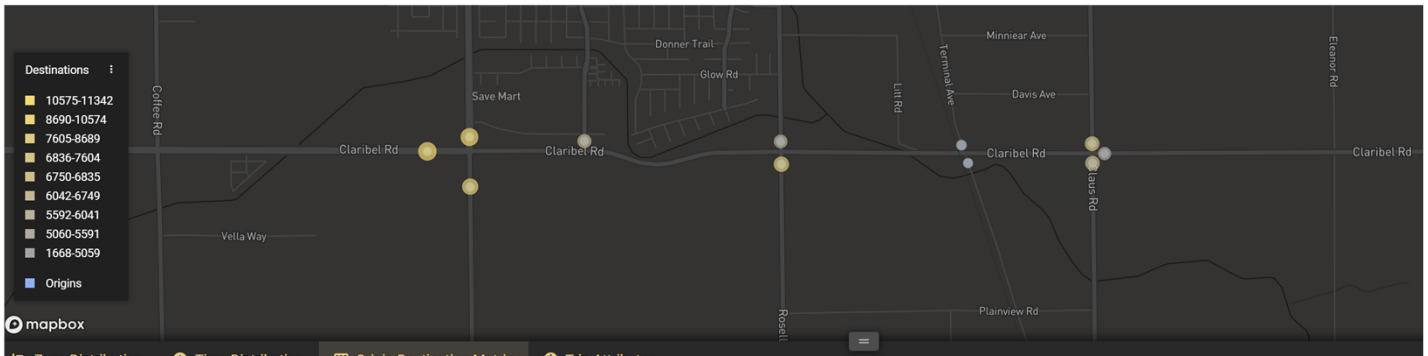
Basic Usage

- Create “Zones”
- Zones can be pre-set geography (ie… zip code, TAZ, census block, etc…)
- Custom Zones
  - Pass-through | No/Uni/Bi-Directional
  - Non-pass-through (Internal or Trip-End)
- Select Data Period
- Day Type (Weekday/Weekend/Friday/Custom)
- Day Parts (Hourly | AM/PM Peak)

Examples

Using Streetlight Data

Origin - Destination

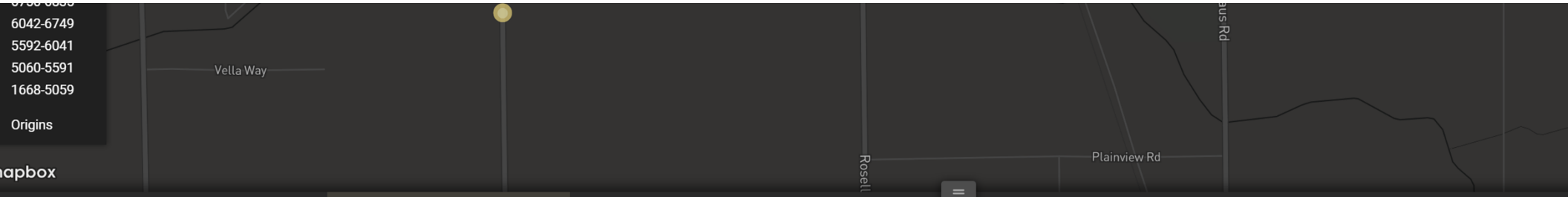


Zone Distribution | Time Distribution | Origin-Destination Matrix | Trip Attributes

Origin-Destination Matrix

Destinations

Origins	D1	D10	D11	D2	D3	D4	D5	D6	D7	D8	D9	
O1	0	165	1,752	4,289	1,742	1,334	791	1,388	567	290	749	13,067
O10	135	0	1,213	30	42	112	96	33	32	12	4,896	6,601
O11	1,372	992	0	83	301	585	241	137	29	22	271	4,033
O2	3,260	22	101	0	5,008	144	91	238	30	68	36	8,998
O3	2,097	41	388	5,635	0	883	229	166	177	23	210	9,849
O4	1,040	106	886	96	837	0	205	1,891	414	356	437	6,268



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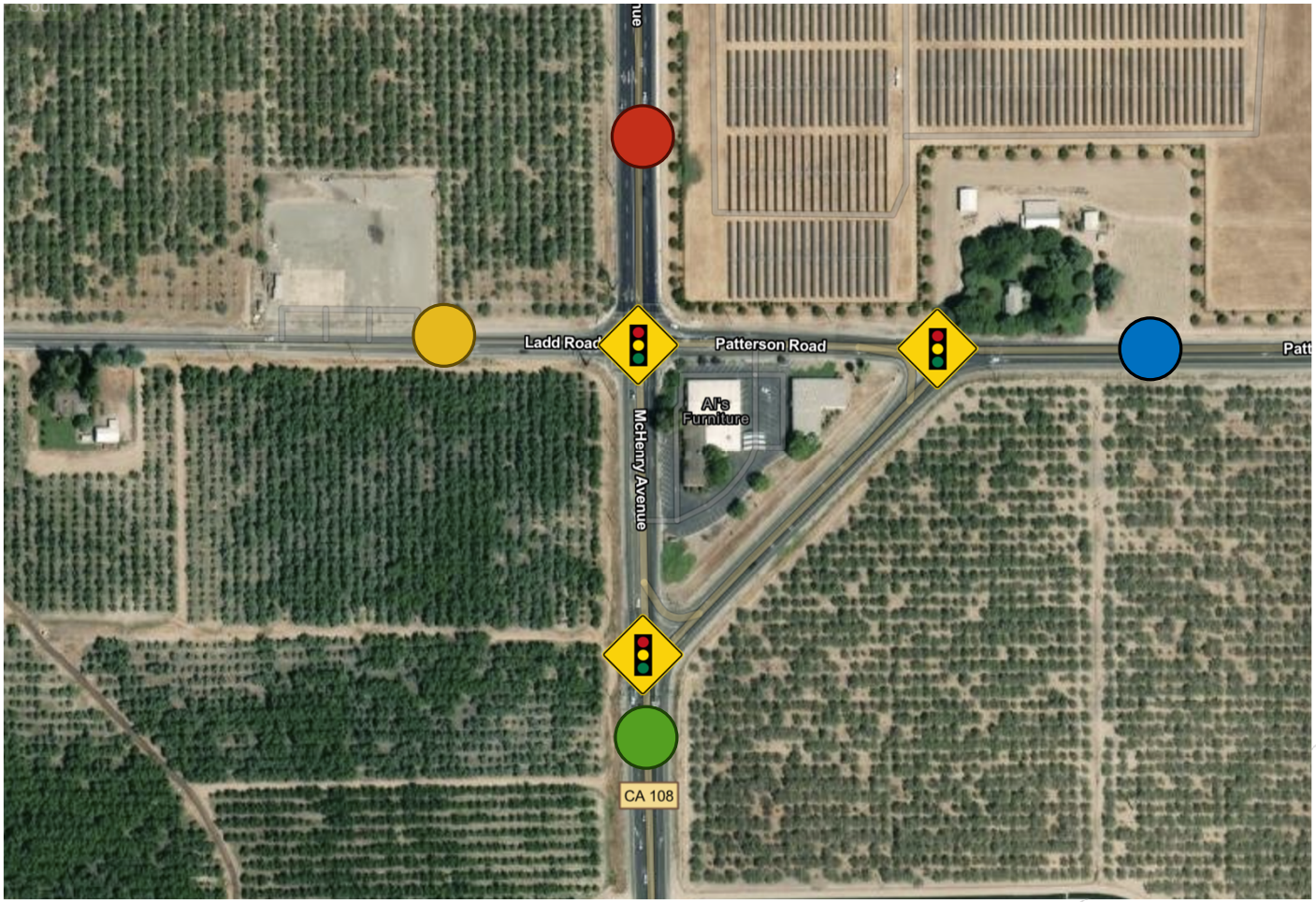
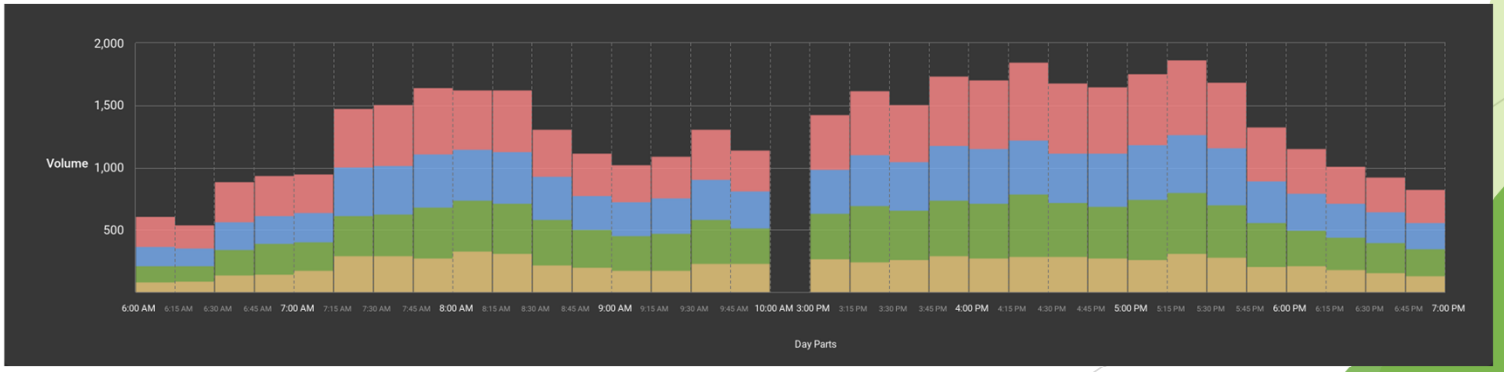
Turn Movement Counts



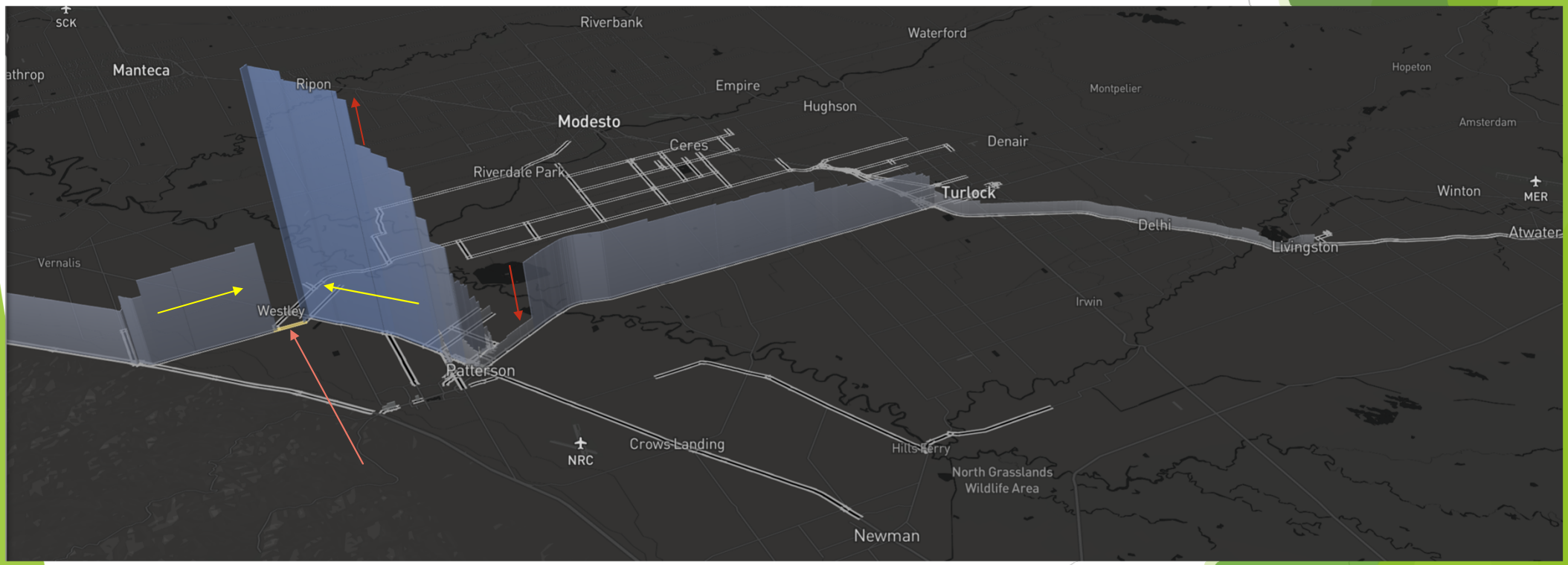
Turning Movement Counts



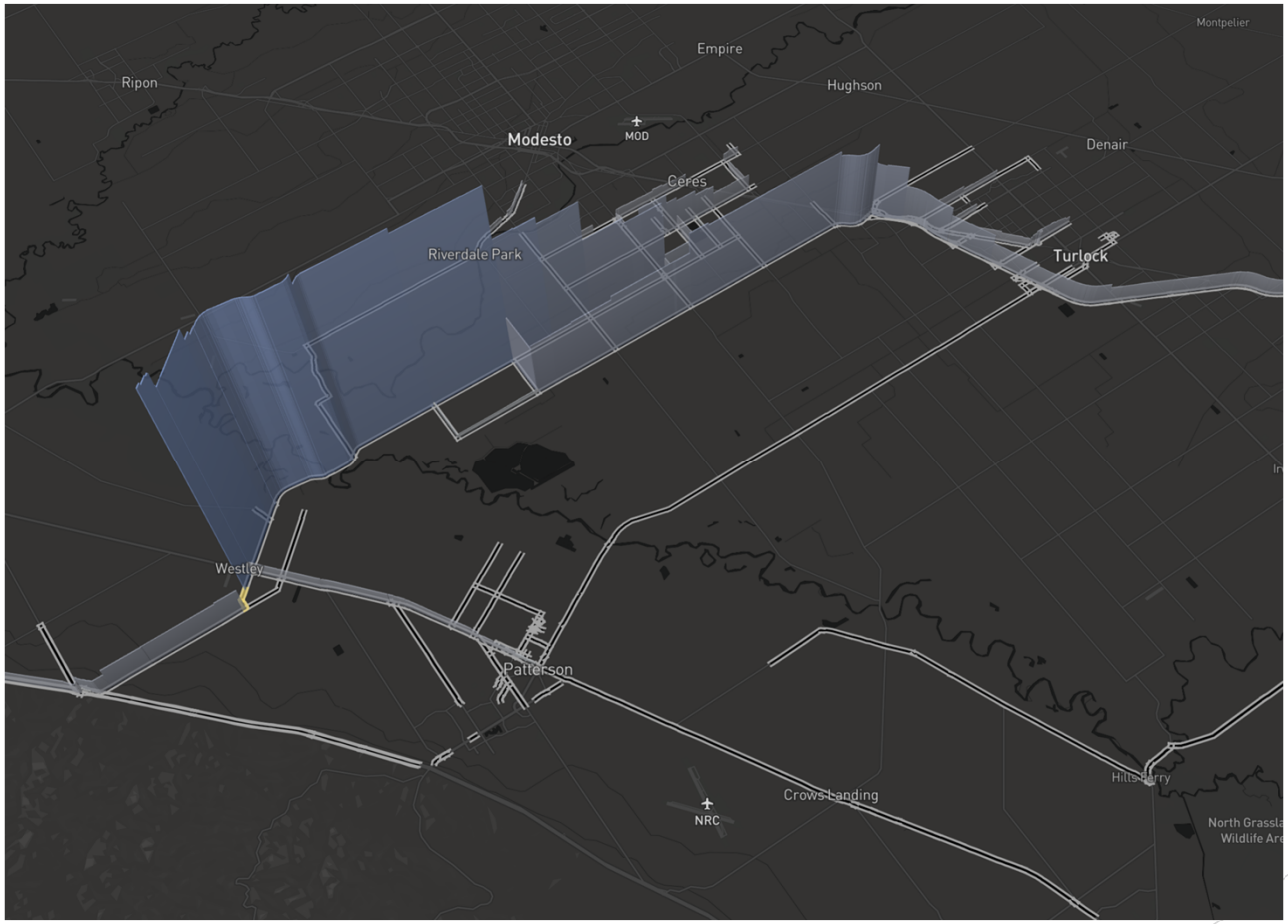
Top Routes

Santa Venetia
Martinez
Pittsburg
Antioch
Oakley
Lincoln Village
Concord
Stockton
Richmond
Clayton
Brentwood
Paradise Cay
Walnut Creek
Mount Diablo State Park
Berkeley
Danville
Valley Home
Oakland
Manteca
San Francisco
Alameda
San Ramon
Mountain House
Oakdale
Tracy
Ripon
Riverbank
San Leandro
San Francisco Bay
Hayward
Pleasanton
Livermore
Modesto
Waterford
Bruno
Ceres
Hughson
Union City
San Mateo
Fremont
Redwood City
Turlock
Patterson
Palo Alto
Milpitas
Delhi
NUQ
Crows Landing
Livingston
Sunnyvale
San Jose
Cupertino
Newman
Campbell
Gustine
Los Gatos
Grasslands Wildlife Management Area
Henry W. Coe State Park
Route Segments
270-273
212-269
188-211
154-187
127-153
96-126
59-95
24-58
1-23
Zones

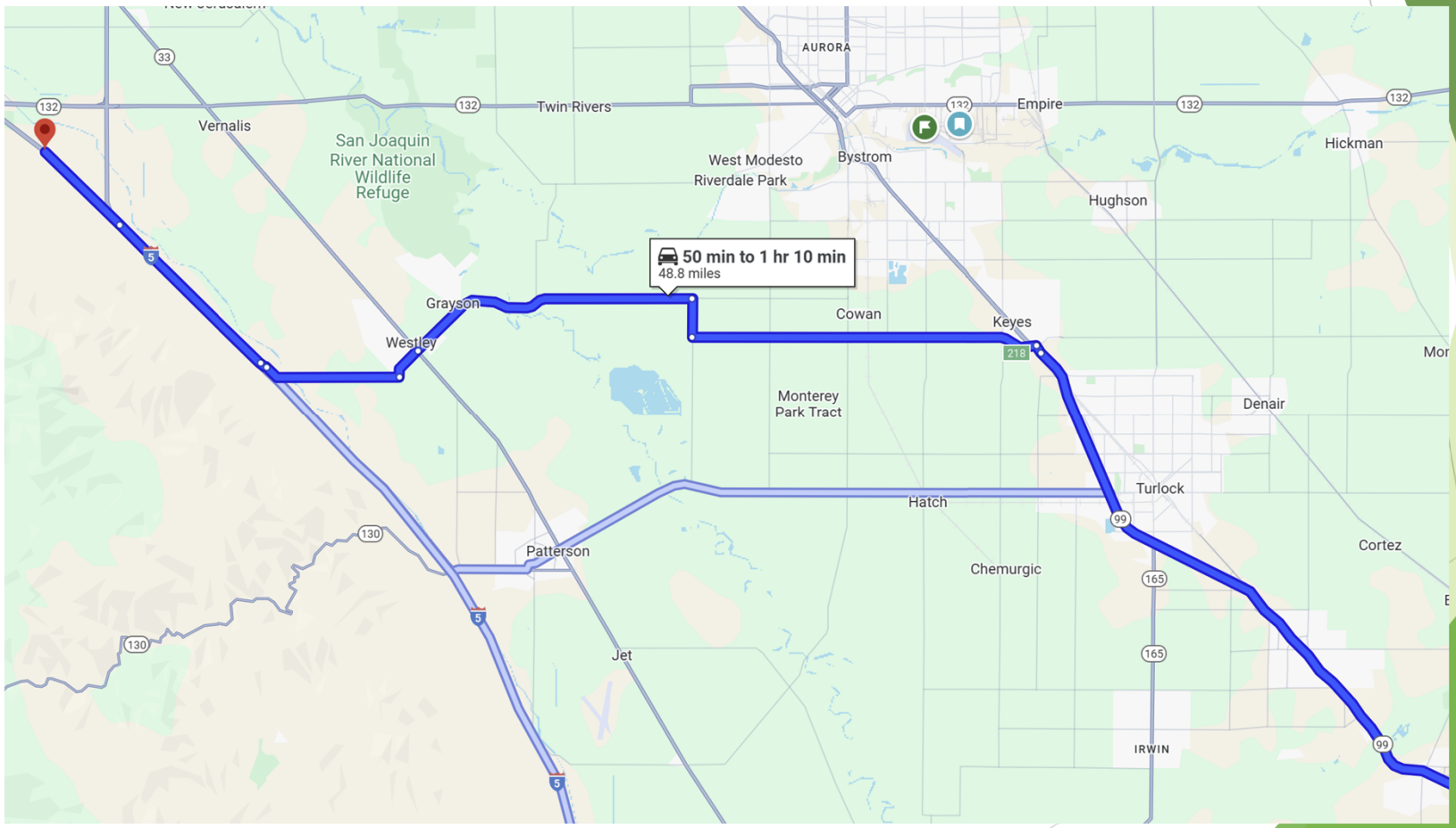
Top Routes


SCK
Riverbank
Waterford
Manteca
Ripon
Empire
Hughson
Modesto
Ceres
Riverdale Park
Denair
Turlock
Montpelier
Hopeton
Amsterdam
Winton
MER
Delhi
Livingston
Atwater
Vernalis
Westley
Irwin
Patterson
NRC
Crows Landing
Hills Ferry
North Grasslands
Wildlife Area
Newman

Top Routes


Montpelier
Empire
Ripon
Hughson
Modesto
MOD
Denair
Ceres
Riverdale Park
Turlock
Westley
Patterson
Crows Landing
NRC

Google Maps


AURORA
Twin Rivers
Empire
Vernalis
San Joaquin River National Wildlife Refuge
West Modesto
Riverdale Park
Bystrom
Hickman
Hughson
50 min to 1 hr 10 min
48.8 miles
Grayson
Cowan
Keyes
Westley
Monterey Park Tract
Denair
Turlock
Hatch
Patterson
Chemurgic
Cortez
Jet
IRWIN

Questions | Discussion

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