



CAMBRIDGE
SYSTEMATICS

Think  Forward

Teton County Travel Model

presented to

Stakeholder Advisory Committee

presented by

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Outline

- Demand Model Overview
- Simulation Overview
- Simulation Findings

Travel Demand Modeling Overview

What is a Travel Demand Model?

- A **tool** to provide travel information that can aid in planning for transportation improvements
- A way of **organizing your assumptions**
- A program that can "predict" existing travel demand and forecast travel demand for future scenarios

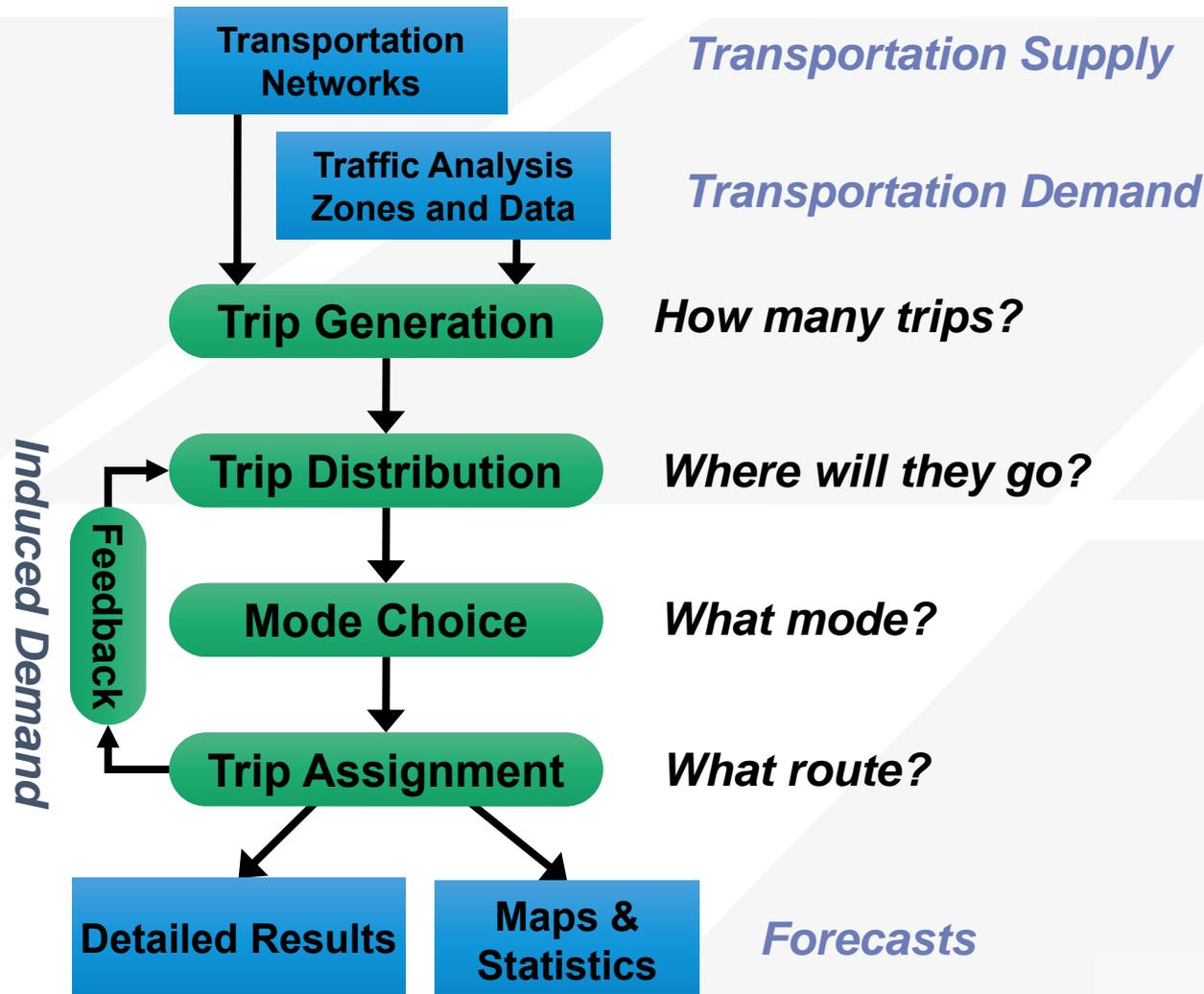
Real world



Modeled World



The Four Steps



Traffic Simulation Model Overview

What is a Simulation Model

➤ Operations Assessment Tool

- » Simulates the decisions of drivers and movement of vehicles
- » Second by second decisions simulated
- » Route choices consider realistic delays and queues
- » Lane level geometries and operations (turn bays, weaving, merging, etc.)
- » Simulates signals with realistic field phasing and timings
- » Drivers responds to other vehicles, signals, signs, pedestrians, & congestion to complete their trips

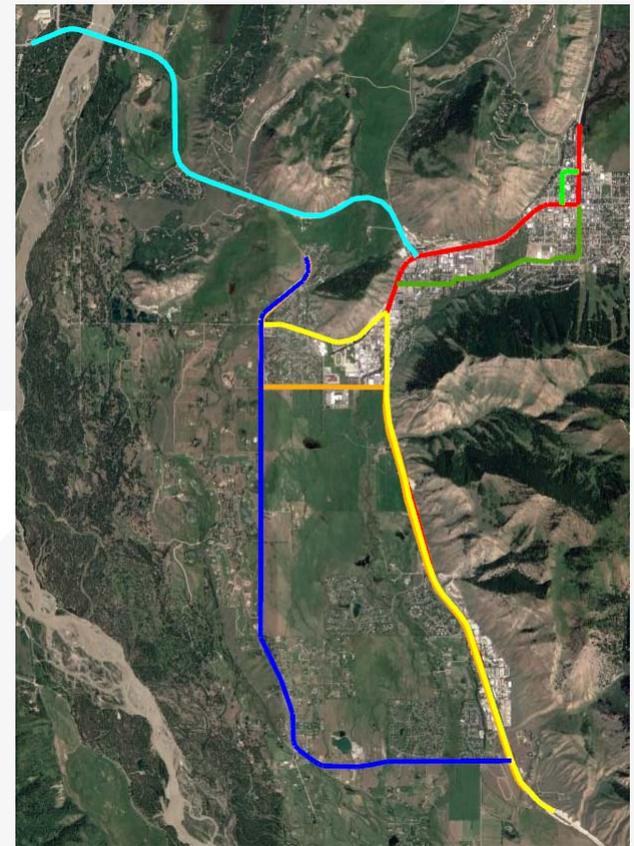
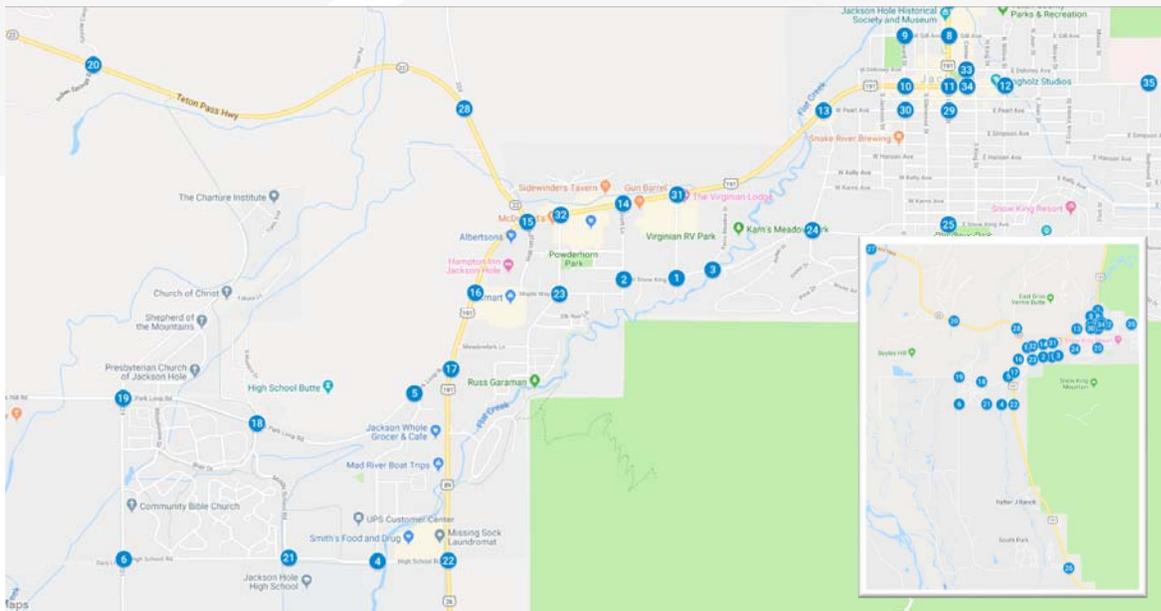


Simulation Picks up from Demand Model

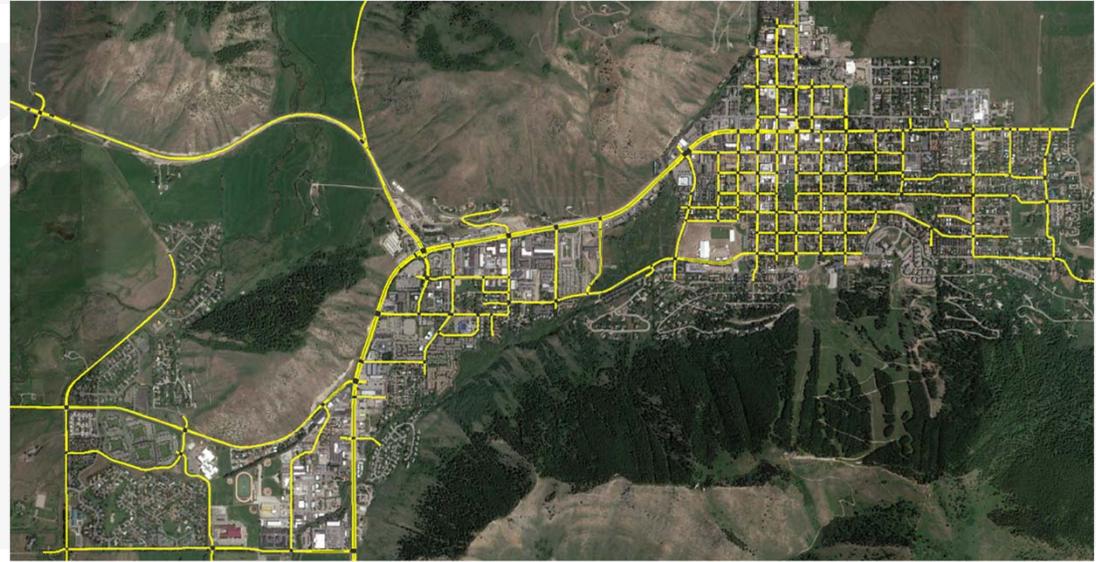
- Uses demand models estimates of trip demands and growth forecasts
- Calibrated against field counted turning volumes and travel times
- AM and PM peaks simulated
 - » 7:00 – 9:00am, 3:30-5:30 pm
- Summer Model Developed
- Winter Model to be developed

Field Data Collection

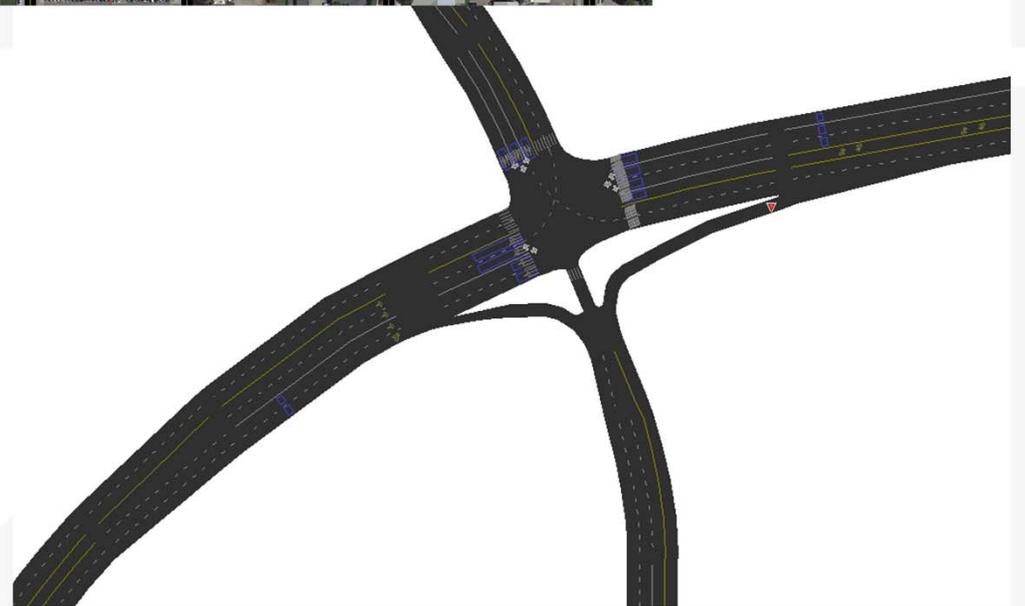
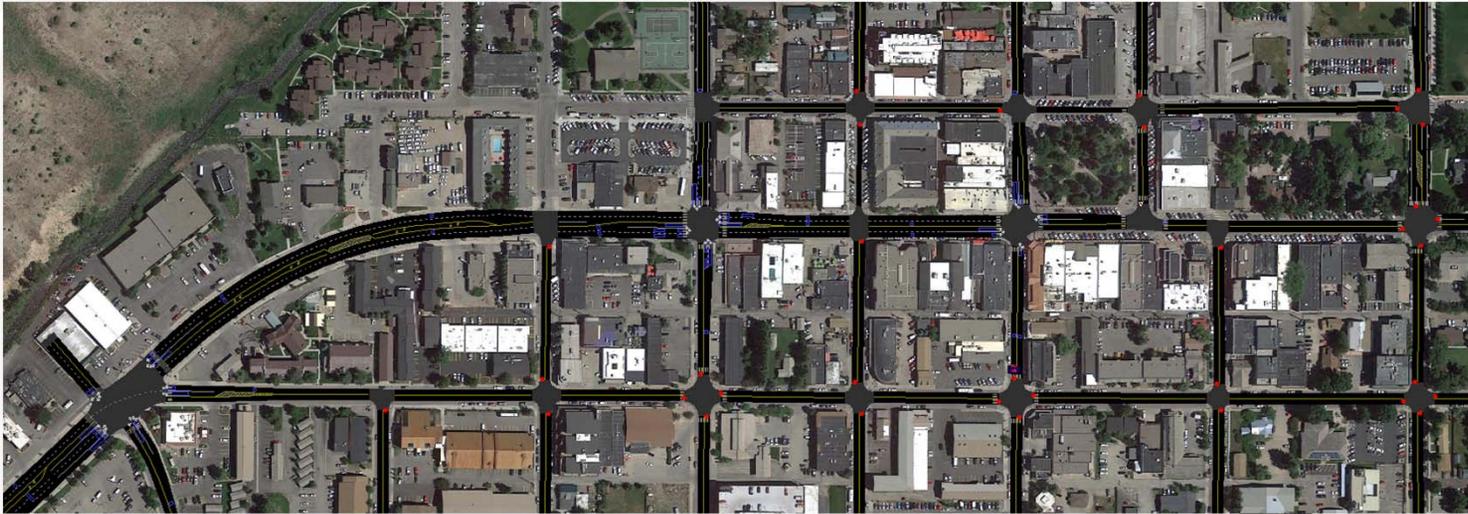
- 35 Intersections, 7 travel time corridors
 - » Summer July 23-25, 2019
 - » Winter February 25-27, 2020



Simulation Network - Overview

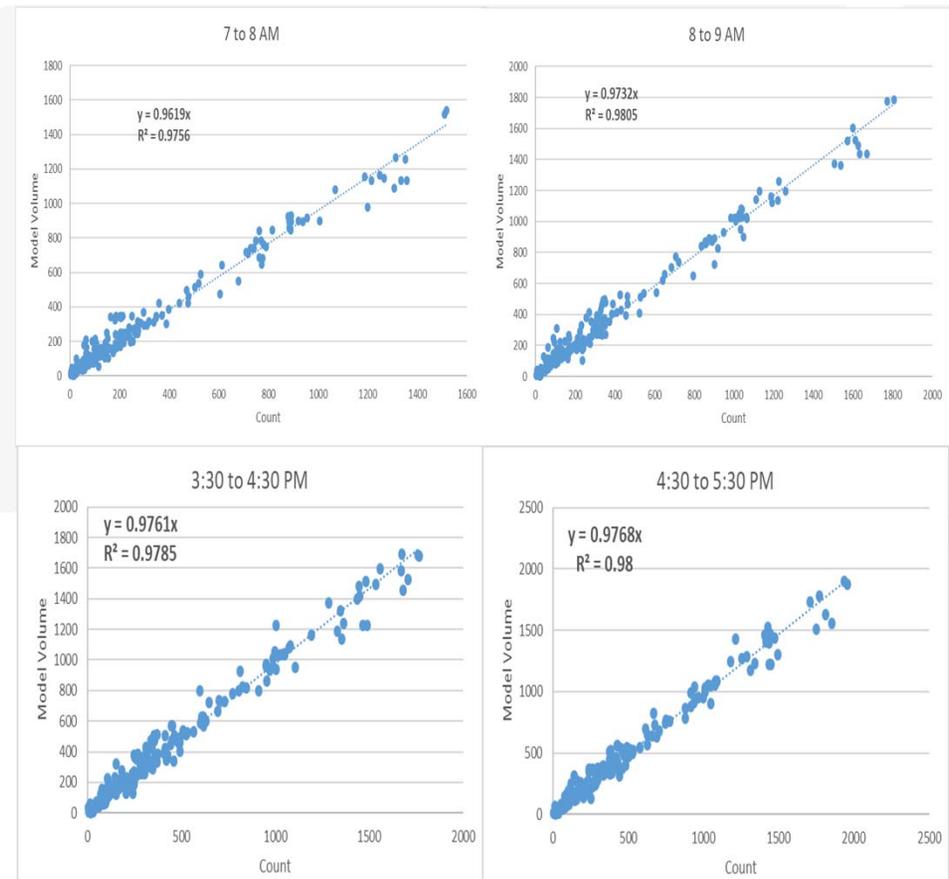


Simulation Network - Details



Model Calibration

- Adjust Driver Behaviors to reflect local conditions
 - » Headways
 - » Gap Acceptance
 - » Speed Adherence
- Tune Demand Model Trip ODs to better reflect counts



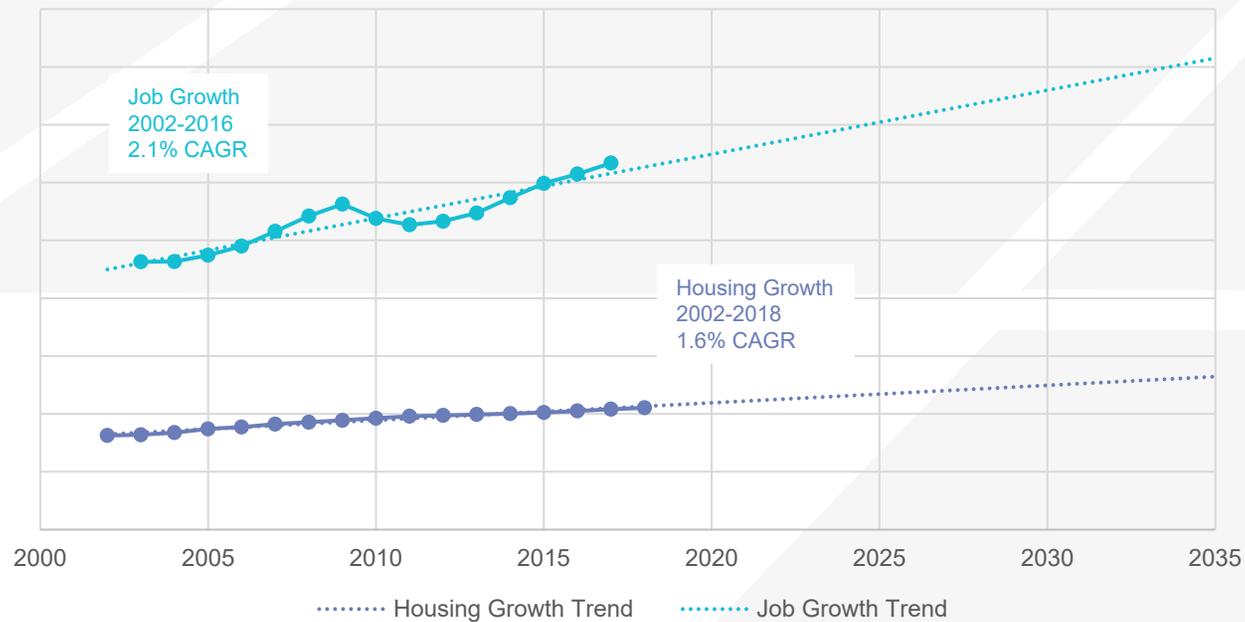
Performance Metrics (Typical)

- Delays (total and per vehicle)
- Queue Lengths
- Corridor Travel Times
- Vehicle Hours Traveled
- HCM-style Level of Service (LOS)
- Animations

Forecast Year Data & Assumptions

How Was Growth Projected

Jobs, Housing Growth Projection



Simulation Findings

Tribal Trail Simulations

- Alternatives Developed
 - » No Build (no Tribal Trail connection)
 - » Tribal Trail with
 - Interchange with WYO 22
 - Roundabout with WYO 22
 - Signalized Intersection with WYO 22

- Two future years:
 - » 2030 2-Lane WYO 22
 - » 2045 4-Lane WYO 22

Preliminary Findings Overview

- No Build Improvements
 - » Impacts of the Florida T at 22/390
- Tribal Trial Impacts on:
 - » Operations on WYO 22
 - » Operations at the Y

No Build Impacts

- Changing baseline for all future analyses
- Florida T improvement at 22 & 390 improves PM operations
- Simulated Westbound Summer PM peak hour travel times
 - » Downtown Jackson to WYO 22 & 390
 - » Existing Conditions: 37 minutes
 - » 2030 No Build Conditions: 23 minutes (- 14 min)
 - » 2045 No Build Conditions: 26 minutes (- 11 min)

Tribal Trail Connection

➤ Levels of Service: Interchange

| | Appr. | 2030 AM | 2045 AM | 2030 PM | 2045 PM |
|---------------|-------|---------|---------|---------|---------|
| Tribal Trail | NB | A | A | B | B |
| Coyote Canyon | SB | A | A | A | A |
| WYO 22 | EB | A | A | A | B |
| WYO 22 | WB | A | A | A | A |

Tribal Trail Connection

➤ Levels of Service: Signal

| | Appr. | 2030 AM | 2045 AM | 2030 PM | 2045 PM |
|---------------|--------|---------|---------|---------|---------|
| Tribal Trail | NB T/R | D | C | E | C |
| | NB L | D | D | E | D |
| Coyote Canyon | SB T/R | B | B | C | C |
| | SB L | C | D | C | C |
| WYO 22 | EB T/R | D | B | B | B |
| | EB L | E | A | E | F |
| WYO 22 | WB T/R | A | B | D | A |
| | WB L | D | E | E | E |

Tribal Trail Connection

➤ Levels of Service: Roundabout

| | Appr. | 2030 AM | 2045 AM | 2030 PM | 2045 PM |
|---------------|-------|---------|---------|---------|---------|
| Tribal Trail | NB | F | F | D | D |
| Coyote Canyon | SB | B | D | E | E |
| WYO 22 | EB | A | C | C | A |
| WYO 22 | WB | A | B | C | C |

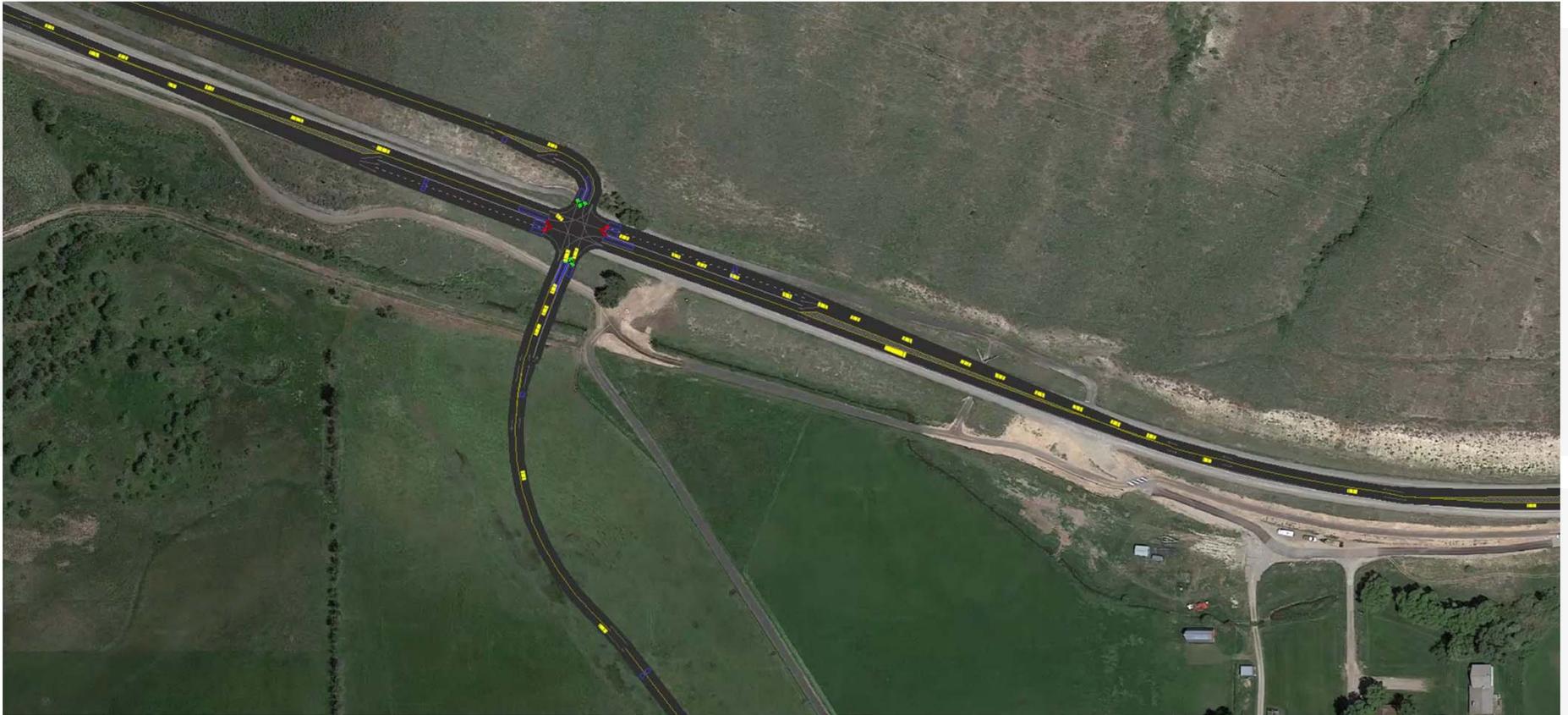
2030 PM: Tribal Trail with Interchange



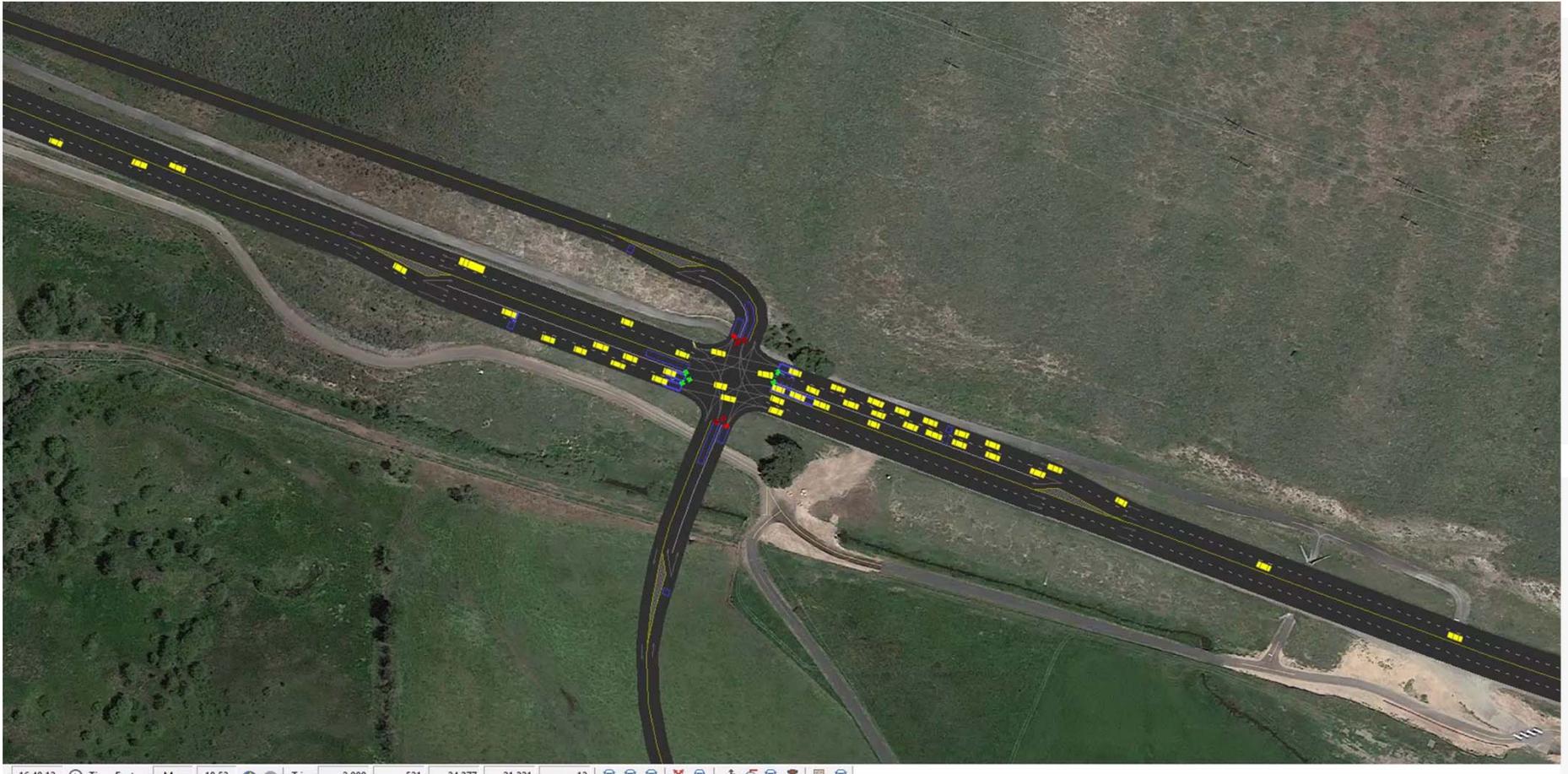
2045 PM: Tribal Trail with Interchange



2030 PM: Tribal Trail with Signal



2045 PM: Tribal Trail with Signal



Impacts of Tribal Trail on the Y

➤ No Build 2045 PM

➤ Build 2045 PM



➤ Volume Reductions:

- » Left turn from Broadway to 22: 15-20%
- » Right Turn from 22 to Broadway: 10-12%

Impacts on the Y

➤ Delays per Vehicle – AM Peak Hour

| | Appr. | 2030 NoBld | 2030 Signal | 2045 NoBld | 2045 Signal |
|------------|----------|---------------|----------------|---------------|----------------|
| WYO 22 | L | 67 | 55 | 270 | 257 |
| Southbound | LT | 65 | 57 | 251 | 234 |
| | R | 54 | 44 | 237 | 211 |
| Broadway | L | 56 | 41 | 77 | 58 |
| Eastbound | R | 46 | 47 | 68 | 78 |
| Broadway | L | 48 | 51 | 55 | 56 |
| Westbound | T | 40 | 38 | 43 | 42 |
| | R | 13 | 11 | 18 | 16 |

Impacts on the Y

➤ Delays per Vehicle – PM Peak Hour

| | Appr. | 2030 NoBld | 2030 Signal | 2045 NoBld | 2045 Signal |
|------------|----------|---------------|----------------|---------------|----------------|
| WYO 22 | L | 50 | 38 | 189 | 82 |
| Southbound | LT | 65 | 46 | 273 | 125 |
| | R | 70 | 37 | 289 | 129 |
| Broadway | L | 63 | 50 | 173 | 62 |
| Eastbound | R | 36 | 43 | 50 | 40 |
| Broadway | L | 50 | 53 | 66 | 70 |
| Westbound | T | 30 | 36 | 69 | 66 |
| | R | 27 | 13 | 72 | 41 |

Thank You