TSMO Advances in ALDOT's West Central Region

Chris Sewell, P.E.

Ken Colvert

Outline

TMC History and Operations

Alabama Service and Assistance Patrol (ASAP)

UA Gameday Operations

Traffic Incident Management Responder Training

Traffic Signal Operations Program

Current ITS Projects

Future of ITS/TSMO in Transportation

Tuscaloosa Regional Traffic Management Center

Ken Colvert

TMC Manager

ALDOT West Central Region

What is the Tuscaloosa TMC?

- The Tuscaloosa Regional Traffic Management Center is the communications and Operations hub for ALDOT's Intelligent Transportation System

- Tasked by FHWA CFR 511

  - The timeliness for the availability of information related to roadway or lane blocking traffic incident will be 20 minutes or less from the time that the incident is verified for highways outside of Metropolitan Areas and 10 minutes or less from the time that the incident is verified for roadways within Metropolitan areas.

Tuscaloosa Traffic Management Center

- TMC Objectives
  - Identify anything that impedes the flow of traffic
  - Notify motorist within the region of the incident and impact on their travel
  - Signal Operations

- Operations started June 2017
  - Monday thru Friday 8:00am to 5:00pm

- 24/7 Operations began January 2018

- Coverage includes ALDOT's West Central Region
 - 13 Counties
  - I-20/59, I-65, and I-22

Tuscaloosa Traffic Management Center

- 3 – 4 Operators per shift
- Continuously monitor traffic flow data
  - Cameras
    - 150+ cameras currently
    - 150 additional by end of 2023
  - Traffic Speed via Roadside Vehicle Detection & HERE data
    - Allows for Origin/Destination Travel Times
  - Law Enforcement and 911 Agency Interaction
    - CAD feeds from multiple agencies
    - Dispatch Radio for Tuscaloosa County 911
    - Alabama Law Enforcement Agency Radio

Tuscaloosa Traffic Management Center

- Other Resources Used to Manage and Monitor Roadways
    - Social Media
    - Media Outlets
    - Crowd-Sourcing Data
    - Speed Data
    - Speed Maps
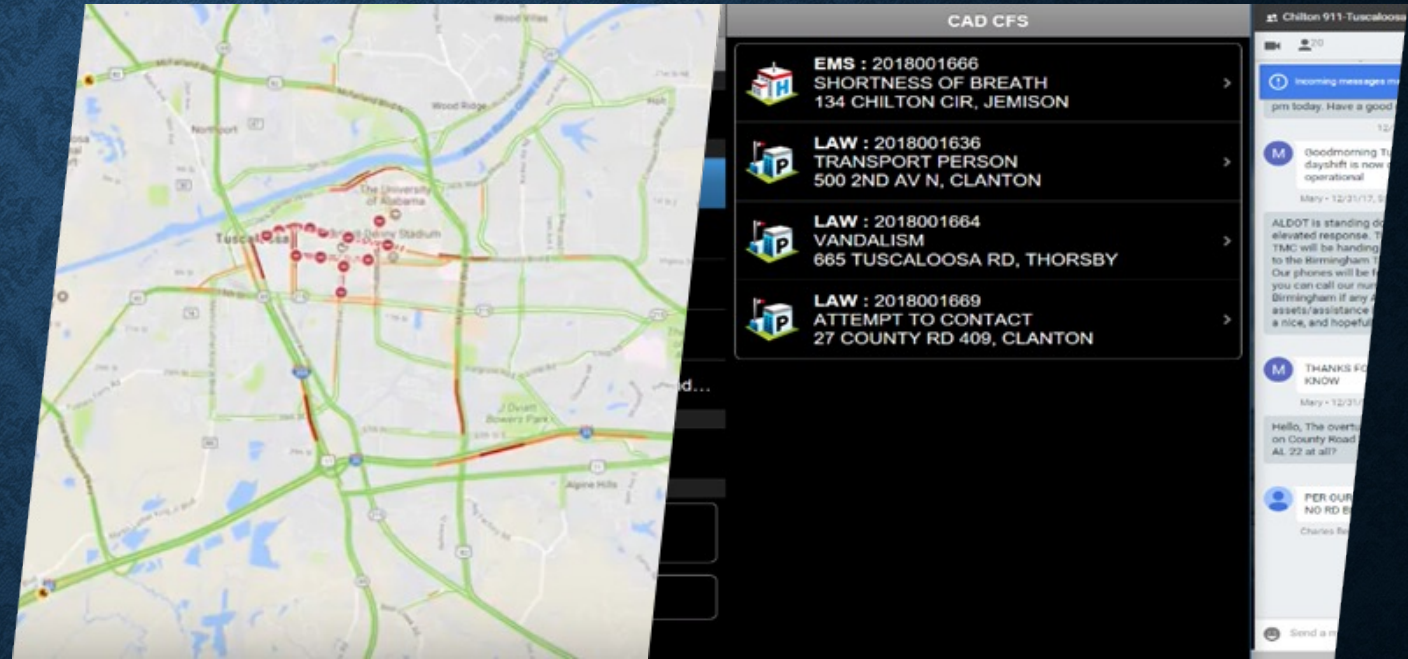
Algo Traffic

- Developed by UA Center for Advanced Public Safety

- Desktop and App versions

- Real-time Traffic Data uploaded directly from TMCs

  - Construction Zones

  - Crashes, Incidents, and Disabled Vehicles

  - Traffic Speed

- Access to traffic cameras across the state

- NWS Alerts

- Video Algo
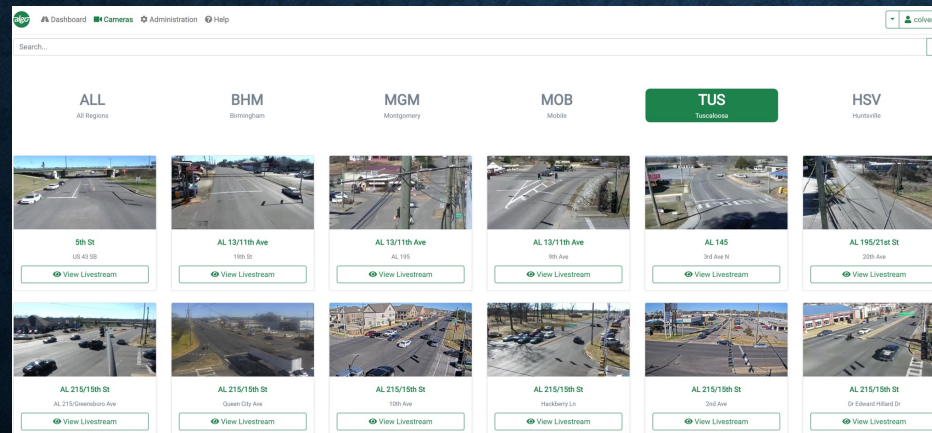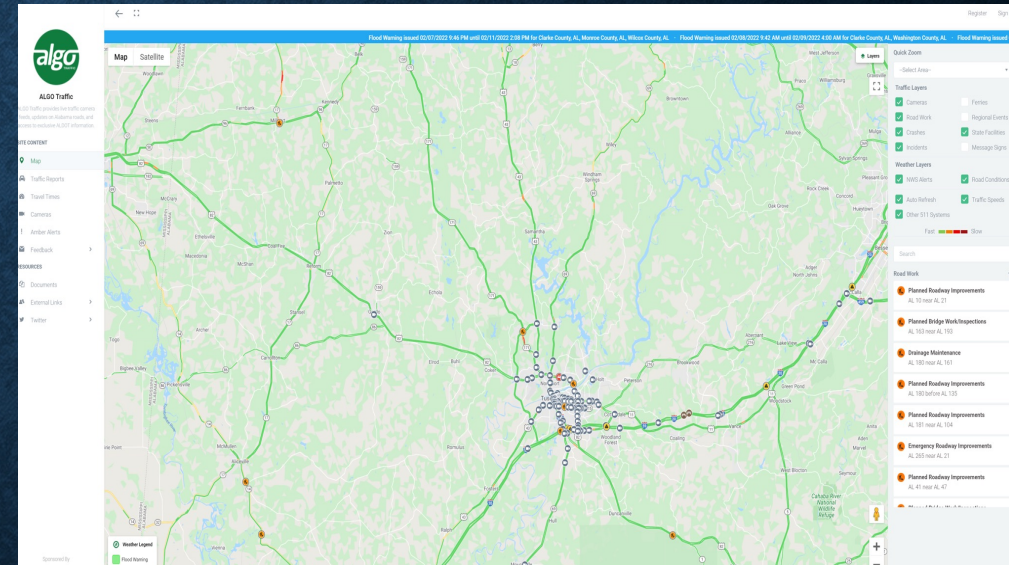
Tuscaloosa RTMC Partners

Alabama Service and Assistance Patrol

Alabama Service and Assistance Patrol

- Started in Spring 2018 in Tuscaloosa
  - Has been running in Mobile and Birmingham for several years
  - Also operating in Montgomery and Huntsville now
- Actively patrols Tuscaloosa and Chilton Counties
  - Operating hours
    - Monday thru Friday 6:00 AM to 10:00 PM
  - I-20/59 Mile Post 68-100
  - I-65 Mile Post 200-219

Alabama Service and Assistance Patrol - ASAP

- Services offered:
  - Temporary traffic control
    - Wrecks or Disabled Vehicle
  - Flat tires
  - Dead Battery
  - Overheating
  - Out of gas
  - Contacting a Towing Company
  - Minor Mechanical Repairs

UA Gameday Operations

- Begin 4 hours before kickoff for Ingress
  - Signal timings changed
  - DMS Directing Fans to the fastest route
  - Road closures entered Algo Traffic populated
  - Constant Communication with Event Team

- Post Game Operations begin after halftime
  - Signal Timings changed to expedite egress of the stadium
  - All agencies represented for post game
    - ALDOT
    - Tuscaloosa and UA Police
    - UA Parking Staff
    - Bruno Event Team
  - Average Egress time 1hr 47 min

Traffic Incident Management Responder Training

- TIM: Consists of a planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible

- Effective TIM:
  - Improves the safety of emergency responders, crash victims, and motorists
  - Reduces the duration and impacts of traffic incidents

ALTIM

ALABAMA
TRAFFIC INCIDENT MANAGEMENT
RESPONDER TRAINING PROGRAM

COMMUNICATIONS | EMERGENCY MANAGEMENT | EMS | FIRE/RESCUE
LAW ENFORCEMENT | TOWING & RECOVERY | TRANSPORTATION/PUBLIC WORKS

Responders struck and Killed in 2019

- 19 Law Enforcement Officers
- 9 Fire and Rescue Personnel
- 14 Tow Operators and 3 Mobile Mechanics
- Several transportation professionals from DOTs, Public Works, and Safety Service Patrol Programs

Roadway Incidents Reported Nationally In 2019

- 6,756,000 police-reported crashes:
  - 36,096 Fatality crashes
  - 1,916,000 Injury crashes
  - 4,806,000 Property-damage only crashes
- AAA assisted an estimated   32 million motorists
- NFPA reported a total of 212,500 highway vehicle fires

Impacts of Incident-Related Congestion

- **Causes of Congestion Nationally:**
  - **40% Bottlenecks**
  - **25% Crashes**
  - **15% Bad Weather**
  - **10% Other incidents**
  - **5%   poor signal timing**
  - **5%   Special Events**

- **Results of Congestion**
  - **Lost time and productivity**
  - **Increased cost of goods and services**
  - **Increased fuel consumption**
  - **Impacts on air quality and the environment**
  - **Negative public image for response agencies**

AAA Crashes vs Congestion November 2011	Cost of Crashes		Cost of Congestion	
	Total	Per Person	Total	Per Person
2005 National	$164.2 billion	$1,051	$57 billion	$430
2009 National	$299.5 billion	$1,522	$97.7 billion	$590

Chris Sewell, PE
Assistant TSM&O Engineer
ALDOT West Central Region

What is RTOP?
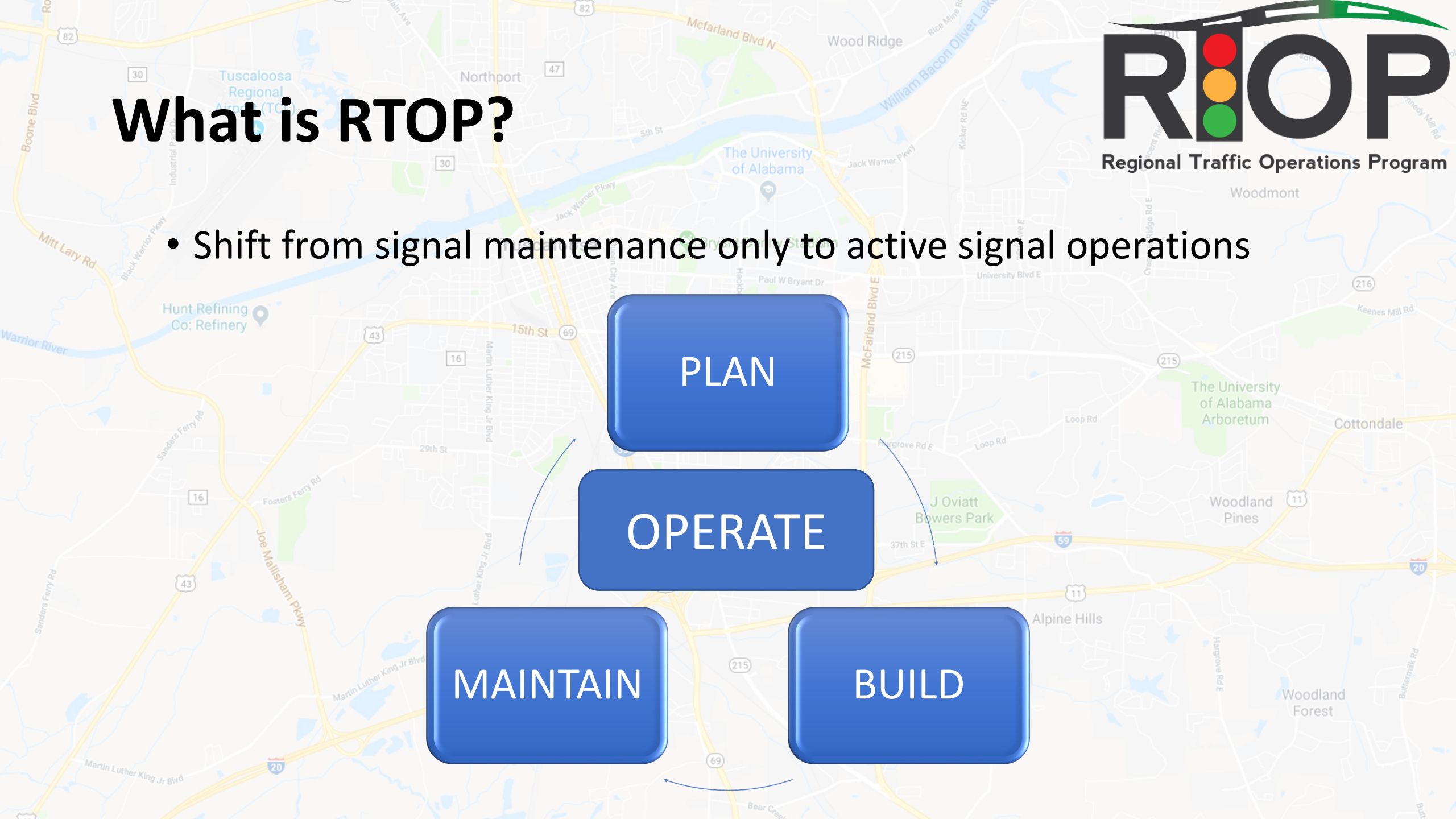
- Shift from signal maintenance only to active signal operations

RTOP – Team overview

- **Consultant (ARCADIS)**
  - Provide on call expertise
  - 1 Signal Engineer- Jason Taylor, P.E.
  - 1 Signal Technician – Cleveland Barron

- **University of Alabama**
  - Develop Performance Measures and Other Reporting Dashboards

- **ALDOT**
  - 2 Signal Engineers – Assisting to develop and review timing changes before implementation
  - 2 UA Student Interns

Operations - Year 1

- **Actively Operated 135 Signals in Tuscaloosa County**
  - Developed New Coordination Plans/Updated Basic Timings
  - Upgraded Equipment
  - Repaired Detection – Tuscaloosa and Northport
  - Brought Signals Online
  - Installed Cameras
  - Monitored and Adjusted Timings Daily

- **Retimed additional 39 Signals outside of Tuscaloosa County**
  - Developed New Coordination Plans/Updated Basic Timings
  - Repaired Detection

Signal Timing Improvements

Signalized Corridor	Peak	Northbound/Eastbound Travel Time(min)			Southbound/Westbound Travel Time(min)		
		Before	After	Change	Before	After	Change
North McFarland Blvd (US-82)	AM	19	12	37%	13	7	46%
	PM	13	7	46%	22	12	45%
South McFarland Blvd (US-82)	AM	11	7	36%	6	5	17%
	PM	10	8	20%	15	7	53%
Greensboro Ave	All-Day	3	1.5	50%	3	1.5	50%
South AL-69	AM	16	6	63%	7	6	14%
	PM	12	8	33%	14	7	50%
Skyland Blvd	AM	15	11	27%	18	9	50%
	PM	12	6	50%	16	10	38%

RTOP – Tuscaloosa's Results

- 4 minutes saved per trip
- 2,350 minutes saved per day
- Representing **$15.8 million** in time and fuel savings per year

Current ITS Projects

- **ATCMTD Grant with UA**
  - **ITS Deployment Grant**
  - **Full camera coverage on I-20/59 from MP 68 to MP 90**
  - **Fiber Optic Communication**
  - **Radar Vehicle Detection**
  - **Other leading edge ITS technology research**
- **I-65 ITS Project**
  - **State funded ITS Deployment Project**
  - **2 Dynamic Message Signs**
  - **Full camera coverage on I-65 from MP 200 to MP 219**
  - **Fiber Optic Communication**
  - **Radar Vehicle Detection**
- **McFarland Widening Project**
  - **3 Dynamic Message Signs**
  - **Full camera coverage from Rice Mine Road to AL-69**
  - **Fiber Optic communication**

Future of ITS/TSMO in Transportation

- Capacity projects are becoming less feasible
  - Material costs are going up
  - Increasing Right-of-Way costs
  - Running out of Right-of-Way
- TSMO is working to make our routes more efficient
  - RTOP, Signal timings, automated incident detection, quicker incident clearance, etc.
- While all crashes cannot be prevented, secondary crashes in the queue can
  - USDOT statistics show that the probability of a secondary crash increases by 2.8% every minute that the primary incident remains a hazard
  - Every minute a freeway lane is blocked correlates to four minutes of travel delay

QUESTIONS?

- Ken Colvert
  - colvertk@dot.state.al.us
  - (205) 861-9115

- Chris Sewell, P.E.
  - sewellc@dot.state.al.us
  - (205) 554-3260

Tuscaloosa RTMC
To Report any Traffic Incident
(205) 348-5198