

# **Rural Intelligent Transportation Systems Toolbox**



A National Highway  
Institute Training  
Program

# Overview of Presentation

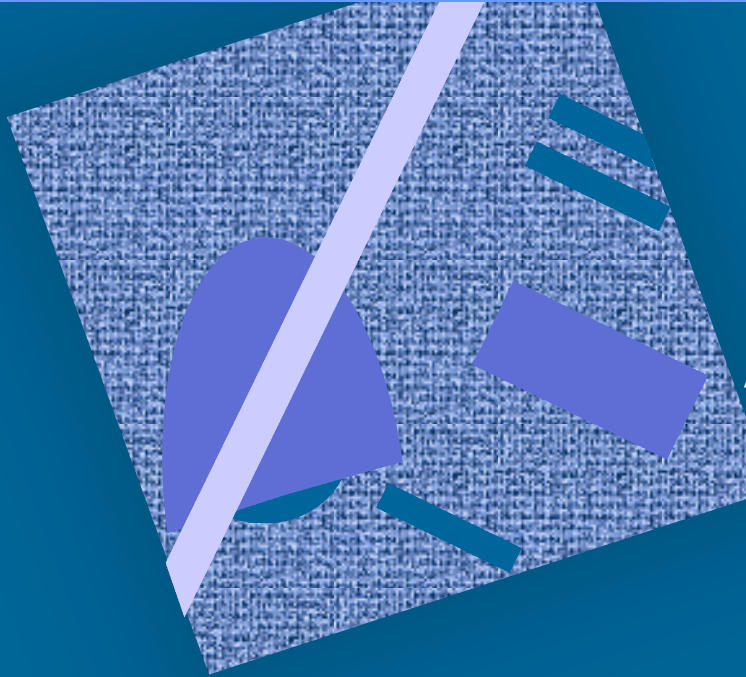
## Sessions

- ① Introduction
- ② Rural ITS-background & elements
- ③ Rural ITS Tools-applications & benefits
- ④ ITS Strategic Planning
- ⑤ Summary

# Outline

1. Identify transportation needs and challenges in rural environment
2. Define ITS and advanced rural transportation systems (ARTS)
3. Relate the value of rural ITS Toolbox
4. Describe ITS strategic planning
5. Explain the benefits of ITS applications in rural areas
6. Relate lessons learned in rural ITS implementations
7. Reinforce information resources

# Session 1



## Introduction

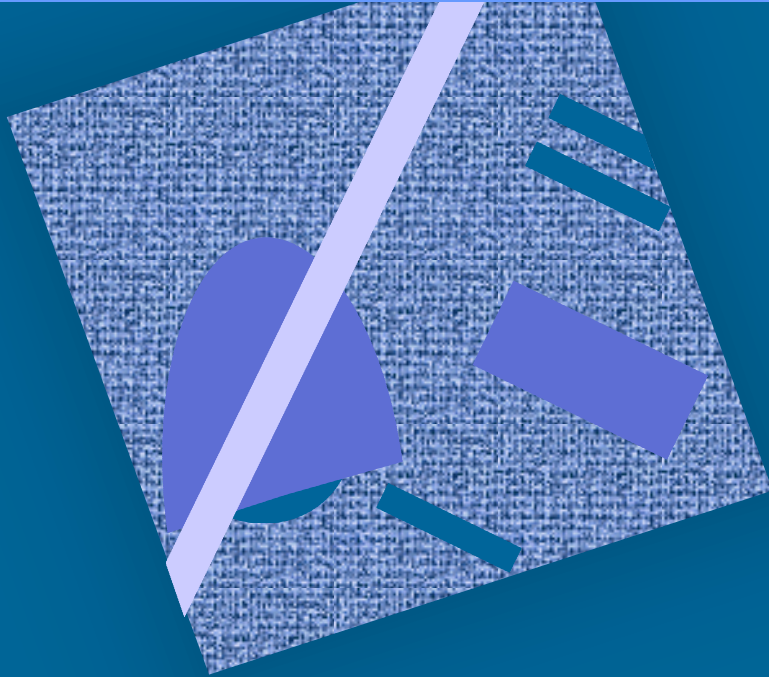
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# Course Goals and Participant Benefits

- Introduction to Rural ITS Toolbox
- Familiarization with ITS strategic planning process and outcomes
- Benefits of ITS applications in rural areas
- Lessons learned in rural implementations
- Enhanced knowledge/use of information resources

# **Rural ITS Toolbox**

## **Instructors**



# Stephen Albert

- Director of Western Transportation Institute
- Conducted research and outreach workshops with state DOTs and FHWA in 25 states
- Authored “Intelligent Transportation Primer, Advanced Rural Transportation System Chapter”

# Moe Zarean, PhD, PE

- <TITLE>
- Principal investigator for the USDOT's "Development of Rural ITS" task order contract-stipulates the Rural ITS Toolbox
- Principal Investigator for FHWA's "Rural Applications of Advanced Traveler Information Systems"



# Chris Hill, PhD

- <TITLE>
- Chair of the ITS America Advanced Rural Transportation Committee
- Senior Member of USDOT's rural ITS support contractor team
- Key player in the scope and development of the Rural ITS Toolbox

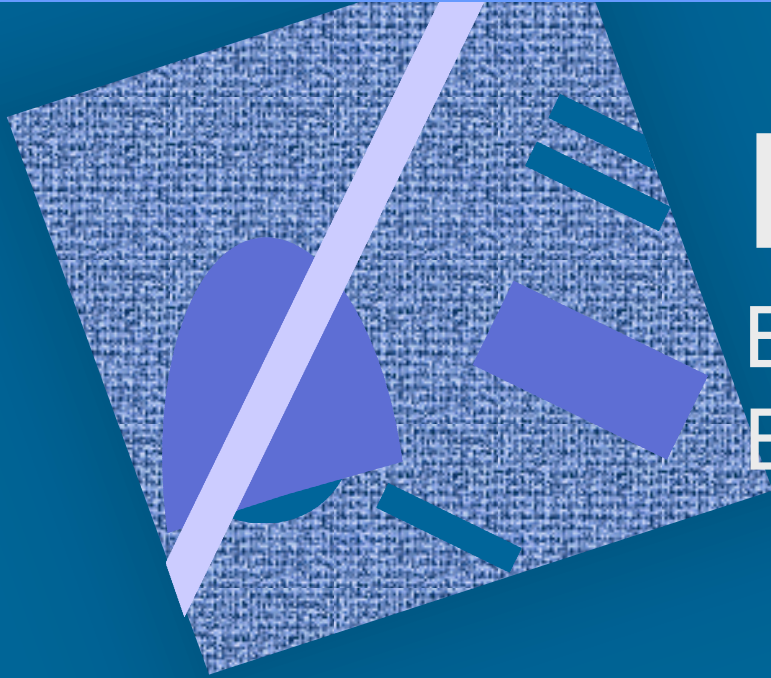
# Charles Dankocsik, PhD

- <TITLE>
- Key player in the “Development of Rural ITS” task order contract
- Authored USDOT training course “Deploying Integrated Intelligent Transportation Systems”
- Extensive expertise in assessing the needs of rural environments

# Target Audience

- Transportation Agencies
  - Federal, State, and Local
  - Executives, Engineers, and Planners
- Public Mobility Service Providers
- Public Safety Responders  
(enforcement, fire, EMS, etc.)
- National Parks and Forest Services
- Other interested parties

# Session 2



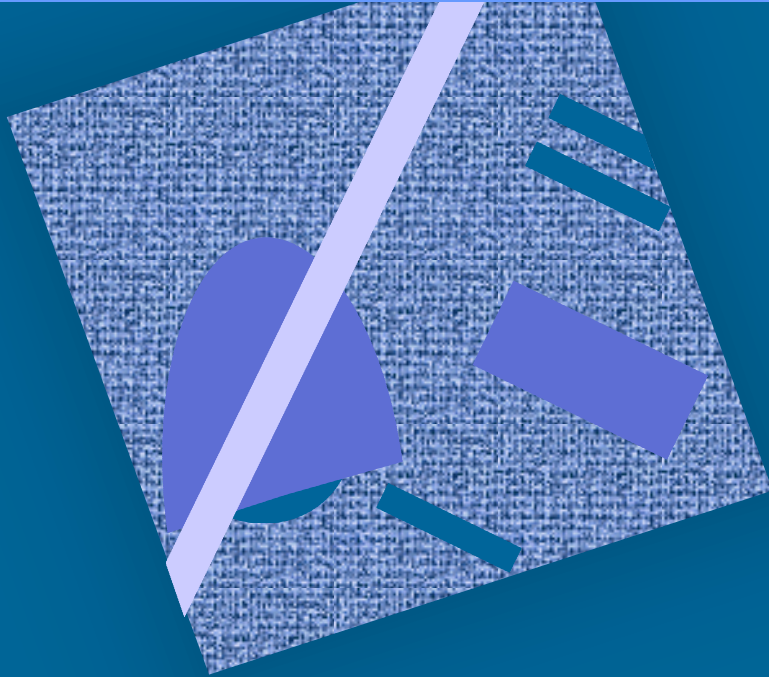
## Rural ITS- Background and Elements

# Session Learning Objectives

Participants will be able to:

- Recognize transportation needs, challenges, and opportunities within rural environments
- Identify ITS elements, functions, and technologies typically applied in rural environments

# **Rural Transportation Needs and Challenges**



# Rural Situations



- Challenging geography, weather events, and road conditions
- A sparse telecom infrastructure
- Limited public transportation
- NOT one size fits all



# Context



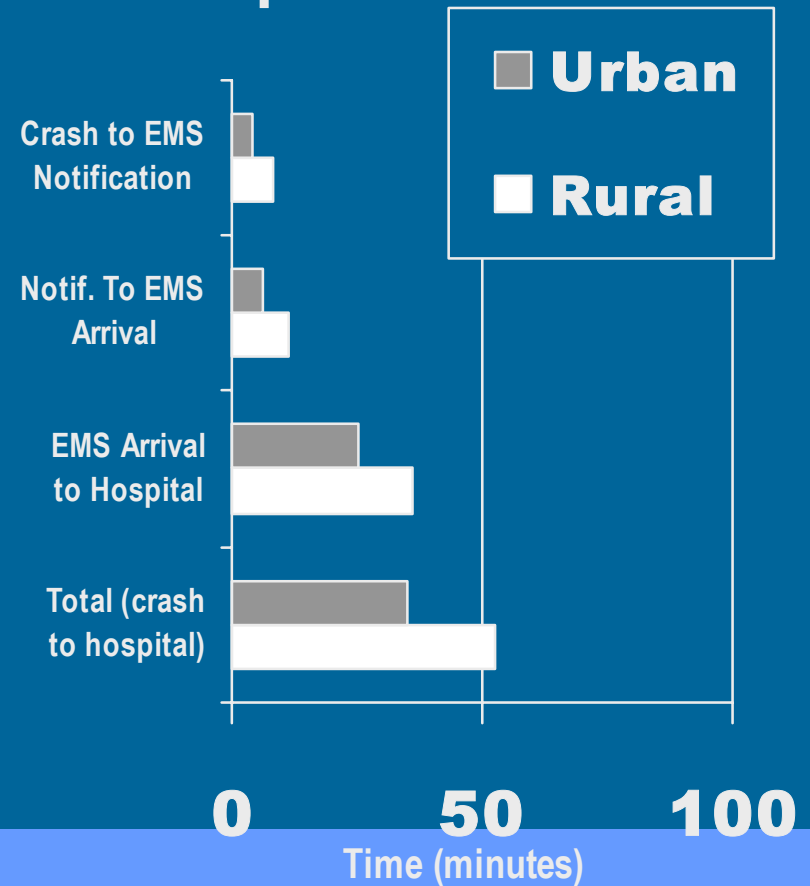
- Limited services between communities
- 78.5% of mileage traveled is rural
- 39.4% of vehicle miles traveled is in rural areas
- 68.4% of crash fatalities occur on rural highways



# Crashes



## Emergency Response Times



# Emergency Response

## In Urban and Rural United States

- Nearly 20,000 people die each year before receiving hospital care
- Another 22,000 people die after reaching the hospital too late to be saved



# Communications/Power



- Limited cellular communication coverage
- Limited power availability
- Limited E911 service
- Response services potentially volunteer

# Weather



- 7,000 fatalities annually
- 450,000 persons injured
- \$2 billion spent on snow and ice control

# Commercial Vehicle Traffic



In 1998:

- 420,000 large trucks were involved in crashes
- 5,302 people died in crashes involving heavy trucks
- 13% of all traffic fatalities reported involved heavy trucks



# Commercial Vehicle Rollovers

- 10,000 per year
- 80 deaths
- 3,000 injuries
- Physical damage
- Property loss
- Traffic delays
- Environmental damage



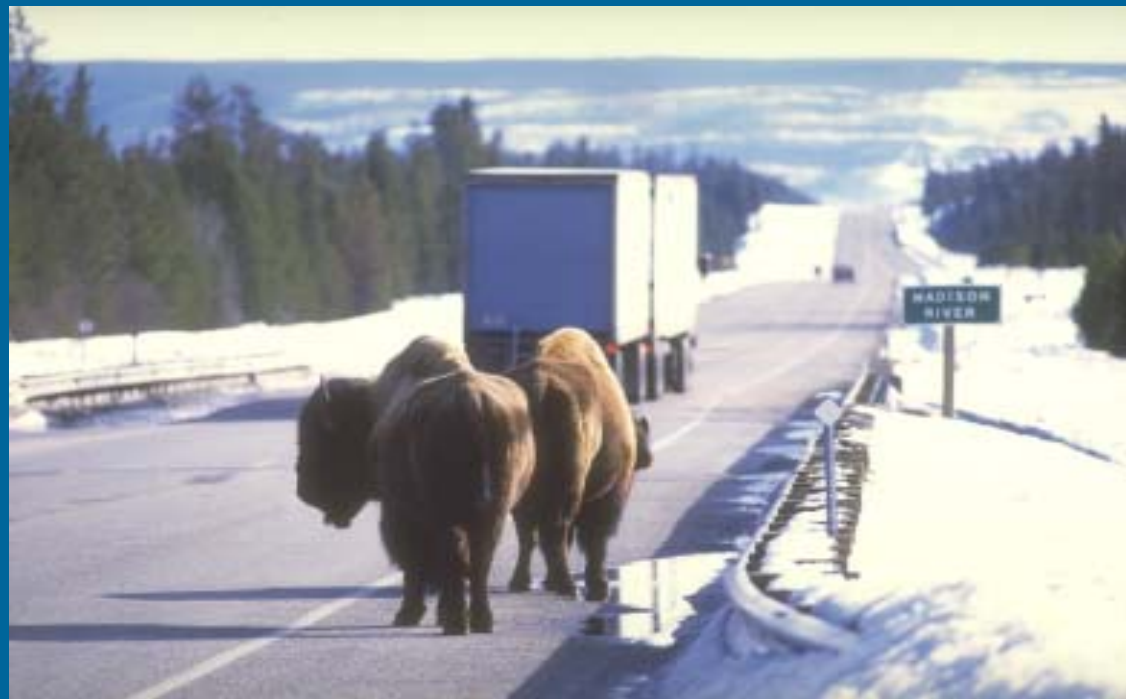
# Maintenance



- City and County Responsibility -- 95% unpaved & 55% paved roads
- 95% of rural residents depend on personal vehicles
- Most rural lanes are less than 10 ft in width
- Limited budget and resources

# Animal Conflicts

- ~726,000 animal/vehicle crashes each year
- PDO estimates ~\$2000/vehicle, \$1.0 billion each year





# High Recreational Traffic



- Major Route Congestion
- Seasonal Demand
- High Crash Locations
- Limited Visitor Information
- Limited Transit Alternatives
- Limited Infrastructure/Funding
- High Parking Demand/Turn-over

# Transit

- 38% of the rural population has no access to public transportation
- 28% have little access
- 45% of rural elderly have no vehicle
- 57% of rural poor have no vehicle
- 1 in 14 households are without a private vehicle



# Economic Viability

- 1998 Travel expenditures -- \$515.2 billion, resulting in 7.6 million jobs
- Domestic travel -- 1.3 billion person trips in 1998
- In 1998, an estimated 46.4 million international visitors spent \$91.3 billion on travel in or to the U.S.



# State Statistics

## 1998 Traveler Spending, in billions

- California - \$62.6
- Florida - \$48.1
- New York - \$31.3
- Texas - \$27.6
- Illinois - \$18.4
- Nevada - \$17.6
- Hawaii - \$14.0
- New Jersey - \$13.2
- Pennsylvania - \$13.1
- Georgia - \$12.05



# Stakeholders

Who are they?





# Module Format

- User Needs
- Stakeholders
- Applicable Technologies
- Projects
- Resources

I-5  
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