IOWA DOT Interstate 80 Automated Corridors

Planning and Environmental Linkages (PEL) Study

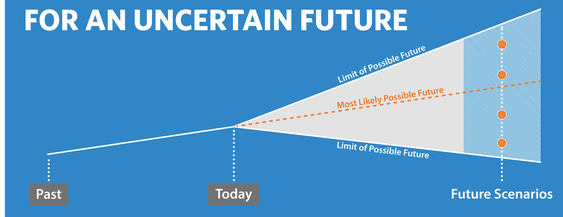
The Iowa Department of Transportation (Iowa DOT) is conducting a Planning and Enviromental Linkages (PEL) study of the rural portions of the Interstate 80 corridor to evulate future safety and mobility needs of all freight and passenger travelers.

STUDY **APPROACH**

- **Research** – Synthesis of studies on AV evolution and predicted benefits to travelers
- **Scenario Planning** – Consider both aggressive and conservative AV adoption rates potential futures
- **Traffic Capacity** – Vissim modeling with custom-scripting to include vehicle-to-vehicle communication
- **Predictive Safety Analysis** – Crash mapping approach to reflect the combined crash reduction of AV technologies on local crash patterns
- **Travel Time Reliability Analysis** – Assessing how automated vehicles reduce the prevalence and severity of crashes, the prevalence of recurring peak slowdowns, and the impact of weather
- **Future Proofing** - Providing flexibility in the proposed design features to accommodate multiple future scenarios, resulting in enhanced adaptability to future trends including AVs
- **Strategic Communications** – Develop a customized video to explain AV's in a public friendly, easy to understand way

STUDY **AREA**

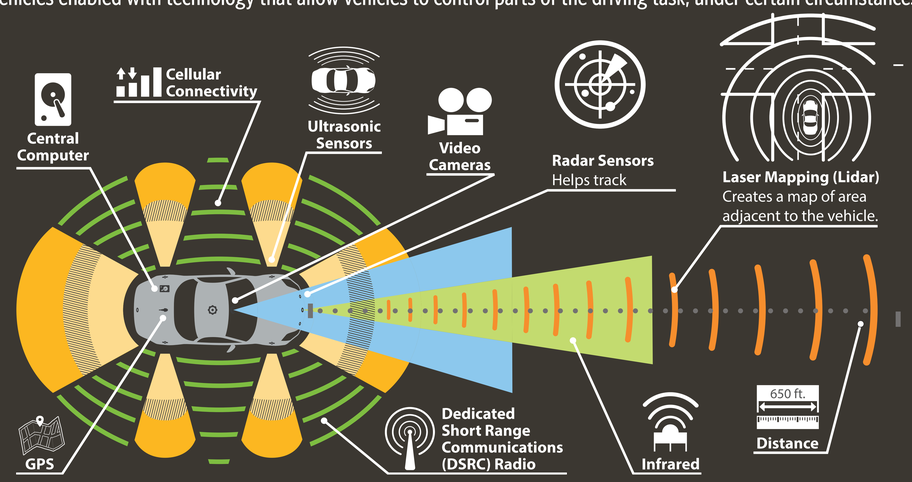
SCENARIO PLANNING **FOR AN UNCERTAIN FUTURE**



Study approach drives a set of conclusions and recommendations that are developed with forethought of uncertainty of the future in mind.

AUTOMATED VEHICLES

Vehicles enabled with technology that allow vehicles to control parts of the driving task, under certain circumstances.



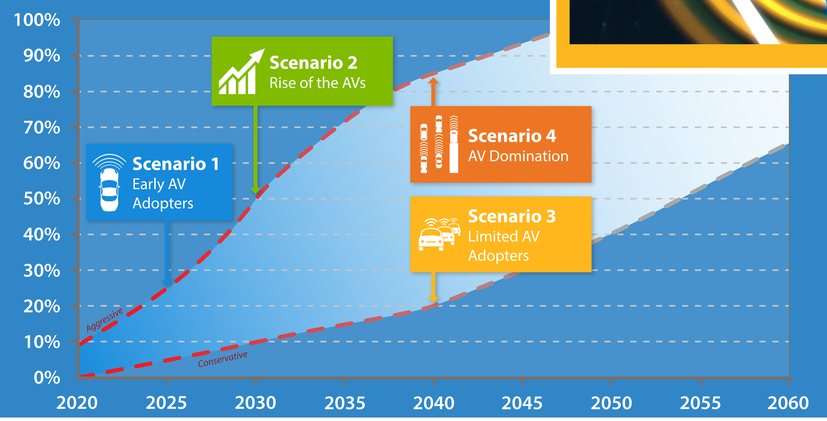
LEVELS OF AUTOMATION

- 0 No Automation
- 1 Driver Assistance
- 2 Partial Automation
- 3 Conditional Automation
- 4 High Automation
- 5 Full Automation

BENEFITS OF AVS

- Reducing the incidence of crashes related to human factors and weather
- Significant improvements to highway capacity without the need for additional construction
- Improving travel efficiency and reliability
- Improving mobility to disabled and senior citizens
- Improving fuel efficiency through vehicle drafting
- Reducing aggressive driving

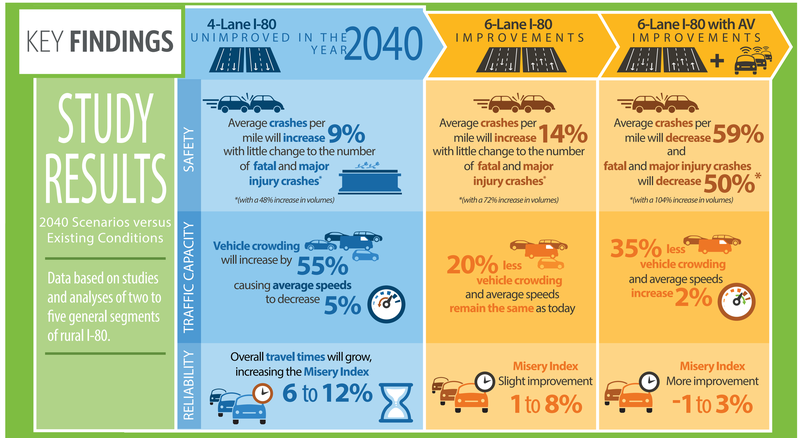
AUTOMATED VEHICLE **MARKET ADOPTION**



RISE OF THE AVS: VIDEO PRODUCTION

Based on the I-80 Automated Corridors Study, Iowa DOT produced a video that illustrates AV technology and transportation in Iowa. The video production uses 3D visualization and Vissim traffic simulation from the Interstate 80 Automated Corridor study. The video will be used as an educational tool and illustration of the industry leading research and planning efforts in Iowa.

KEY **FINDINGS**



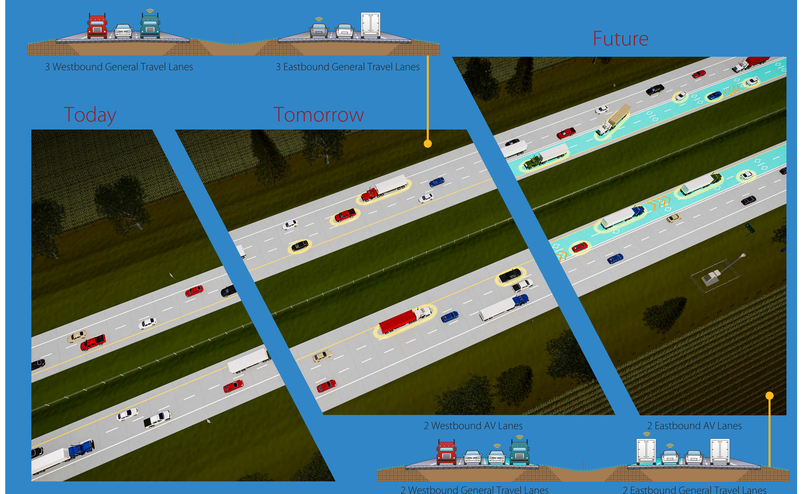
Near-term: AVs can mix efficiently with non-automated vehicles

Long-term: Planners should consider the increased number of trips AVs will generate

Our process: Key focus on flexibility in design due to uncertain AV future

FUTURE PROOFING RECOMMENDATIONS

- Develop a Smart Corridor
  - o Communication - Advanced cellular and fiber
  - o Power – Continuous power lines along corridor
  - o Detection – Cameras, sensors, and data processing from AVs
- Enhanced pavement design
  - o Consider more concentrated loading and increased truck traffic in pavement design
  - o Full width pavement base and geogrid recommended
- Full width, full depth shoulders
  - o Shoulders may be used as AV lanes in the future (managed by TMC)



CALL FOR STUDY: Develop a concept of operations for I-80 and AVs, including infrastructure.

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