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ABBY MORGAN, PH.D., P.E.

PRINCIPAL ENGINEER

Abby Morgan, Ph.D., P.E. has boots on the ground experience developing federal rulemaking for advanced crash avoidance technologies and planning and evaluating connected and automated vehicle deployments. Abby has helped state and local agencies develop policy on advanced vehicle technology, freight system performance, crash safety, intersection control evaluations, and electric vehicle charging infrastructure. As a Safety Standards Engineer with the National Highway Traffic Safety Administration (NHTSA), Abby led rulemaking on tires and advanced driver assistance systems for light and heavy vehicles. She is passionate about vehicle dynamics and would love to talk to you about autocrossing and tire performance.

EDUCATION

- Ph.D., Transportation Engineering, Purdue University, 2010
- M.S., Civil Engineering, Washington University in St. Louis, 2007
- B.S., Civil Engineering, Washington University in St. Louis, 2007

PROFESSIONAL STATUS

- Licensed Professional Civil Engineer, State of Virginia, License No. 0402054388
- Licensed Professional Civil Engineer, State of Florida, License No. 81756

PROFESSIONAL ASSOCIATIONS

- TRB Truck and Bus Safety Committee, Technology Subcommittee Chair
- Institute of Transportation Engineers, Connected and Automated Vehicle Steering Committee, Member

PROFESSIONAL EXPERIENCE

USDOT / NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA)

2011-2016, *Crash Avoidance Safety Standards Engineer*

Dr. Morgan is passionate about crash safety and vehicle dynamics. Prior to KAI, Abby worked for the National Highway Traffic Safety Administration (NHTSA) as a Rulemaking Engineer. She developed Federal motor vehicle safety standards and policy recommendations for crash avoidance technologies related to braking, steering, and vehicle handling. She frequently coordinated with stakeholders to identify reasonable alternatives for regulation and compliance test programs. Her responsibilities included developing regulatory and policy recommendations for NHTSA and responding to Congressional and media inquiries related to technical and policy issues.

Dr. Morgan served as NHTSA's tire standards expert. She independently authored technical and policy documentation to upgrade the heavy vehicle tire safety standard (FMVSS No. 119), and she personally

managed multiple research programs to evaluate alternative test conditions for the standard. She gave multiple technical presentations on NHTSA's regulatory efforts related to tire performance and rating systems.

Abby also led NHTSA's agency-wide, multidisciplinary team responsible for researching Automatic Emergency Braking (AEB) and Forward Collision Warning (FCW) systems. In this role, she coordinated the development of reasonable, repeatable, and reproducible test procedures, which have been adopted by many automobile manufacturers and system suppliers. Ms. Morgan worked with international government regulatory agencies, US NCAP, Euro NCAP, insurance groups, vehicle manufacturers, and system suppliers to evaluate regulatory programs and performance testing alternatives related to Level 2 Automation, including AEB and FCW systems. Ms. Morgan managed the development, drafting, and response to the agency's Request for Comment Federal Register notice on Advanced Braking Technologies that Rely on Forward-Looking Sensors, which included FCW, Crash Imminent Braking (CIB), and Dynamic Brake Support (DBS), and the grant notice for the petition for rulemaking on heavy vehicle AEB. She has supported agency policy decisions related to Levels 1, 2, and 3 Automation.

Selected NHTSA Publications:

- Glassbrenner, D., Morgan, A., et al., 2017. *A target population for Automatic Emergency Braking in Heavy Vehicles*, USDOT/NHTSA, DOT HS 812 390.
- NHTSA, 2015. *Grant of Petition for Rulemaking: Heavy Vehicle Automatic Forward Collision Avoidance and Mitigation Systems*, 80 FR 62487, 16 October 2015.
- NHTSA, 2015. *New Car Assessment Program: Request for Comments on Automatic Emergency Braking*, 80 FR 4630, 28 January 2015.
- NHTSA, 2012. *Advanced Braking Technologies that Rely on Forward-Looking Sensors: Request for Comments*, 77 FR 39561, 3 July 2012.

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2016-present, *Principal Engineer*

Freight Planning

SR 710 Connected and Automated Vehicle (CAV) Program Planning – FDOT District 4; *Technical Advisor*. Abby is leading the planning for FDOT District 4's first CAV deployment on the SR 710 corridor. This corridor is a major east-west freight corridor in South Florida providing access to the truck entrance for the Port of Palm Beach. She led a technology assessment of the CV readiness of existing infrastructure; engaging with local stakeholders (including the Port of Palm Beach and Palm Beach County's TPA and Traffic Engineering Department); and developing the Concept of Operations (ConOps), Project Systems Engineering Management Plan (PSEMP), and RFP scope to move the project from planning to design.

Virginia DOT Statewide Truck Parking Study; *Project Manager*. Many states struggle to meet the demands for safe and legal truck parking spaces to support the growing freight and goods movement. Abby manages Virginia DOT's (VDOT's) statewide truck parking study to use GPS-based vehicle data to quantify the truck parking need in Virginia, support federal Jason's Law reporting requirements, and recommend strategies to increase truck parking capacity throughout the state. She leads stakeholder workshops and management briefings on the study's methods and results.

Alaska Weigh-In-Motion (WIM) Plan Update; Lead Engineer. Abby updated Alaska's statewide WIM plan by assessing the state's freight characteristics, data collection needs, and federal reporting requirements. Abby led stakeholder interviews with the trucking industry, WIM vendor, and various

divisions across AK DOT&PF to understand the strengths and challenges of the existing WIM program. She identified barriers to data sharing across divisions and developed a strategy to reuse existing equipment from decommissioned sites, plan for safety during temporary roadside inspections using Portable WIM sensors, and make WIM data reports more accessible to all divisions in the Department.

Automated Vehicles and Emerging Technologies

FHWA ADS Operational Behavior and Traffic Regulation Information; *Policy Advisor*. Access to data is a critical enabler for the safe, efficient, and accessible integration of Automated Driving Systems (ADS) into the transportation system. Data systems related to traffic laws and regulations will facilitate the development of ADS behavior as well as roadway adaptations that fulfill the vision of safe and effective ADS operation. Abby is the Regulatory Advisor for this research to identify the challenges of creating and maintaining an ADS-ready traffic laws and regulation database.

NCHRP Project 08-117: Impact of Transformational Technologies on Land Use and Transportation; *Deputy Project Manager.* Abby was the lead researcher and co-author of the first national guidebook, *Report 924: Foreseeing the Impact of Transformational Technologies on Land Use and Transportation*. The research developed a process for state DOTs and local planning agencies to prepare for impacts of new technologies through self-assessment, data and information gathering, new partnerships, and nimble policy. Her guidance addresses the impacts of e-commerce on freight delivery, distribution, warehousing, as well as rural and urban freight transportation needs.

USDOT Connected Vehicle (CV) Pilot Deployment Evaluations—Wyoming, Tampa, New York City; *Project Manager*. Abby leads the team developing microsimulation models to reflect driver behavior differences between CV and non-CV drivers for all three of the deployment sites in Tampa, FL; New York City, NY; and the Wyoming I-80 Rural Freeway pilot test site. Abby applies her technical knowledge of CV communications, her understanding of public agency performance measures, and her expertise in transportation mobility modeling to estimate potential future benefits of expanded CV deployments and extrapolating results to estimate national-level impacts.

FDOT District 1 Automated Shuttle System; *Technical Advisor*. Dr. Morgan is the CAV technical advisor for the FDOT District 1 study to evaluate potential locations and routes for an automated shuttle system. She is helping FDOT understand the capabilities and limitations of current and near-term AVs and teaching FDOT the federal regulatory exemption process to test AVs on public roads.

Selected Kittelson Publications:

- Dowling, R., Morgan, A., NCHRP Report 924, Foreseeing the Impact of Transformational Technologies on Land Use and Transportation, Transportation Research Board, Washington, DC, 2019.
- Morgan, A., et al., 2018. Connected Vehicle Pilot Deployment Program Independent Evaluation: Analysis Modeling, Simulation Plan - Wyoming, USDOT/ITS-JPO, FHWA-JPO-18-663.