

**Proposed Guidance for Fixed Objects in the *Roadside Design Guide***  
**NCHRP Project 17-82**  
**March 2022**

**Implementation Plan**

This memorandum presents the implementation plan for the research results developed in NCHRP Project 17-82, “Proposed Guidance for Fixed Objects in the *Roadside Design Guide*.” The implementation plan addresses (a) research results obtained; (b) recommendations on how to best put the research findings/products into practice; (c) possible institutions that might take leadership in applying the research findings/products; (d) issues affecting potential implementation of the findings/products and recommend possible actions to address these issues; and (e) recommended methods of identifying and measuring the impacts associated with implementation of the findings/products.

**Research Results Obtained**

The research results from Project 17-82 intended for implementation by practitioners are presented in a design guidance document, *Design Guidance for Mitigating Collisions with Trees and Utility Poles*, and in an accompanying spreadsheet tool, developed in Microsoft Excel, which implements the crash prediction and benefit-cost analysis methods developed in the research. A final research report was also prepared to document the activities undertaken as part of the research. This final research report will be of primary interest to researchers interested in how the research was conducted, rather than to practitioners.

**How to Put the Research Findings/Products into Practice**

The research results should be put into practice by engineers and planners responsible for roadside improvements to reduce crashes involving roadside trees and utility poles. The target audience for implementation activities should include engineers and planners responsible for state highways; city, county, and municipal highways and streets; tribal roads; park roads; and resource recovery roads.

The activities that should be undertaken to disseminate the research results to the target audience for implementation include:

- Publication of the design guidance document, *Design Guidance for Mitigating Collisions with Trees and Utility Poles*, by NCHRP.
- Posting of the accompanying spreadsheet tool on an NCHRP website where it can be downloaded by potential users for application along with the design guidance.
- Incorporation by AASHTO of the research results in the next edition of the AASHTO *Roadside Design Guide*. Suggested text to be considered by AASHTO for incorporation

in the *Roadside Design Guide* has been presented in Appendix B of the final research report.

Project 17-82 has developed a power point presentation featuring the research results that can be used in technology transfer activities to brief potential users on the nature of the research and the products developed. The research team may be invited by TRB or AASHTO to present these results in a webinar.

### **Possible Institutions to Take the Lead in Implementation Activities**

Possible institution to take the lead in direct implementation of the results of Project 17-82 include FHWA, state and local highway agencies, and their consultants. The lead in disseminating the research results to these agencies may be undertaken by AASHTO, TRB, and FHWA.

The first step in implementing the research results is publication of the design guidance by NCHRP and posting of the accompanying spreadsheet tool on an NCHRP website. This is an essential activity because practitioners need access to the guidance and the tool in order to implement the research.

Beyond publication of the research products, the single most important step toward institutionalizing the research results would be incorporation of the research results in the *AASHTO Roadside Design Guide*, including references to the NCHRP design guidance and the spreadsheet tool. As the national organization of the state departments of transportation, AASHTO often takes a lead role in disseminating research results to their member departments. Updating of the *Roadside Design Guide* is the responsibility of the AASHTO Technical Committee on Roadside Safety (TCRS), which operates as a subgroup of the AASHTO Committee on Design. The research team has briefed the TCRS several times during the research and we understand that they are expecting to receive and review the research results.

The AASHTO TCRS regularly meets jointly with the TRB Roadside Safety Design Committee, so the TRB Committee has also been briefed by the research team as the research has progressed. Thus, the TRB committee is expecting to receive and review the research results and can also be expected to assist in disseminating the results of Project 17-82 to their members and to a wider audience.

FHWA often takes a lead role in disseminating research results to practitioners through publications, through their resource center, through their division offices located in each state, and through the training course they develop and present. FHWA is aware of the research through participation on the NCHRP project panel and can be expected to review the research results and decide on an appropriate course of action for disseminating the results.

AASHTO, TRB, and FHWA can be asked to encourage future presentations at their meetings and at other professional meetings concerning user experiences in implementing the Project 17-82 research results.

## **Issues Affecting Potential Implementation of the Research Results**

The research results from NCHRP Project 17-82 represent a new approach to roadside safety that has not yet been used extensively in the United States. The research results use a modified version of a crash prediction model developed by the International Road Assessment Programme (iRAP) and its American partner, the U.S. Road Assessment Program (usRAP). This model, referred to in the research as the Road Assessment Program (RAP) model, has been used in planning crash reduction programs in over 70 countries around the world and in state or local agencies in approximately 12 U.S. states. While the RAP model includes crash prediction procedures for run-off-road crashes involving fatalities and serious injuries, it has not been previously used in the U.S. specifically for management of roadside improvement programs. Therefore, engineers and planners responsible for roadside improvements will need to learn about and become familiar with the model to encourage its application.

The Project 17-82 research results have developed a model that is applicable to managing improvement projects involving relocation or removal of roadside trees and utility poles along rural two-lane and multilane nonfreeways. The model can potentially be adapted to address other roadside fixed object types, in addition to trees and utility poles, and to address roadside improvements on urban streets and on rural and urban freeways. Adaptation of the model for application to these additional fixed-object and roadway types would require further research. However, potential users of the model should be made aware that, if they find the model useful, its adaptation to these other applications is feasible.

## **Recommended Methods of Identifying and Measuring the Impacts Associated with Implementation of the Research Results**

A first cut assessment of the extent of interest in implementation of the research results can potentially be made by monitoring the number of individuals who download the design guidance report and the spreadsheet tool from the NCHRP website. Beyond this, the best source of information on implementation of the research results is through experience reported by or to members of the AASHTO TCRS and the TRB Roadside Safety Design Committee. Members of these Committees are likely to hear about user experiences in implementing the Project 17-82 research results. These Committees might be asked to make periodic surveys of the state and or local agencies concerning the tools they are using for planning roadside improvements and the potential need for enhancement of those tools.