



Future of TNM

FHWA continues planning for the future of TNM, including technological, acoustical, and user-focused improvements.

The most recent version, TNM 3.2, integrates the Roadway Construction Noise Model (RCNM). This is a new, state-of-the-art computer program that enables the prediction of construction noise levels for a variety of construction operations and equipment types. The integration of RCNM will allow user-defined construction vehicles, point source acoustics, and directionality of noise for equipment.

With the constant stream of innovation, FHWA is always looking to the future of TNM. Upcoming versions may consider incorporating evolving technologies, like electric vehicles and quiet pavement, into the noise analysis process and explore the design of innovative noise abatement measures.

TNM Feedback

We love to hear from our users on how we can best prepare the model for practical use as we look toward the future. The following email allows you to provide feedback and contribute to the development of TNM: TNMHelp@dot.gov

We appreciate your continuous support and participation in TNM development.

 **Website:**

https://www.fhwa.dot.gov/environment/noise/traffic_noise_model/

FHWA-HEP-24-009



Banner image sources:

Left image: www.istockphoto.com

Other images: FHWA photos and screenshots



U.S. Department of Transportation
Federal Highway Administration

Celebrating 25 Years of TNM

For 25 years, Traffic Noise Model (TNM) has been the US highway industry's noise modeling software for predicting highway noise and evaluating the acoustic performance of noise barriers. The Federal Highway Administration (FHWA) looks forward to more TNM innovations and collaboration with the user community.

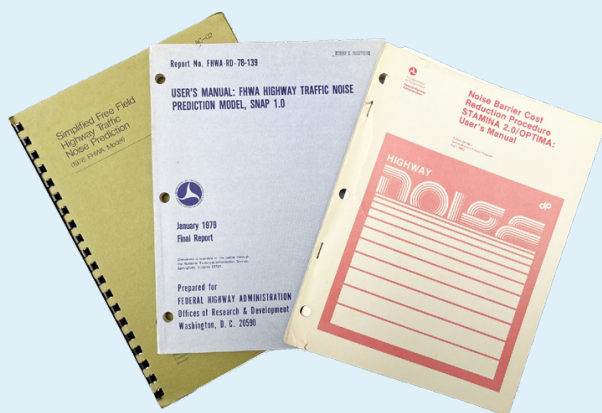
Source: FHWA image of Florida Fan Wall I-95



Before TNM

Noise specialists used numerical methods and charts to hand-calculate noise levels. One of the first prediction models was a statistical approach documented in *Highway Noise, A Design Guide for Highway Engineers*. Later, the Department of Transportation's Transportation Systems Center (TSC) published the *Manual for Highway Noise Prediction*, also known as the TSC model. This used paper punch cards on a mainframe computer. More research and development followed for several years.

This culminated in the development of STAMINA/OPTIMA: the first software to make use of computers and to help users with barrier design. This program was used for two decades before the release of TNM.

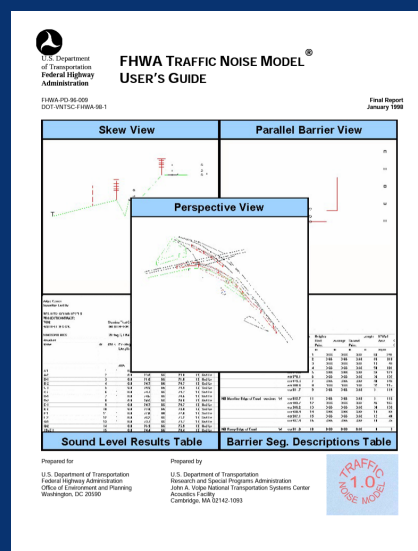


Source: FHWA image of Simplified Free Field Highway Traffic Noise Prediction, Snap, and Stamina user guides

TNM Development

FHWA and its partners saw the need for a new noise model with up-to-date mathematics, software, and a consistent modeling approach. At the 1992 Transportation Research Board meeting, multiple traffic noise modeling features and elements were discussed for inclusion in what would become TNM.

FHWA worked with the Volpe National Transportation Systems Center, and researchers in academia and the private sector to develop TNM 1.0, released in 1998.



Source: FHWA image of TNM 1.0 User Guide

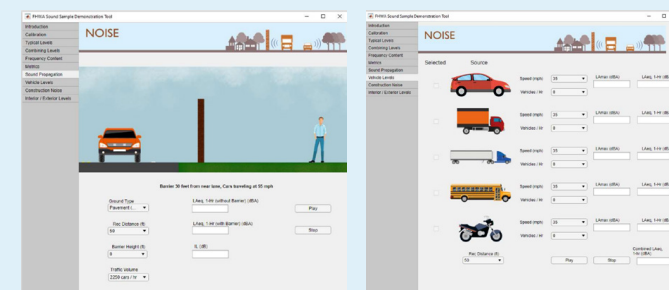
TNM Evolution

TNM has been updated many times to add new content and capabilities, address different bugs, and include improved software and modeling methods. TNM has advanced over many versions since its creation, including 1.0A, 1.0B, 1.1, 2.0, 2.1, 2.5, 3.0 and 3.1. FHWA has responded to TNM stakeholders by including novel and improved elements and functionalities in each new TNM version. Documentation is available online.

In 2021, FHWA launched four new tools for noise analysis and public involvement:

- Traffic Noise Screening Tool (TNST)
- TNMAide spreadsheet tool
- Automated Consistency Test Suite (ACTS)
- Sound Sample Demonstration Tool (SSDT)

All of the tools, except the SSDT, are based on the acoustics found in the Traffic Noise Model version 3 series (TNM 3).



Source: FHWA images of Sound Sample Demonstration Tool