QUARTERLY PROGRESS REPORT

July through September 2020

Independent Evaluation of Non-Traditional Methods to Obtain Annual Average Daily Traffic
FHWA Pooled Fund Study # TPF-5(384)

Submitted by:
National Renewable Energy Laboratory,
Independent Evaluation Team

WORK CONDUCTED THIS QUARTER

Task 1: Project Management and Final Report

- Held bi-weekly status and coordination meetings with FHWA and TTI evaluation team.
    - Reported on progress and discussed strategies for identifying and gathering accurate benchmark data for the evaluation.
    - Discussed challenges and identified solutions for validation location issues

Task 2: Independent Technical Review, Assessment and Support of the Passive Data AADT Method Development

- **Identifying agency sources of benchmark data and checking possible sites:** Continued outreach in 8 states (AZ, DE, IL, MD, NC, ND, OH, VA) to identify possible sources of benchmark data, including ITS monitoring sites, speed zone monitoring systems (Traffic Logix), toll roads, and intersection control systems. The project team identified roughly 12,800 possible count comparison sites. An additional 700 sites from CA will be evaluated.
- **Gathering short duration counts for use in evaluation:** Given the difficulty in finding a sufficient number of permanent benchmark sites, NREL continued to gather short duration counts from several state DOTs among the list of states noted above.
- **Validating accuracy at selected benchmark sites:** The accuracy at some possible benchmark sites is unknown. For example, ITS sensors may be calibrated for speed but not traffic counting. Therefore, the evaluation team is conducting spot checks in several states using video-based traffic counting methods which are known to be accurate. The project team has collected data in Kentucky, Ohio, and Texas to begin validating the accuracy of Wavetronix sensors and Traffic Logix counters. NREL has obtained the relevant Wavetronix data for Kentucky and expects to receive Traffic Logix data very soon. The NREL team also assisted with contracting for approximately 30 directional ITS monitoring sites in Dallas, Ft. Worth, and Houston at which accuracy spot checks have been conducted to ensure accurate benchmark data.
- **Delivered validation locations to Streetlight Data.** The NREL team delivered its validation locations to Streetlight Data in shapefile format. The shapefile contained Open Street Map segments that correspond to count locations. This format was selected to minimize potential for geocoding errors, since Streetlight Data uses Open Street Map as its basemap. To ensure consistency, the validation team used network files provided by Streetlight Data. To the extent possible, count locations were checked to ensure they were positioned correctly, and that the count direction was appropriately accounted for. NREL submitted approximately 450 TMAS

locations, 250 toll locations, 750 signal locations, 100 other ITS locations, 400 radar speed feedback locations, and over 10,000 short-duration count locations.

WORK PLANNED FOR NEXT QUARTER

- Hold bi-weekly status and coordination meetings with FHWA and TTI
- Work with TTI to identify technologies and locations to validate
- Procure additional data to validate benchmark technologies
- Review technology validation results and make determinations about which independent count sites can be used as benchmarks.
- Begin validating AADT estimates from StreetLight Data.

ISSUES AND CONCERNS

- **Counter location and attribute accuracy**: The locational accuracy of some counters makes identifying the matching roadway difficult, often requiring manual review to ensure the correct match. Even upon manual review, some candidate locations must be discarded due to uncertainty. Additionally, some counters do not include sufficient attribute information to assist with the match. These issues were addressed to the extent possible as the list of validation locations was assembled. Additionally, during the validation of Streetlight Data's estimates, we will look closely at those with a higher level of error to ensure the locations were matched to the correct Open Street Map segment.
- **Uncertainty around complex sites:** Some counters are situated at complex locations, particularly on interstates, where multiple lanes and directions may be monitored. Signalized intersection locations present similar challenges. These locations may be difficult to match with estimates provided by the Streetlight Data team. It will likely be necessary to eliminate some potential benchmark locations for these reasons. This process will be time-consuming and is dependent on clear documentation from data providers.