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April 30, 2024

Francis O'Connor  
Acting Director of the Office of Economics  
Surface Transportation Board  
395 E Street SW  
Washington, DC 20423

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**Subject: Request for Unmasked Confidential Carload Waybill Sample**

Dear Director O'Connor,

We are writing to request access to the unmasked confidential Carload Waybill Sample from 1984–2022. This data will support the “INcreasing Transportation Efficiency and Resiliency through MODEling Assets and Logistics (INTERMODAL)” project from the US Department of Energy (DOE) Advanced Research Projects Agency-Energy (ARPA-E). Involving Michigan Technological University and the Argonne National Laboratory, the project team aims to model intermodal logistical decisions for system planning and dynamic scheduling to address emission, energy, time, resiliency, and cost issues up to the year 2050. We require data on origins, destinations, freight revenue, and characteristics, and all other information recorded in the unmasked Carload Waybill Sample. Only our team members from the Michigan Technological University, as listed at the end of this letter, may have access to the requested Waybill data.

**Project Objectives**

Michigan Technological University (MTU), in partnership with Argonne National Laboratory (ANL), will develop an intermodal logistical modeling platform - Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) to support long-term planning decisions on mode, route, and charging for future charging/fueling strategies up to the year 2050, and also quasi-real-time dynamic decisions on scheduling and re-routing to respond to disruptions and real-time traffic conditions.

The objective is to reduce overall energy usage per ton-mile of freight transported while minimizing the levelized cost of ton-kilometers (LCOTKM) with increased supply chain resiliency. Considering future scenarios of renewable energy sources, charging/fueling infrastructure rollout strategies, projected freight demand from ports to warehouses, and natural- and man-made extreme events for intermodal logistics, DRIFT provides optimized intermodal logistical decisions that could help identify the most cost-effective transition

pathways to net-zero greenhouse gas (GHG) emissions intermodal transportation systems, including water, rail, and road.

## **Scope of Works**

Our research will use the confidential Carload Waybill Sample for the following tasks:

### **National-wide intermodal freight demand prediction**

Considering multimodal (i.e., maritime, rail, and road) transportation, we will estimate future port-to-warehouse freight Origin-Destination (OD) demand up to the year 2050 for the entire US in the model. It provides daily/hourly demand predictions for freight tonnage, container count, origins, and destinations. These predictions will be inputs for our other models, enabling them to optimize under various freight demand scenarios. The unmasked confidential carload waybill sample data will be used to calibrate and validate our national-wide intermodal freight demand prediction models.

### **Real-time freight traffic data generation**

The real-time freight traffic data is considered in our dynamic scheduling model. We will generate real-time multimodal freight traffic data and then use it as the input for the optimal real-time decisions of schedule, re-routing, and charging/fueling. The unmasked confidential carload waybill sample data will be used to calibrate and validate the real-time data generation model.

### **Integration of data and models**

The above models, which use waybill data as one of the inputs, will be integrated into an intermodal logistical modeling platform, DRIFT. Our goal is to minimize time, cost, and energy, including under disruptions, to improve resilience, with all the modes working together to get the goods from ports to warehouses.

## **Detailed Data Requested**

We are seeking access to the unmasked confidential Carload Waybill Sample spanning from 1984 to 2022. Although we currently have access to the Public Use Waybill Samples (PUWS), the data is insufficient and incomplete for our comprehensive analysis of railway and intermodal networks. The PUWS are stratifiedly sampled, which cannot well support our freight demand prediction and real-time traffic generation at the national level. Therefore, we

require access to the unmasked Carload Waybill Sample to obtain the necessary detailed information.

## **Data Management Plan**

We will ensure strict compliance with confidentiality standards and data privacy regulations governing the use of the data sets provided. The raw data will only be used in our model development and all results and findings will be presented in aggregate form to maintain confidentiality. Our team is committed to complying with all relevant confidentiality regulations, such as those outlined in 49 CFR § 1244.9. This data set will specifically support academic research conducted by the listed team members.

|              |                                                                                                                                                                                                                                             |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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Thank you for your consideration of this request.

Sincerely,



Kuilin Zhang, Ph.D.

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Affiliated Associate Professor, Department of Computer Science  
Michigan Technological University