



NETL Life Cycle Inventory Data

Process Documentation File

Tracked Output Flows:

Diesel [Crude Oil Products]

Reference Flow

Section II: Process Description

Associated Documentation

This unit process is composed of this document and the data sheet (DS) *DS_Stage4_O_Bulk_Storage_Facility_Diesel_2010.01.xls*, which provides additional details regarding relevant, calculations, data quality, and references.

Goal and Scope

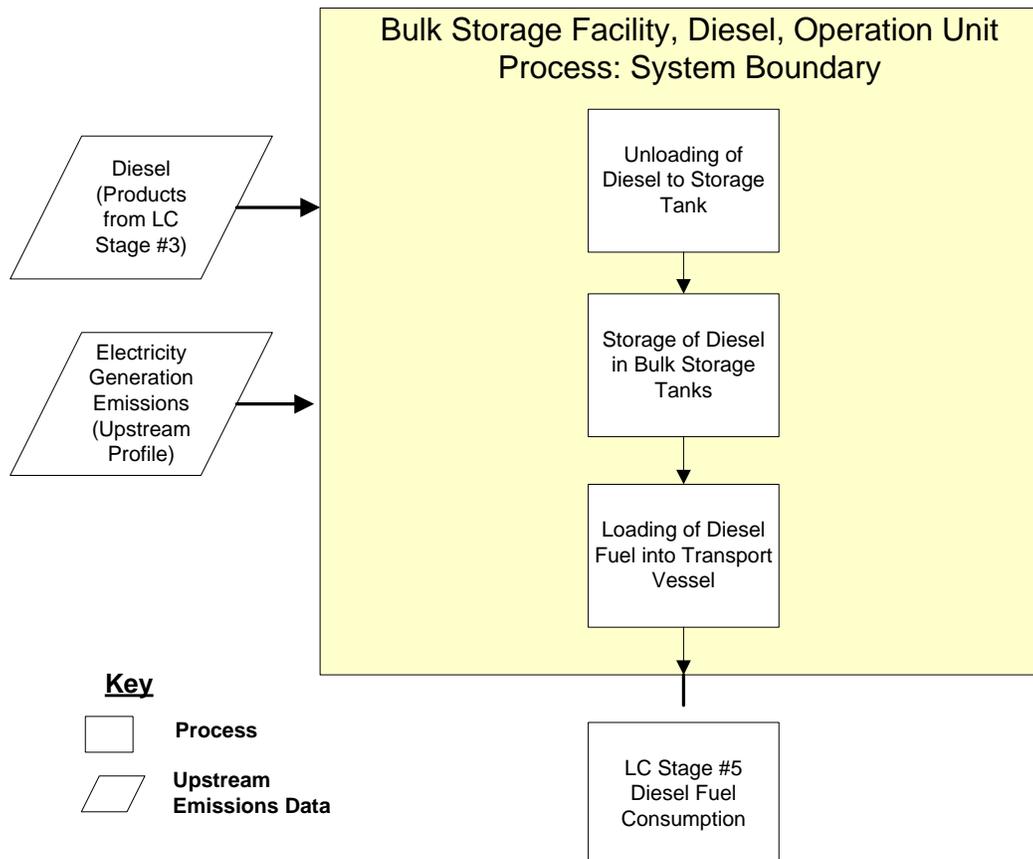
This unit process describes the operation of a bulk storage terminal during the transport (Life Cycle [LC] Stage #4) of finished diesel to a refueling station. Diesel fuel is refined in LC Stage #3 and then transported to the bulk storage facility by pipeline, truck, or rail in separate unit processes, before distribution and eventual use under LC Stage #5.

Boundary and Description

Figure 1 provides an overview of the sub-processes contained within the bulk storage facility operations, as well as relevant upstream profiles that are associated with this unit process. Upon arrival at the bulk storage facility, diesel is pumped from the transport vessel to a storage tank within the facility. Diesel evaporation occurs during both unloading and storage in the tank. The diesel is later moved from the storage tank to a truck for distribution to refueling stations. This unit process ends when the diesel is loaded into the truck and is ready for transport, under LC Stage #4.

Inputs to the unit process, as shown in **Figure 1**, include the diesel fuel to be stored and the electricity for running pumps. The rate of electricity consumption for a bulk storage terminal was not readily available, so the electricity consumption of a refueling facility was used and assumed to be equivalent. This substitution is noted as a data limitation; however, the electricity used in pumping diesel from a transport vessel to a storage tank is expected to be very similar for both types of fuel storage facilities. Approximately 0.00125 kWh of electricity is consumed to transport one gallon of fuel throughout the unloading operation (NETL 2008).

Figure 1: Unit Process Scope and Boundary



Evaporative emissions data for diesel during truck loading and unloading was taken from a Colorado Department of Public Health and Environment Permit Report (STC, 2006). Indicated emissions included non-methane volatile organic compounds (VOCs), carbon monoxide, and nitrogen oxide. To provide additional flexibility to the unit process, it includes an adjustable parameter indicating the amount of diesel fuel lost to evaporative emissions during terminal operations. The default value included in the DS is 2.33E-06 kg/kg diesel. However, in the event that updated or more relevant evaporative emissions rates for diesel are identified, an updated value may be substituted. The bulk storage facility may contribute to water and soil emissions; however, sufficient data were not available to quantify these potential environmental releases. This is noted as a data limitation.

Table 1 shows diesel properties used for calculation of evaporation of fuel in this unit process. **Table 2** provides a summary of modeled input and output flows. Additional detail regarding input and output flows, including calculation methods, is contained in the associated DS.

Section III: Document Control Information

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