

Grid Architecture Component Class Specification

Component Class Designation: Fuel Stockpile

Summary Overview

Fuel stockpiles are large stores of material that are “burned” to produce power and are kept for times of need/scarcity. They are not examples of grid energy storage. This distinction is drawn from the nature of the source of energy – that being not originally sourced from an electric grid. Consequently, a generator plant coal pile is not grid energy storage. Similarly, a battery-based energy storage system is not a fuel stockpile.

Stockpiles exist in several different physical forms depending on the intended end-use. Examples of fuel stockpiles in solid storage form include coal, nuclear fuel rods, and petroleum. Fuel stockpiles can vary in size, reaching quantities as vast as national strategic petroleum reserves.

Logistically, fuel stockpiles can be used as buffers: they can decouple incoming supply flow of fuel from the user of fuel at the generator. An example of a buffered form is natural gas in pipelines (i.e. line packing).

Definitions

N/A

Component Class Description

Purpose and Function

Fuel stockpiles function as reserves or buffers of material that can be used to produce energy when conventional supplies are scarce or unavailable.

Strategic petroleum reserves are maintained by several nations to protect against disruptions in oil supply. Smaller stockpiles of refined petroleum, such as the Northeast Home Heating Oil Reserve, are intended to buffer against interruptions in supply during severe winter storms.

Line packing increases the pressure of gas stored in a pipeline and is used to temporarily increase the capacity of a gas pipeline to meet the next day peak demand.

Key externally visible properties

Energy Density – The amount of energy stored per unit volume of the fuel, typically specified in MJ/kg.

Storage Form – The physical form of the stockpiled fuel.

Rate of Decay or Degradation – The rate at which fuel decays or degrades into a form where its performance is reduced, which may indicate the useful life of the fuel while stockpiled.

Volume/Size – The physical volume or size of the stockpile.

Interface descriptions

N/A

Table of relevant standards

Standard Name	Description	Version/Date

List of Attached Documents

Document Name/File Name	Description	Version/Date

References

No.	Reference

Version History

Action	Date	Description	Author(s)
Created	2 November, 2018	Initial draft	B. Kelley