



Technical Report
NREL/TP-5400-62027
May 2014

Next Generation Hydrogen Station Composite Data Products

Data through Quarter 4 of 2013

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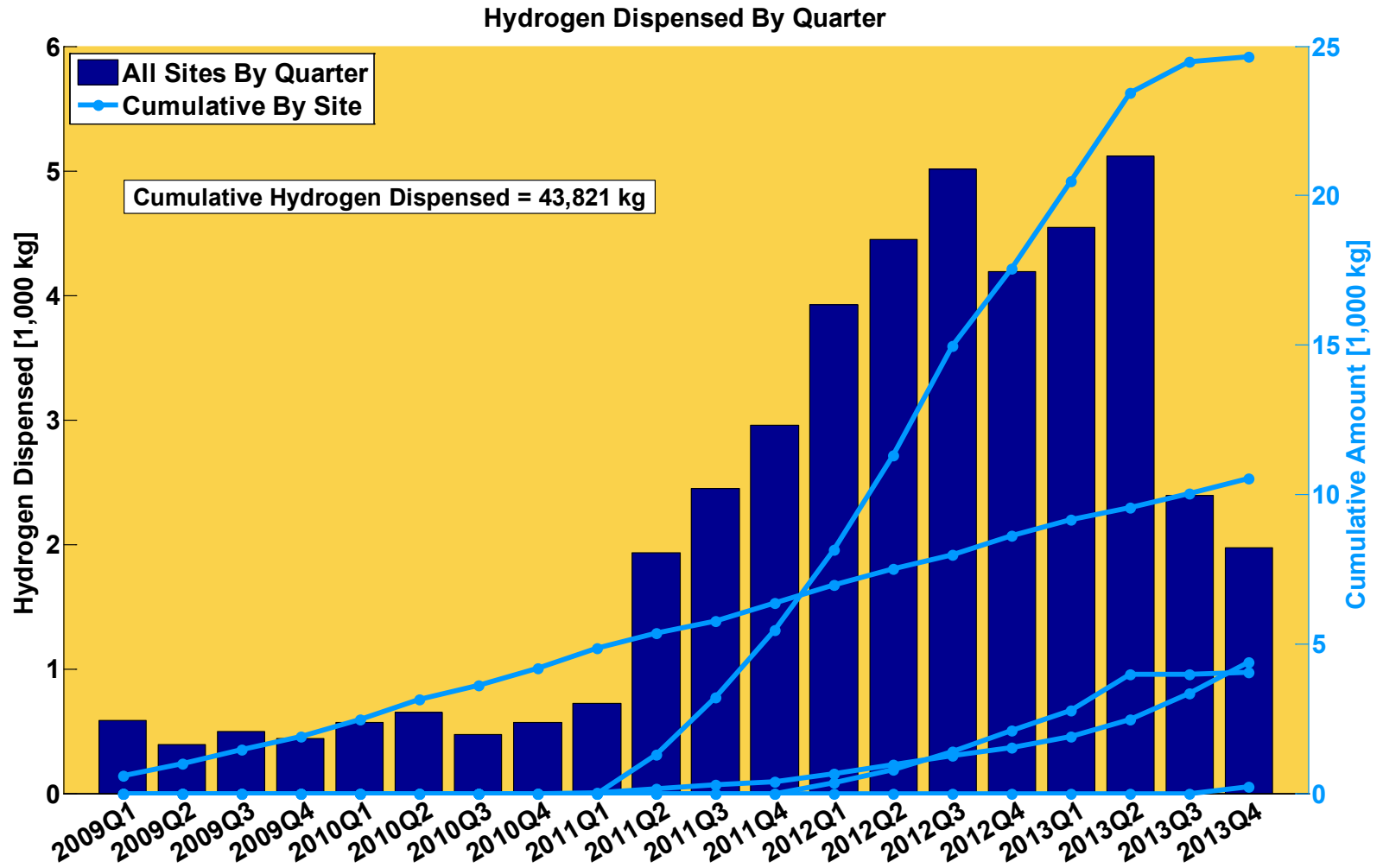
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Hydrogen Dispensed by Quarter

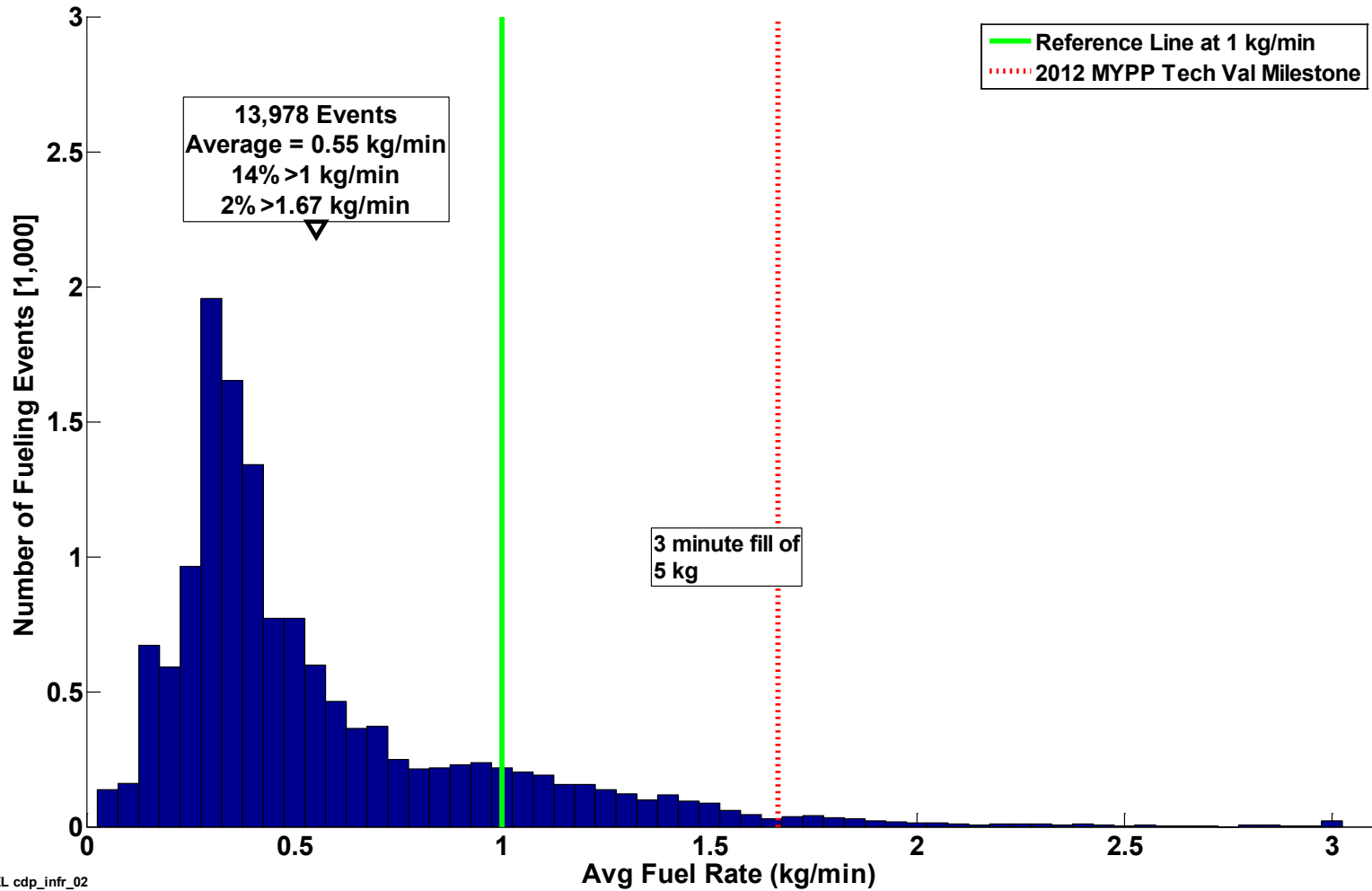


NREL cdp_infr_01

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Histogram of Fueling Rates

Histogram of Fueling Rates

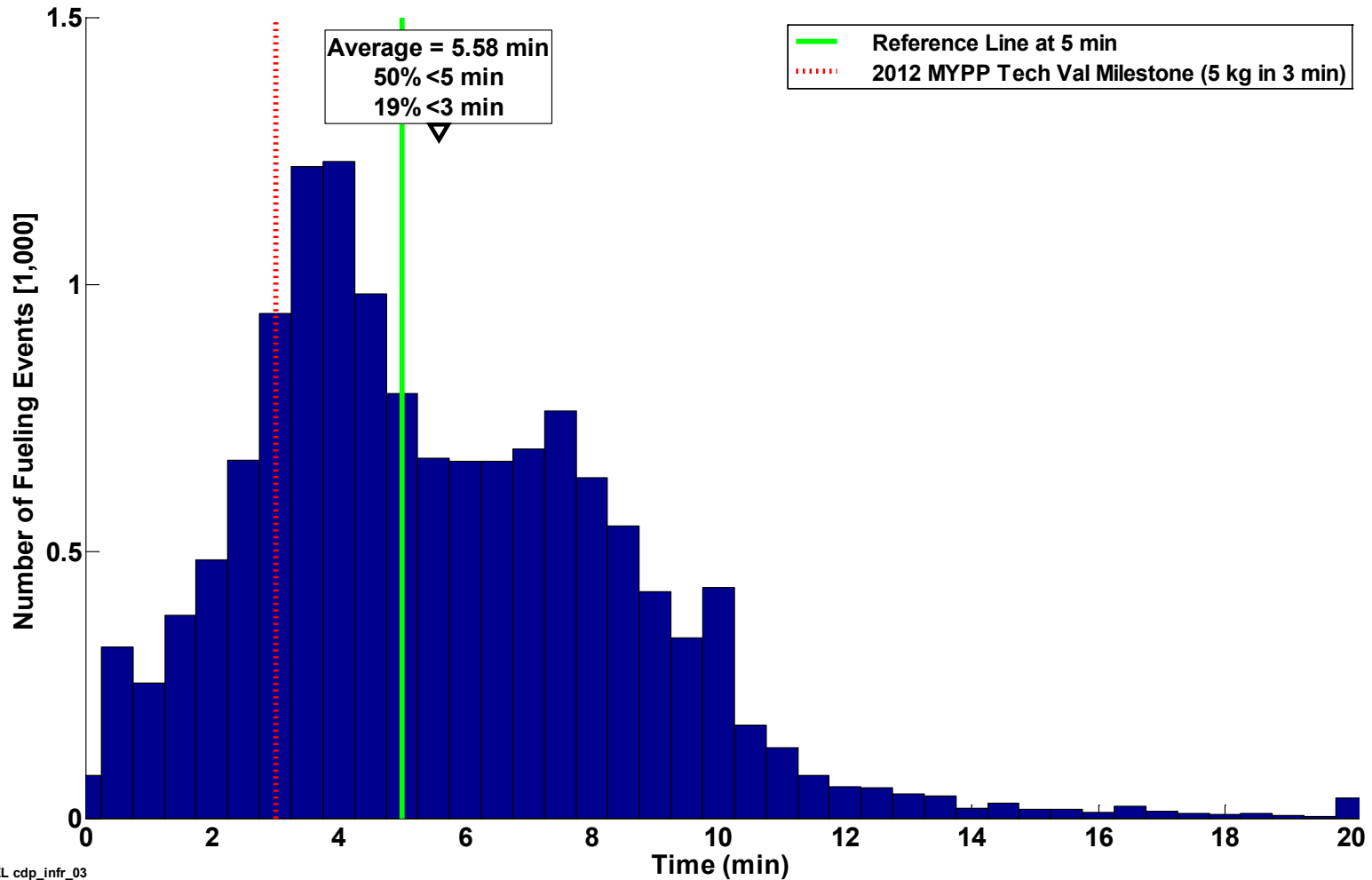


NREL cdp_infr_02

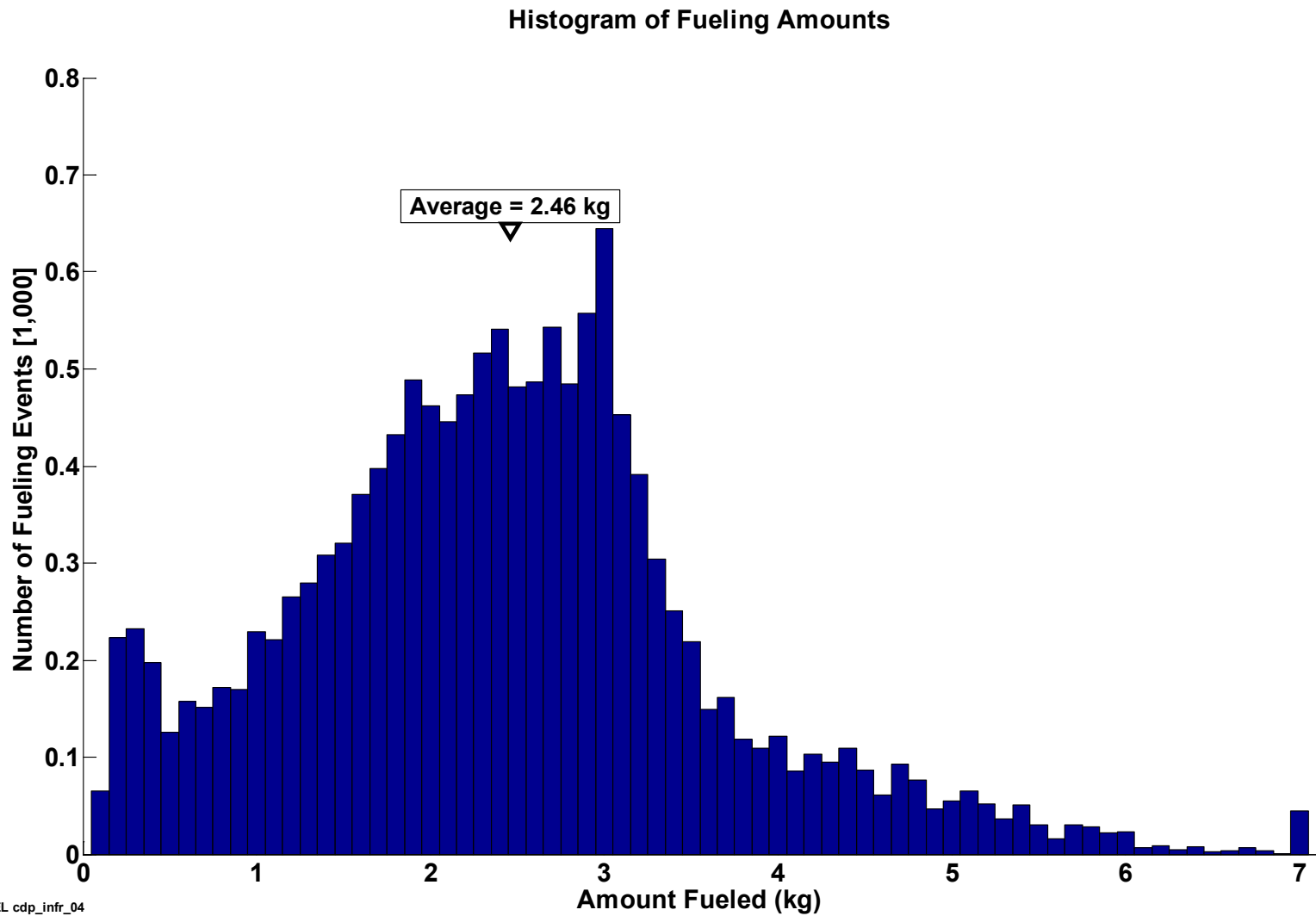
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Histogram of Fueling Times

Histogram of Fueling Times



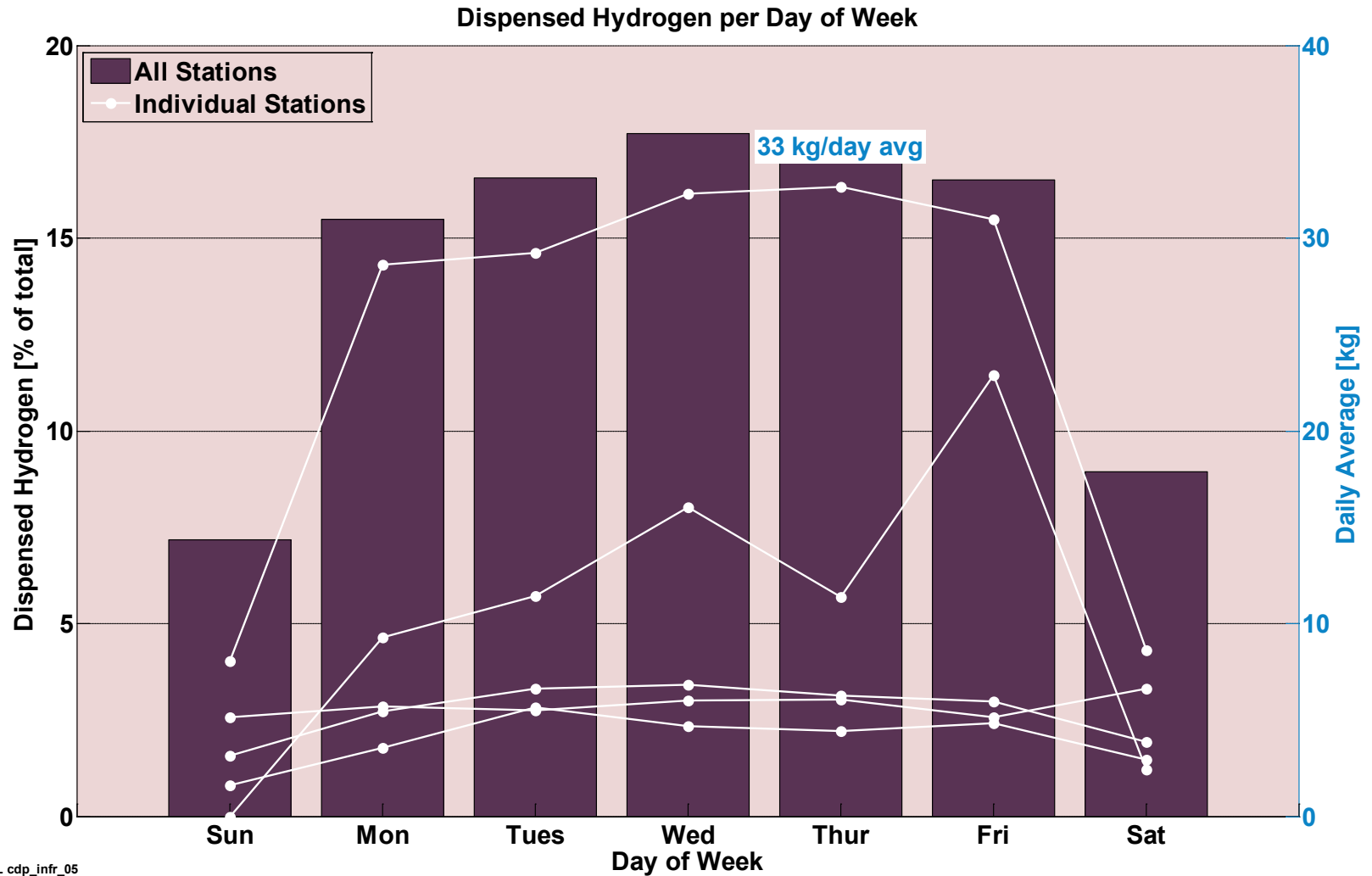
Histogram of Fueling Amounts



NREL cdp_infr_04

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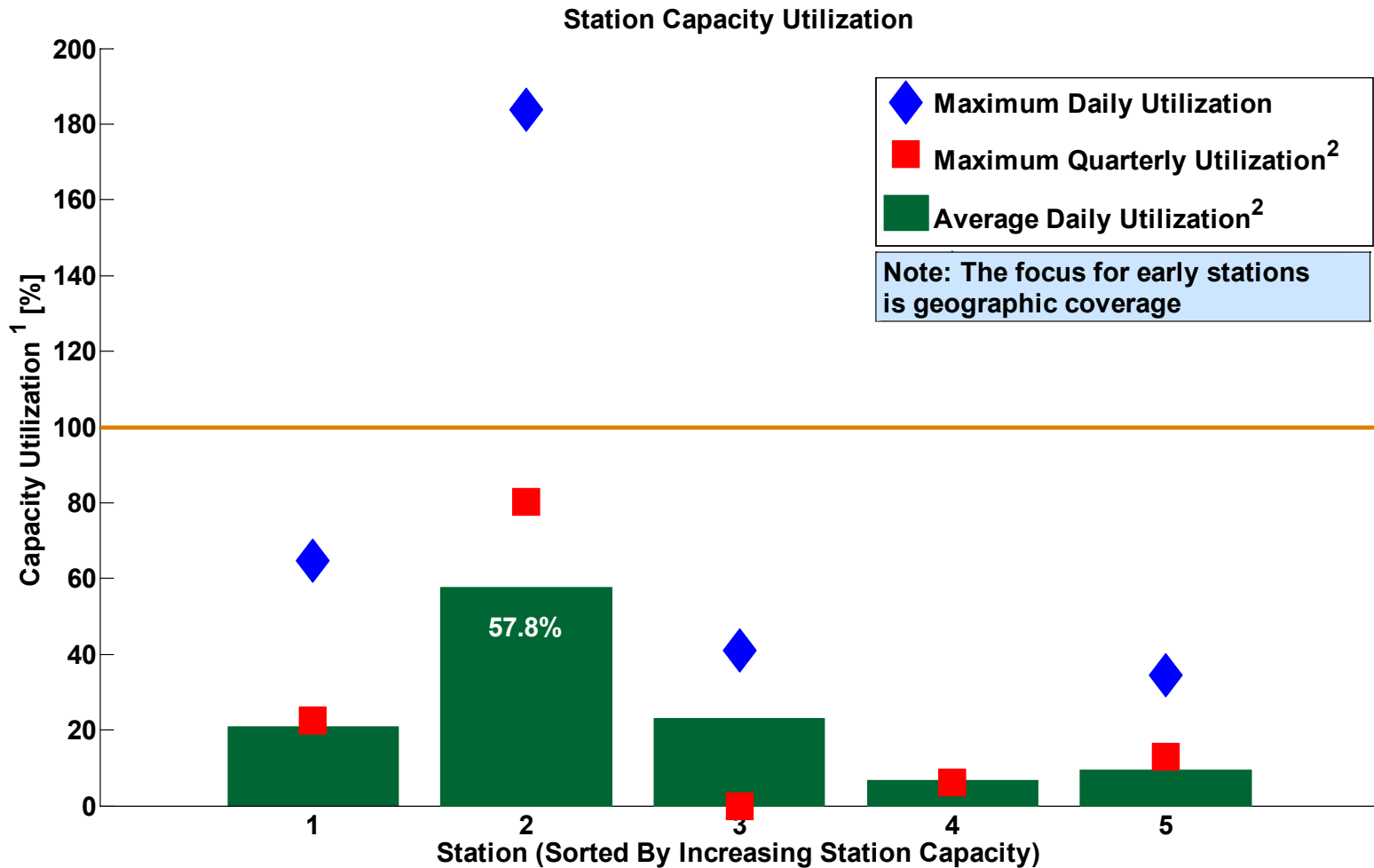
Dispensed Hydrogen per Day of Week



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Station Capacity Utilization

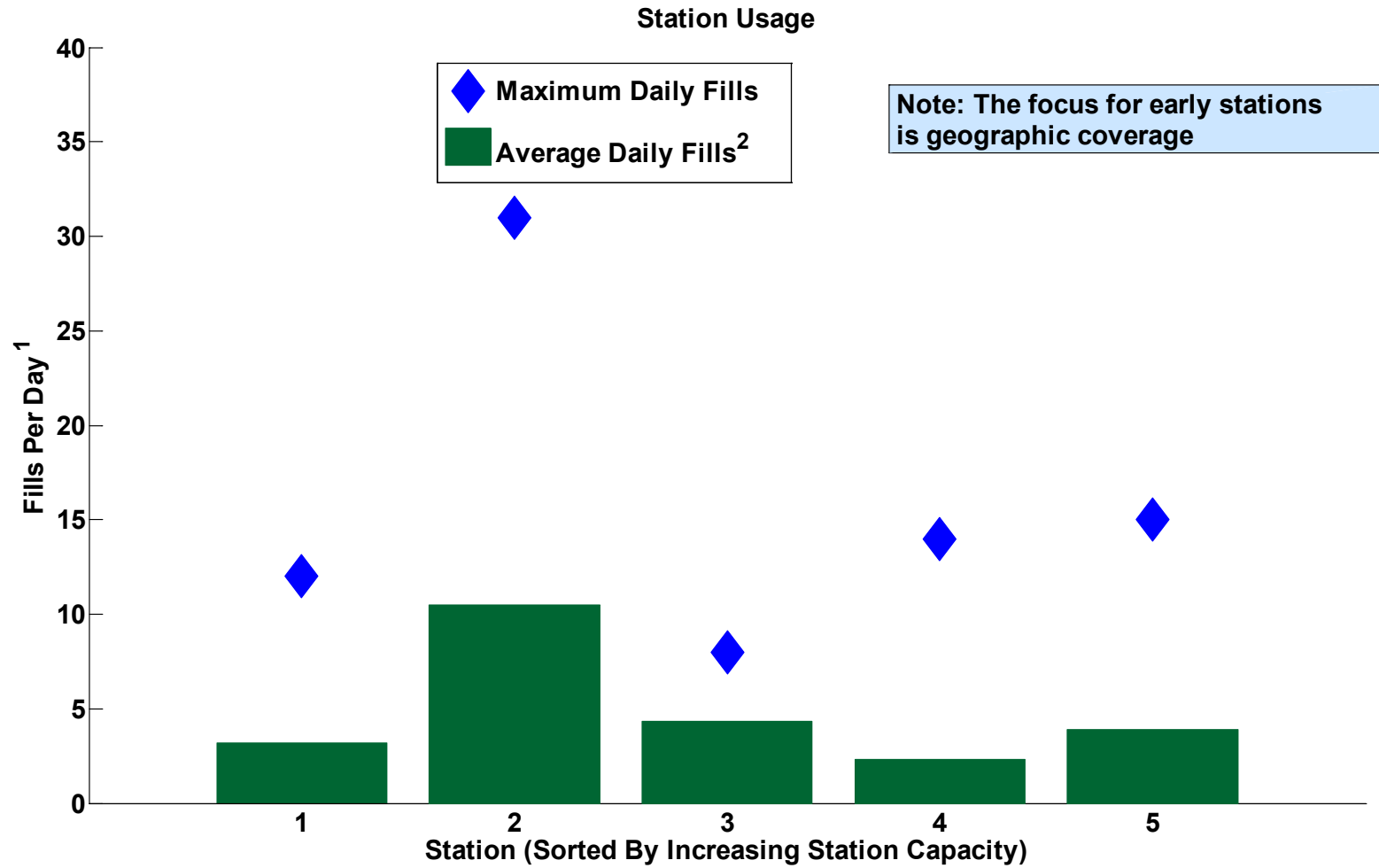


¹ Station nameplate capacity reflects a variety of system design considerations including system capacity, throughput, system reliability and durability, and maintenance. Actual daily usage may exceed nameplate capacity.

² Maximum quarterly utilization considers all days; average daily utilization considers only days when at least one filling occurred

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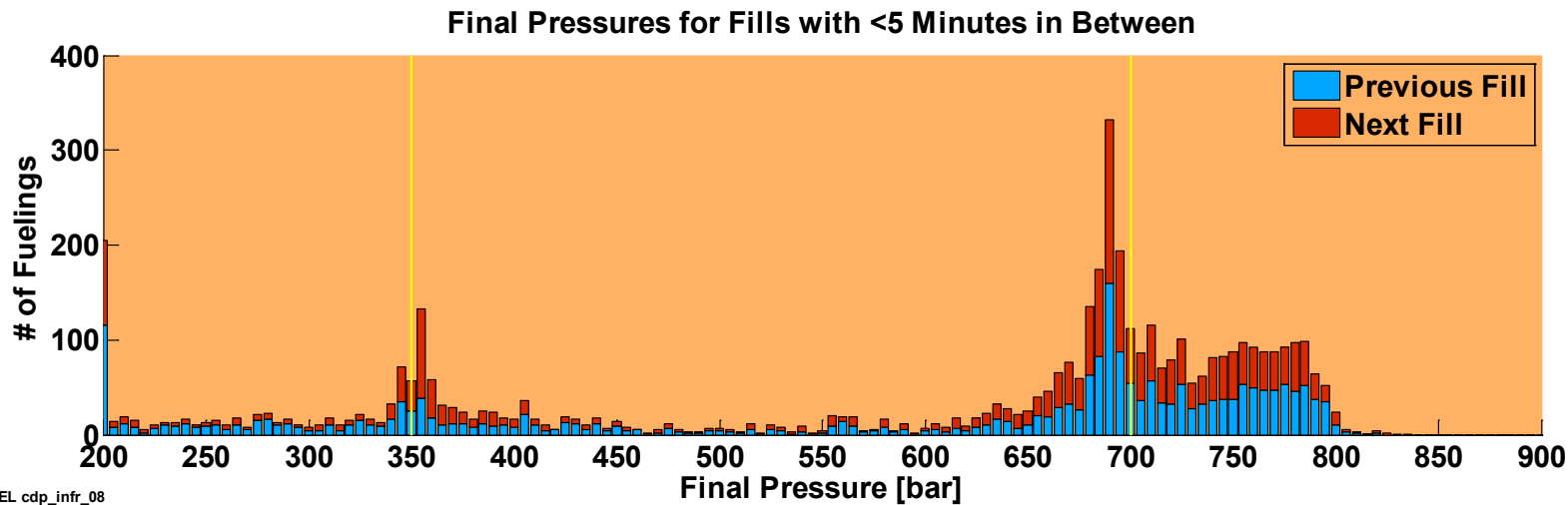
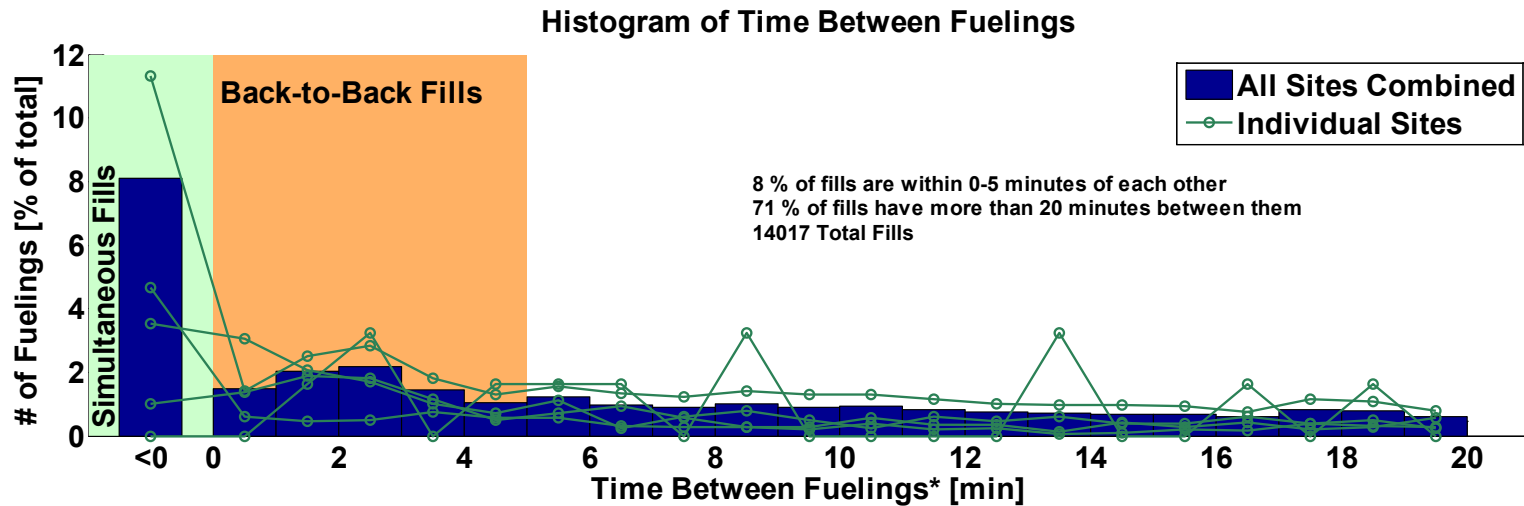
Station Usage



¹Excludes hydrogen fills of < 0.5 kg

²Average daily fills considers only days when at least one fill occurred

Time Between Fueling

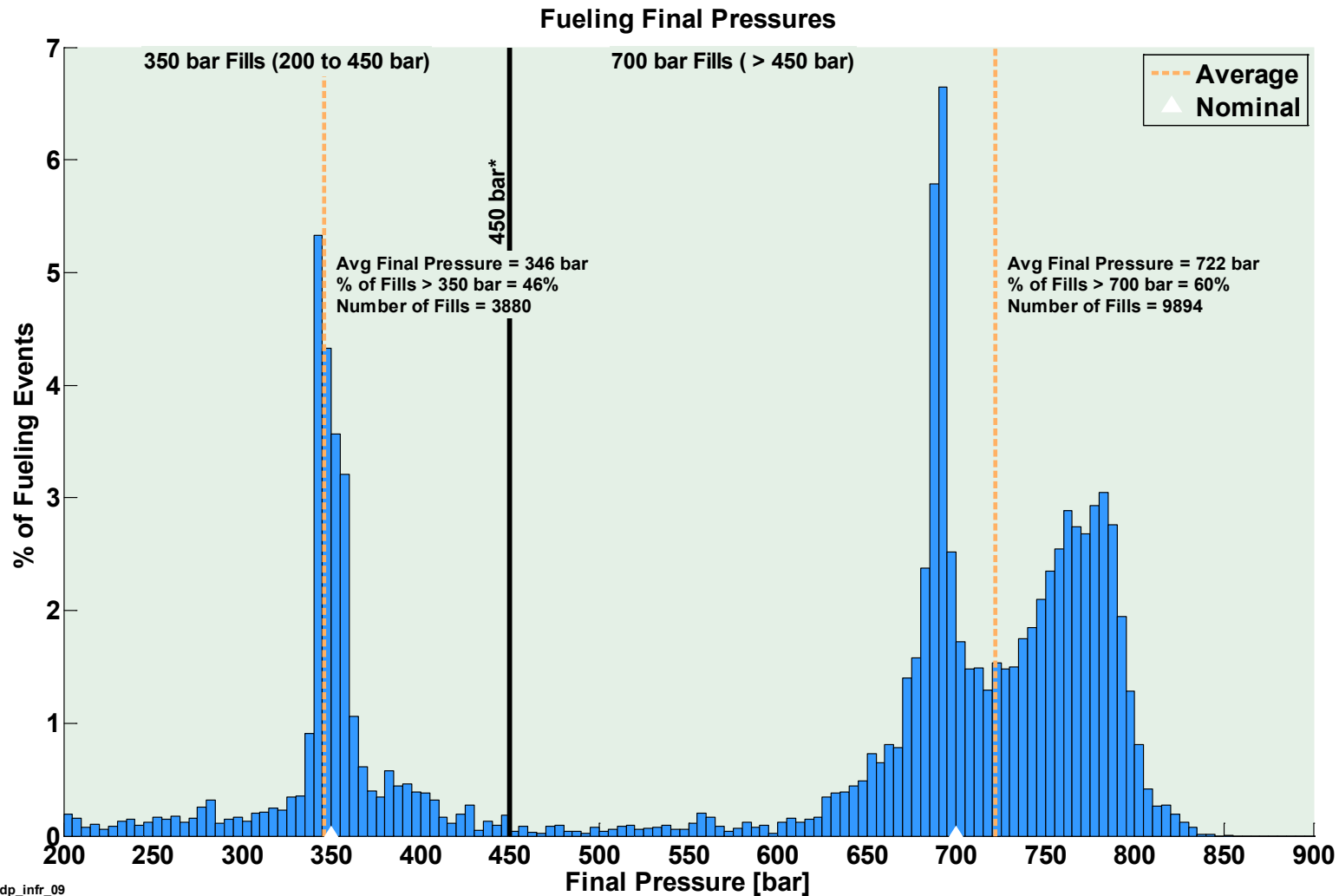


NREL cdp_infr_08

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*Time is from end of fill to start of next fill.

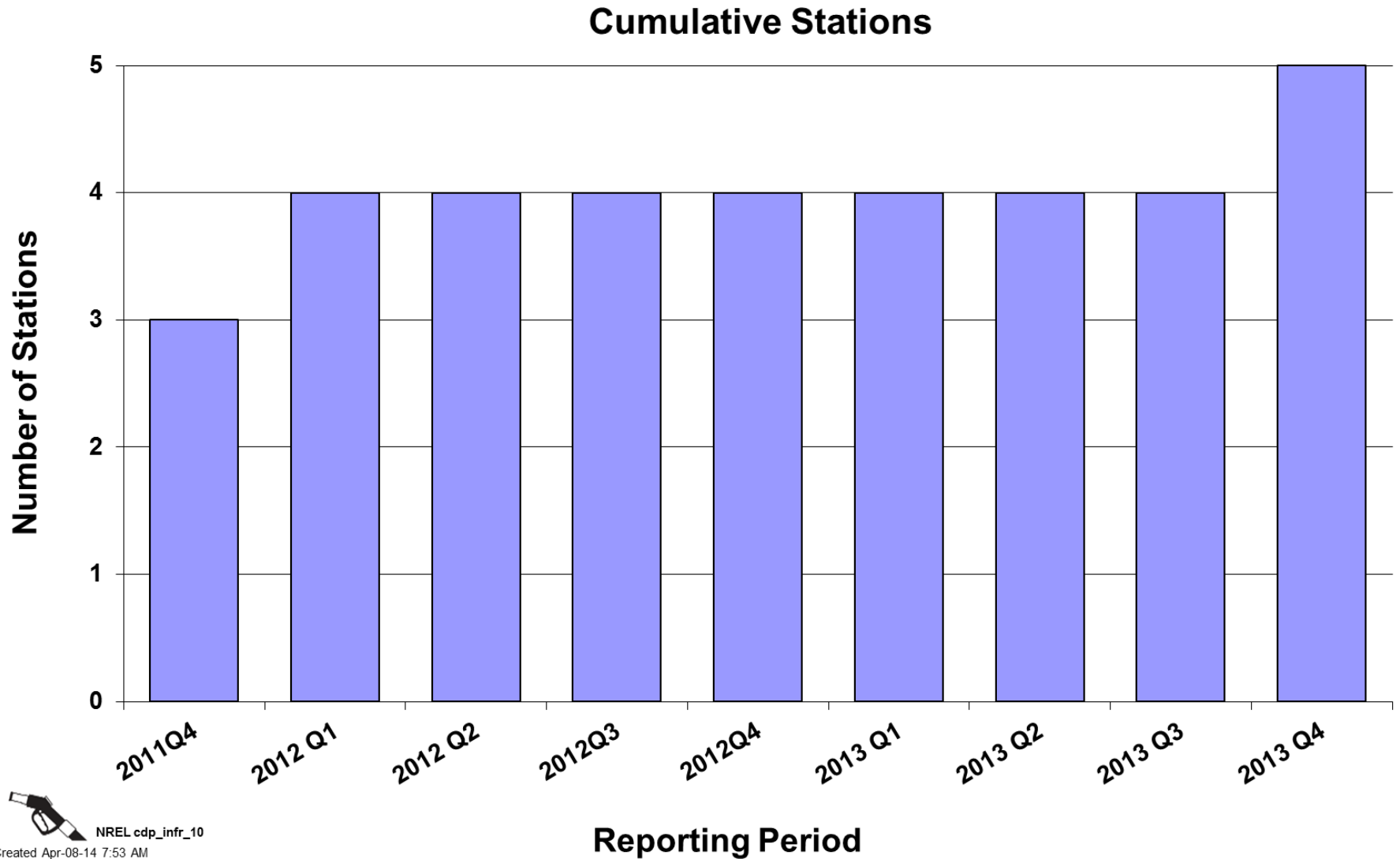
Fueling Final Pressures



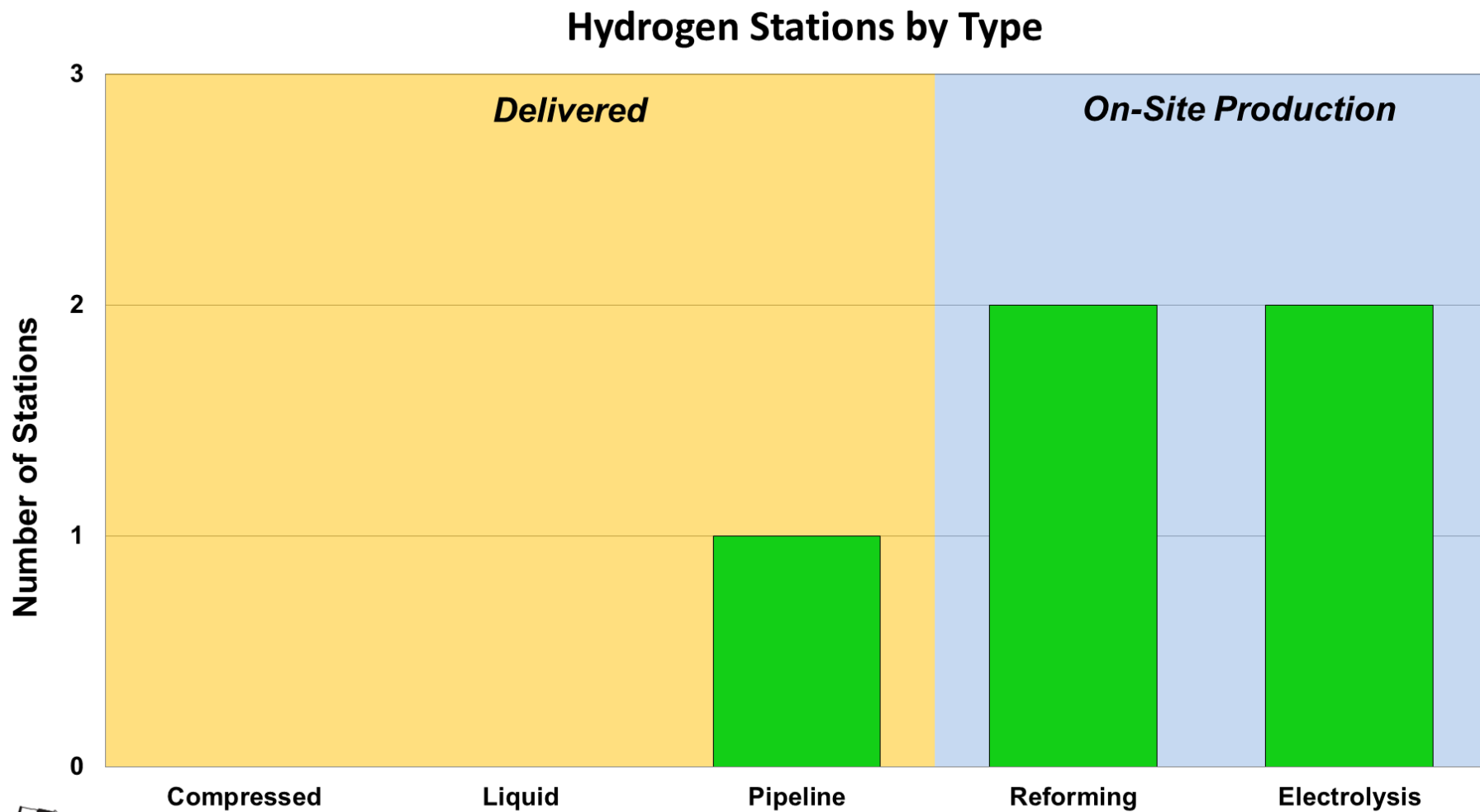
NREL cdp_infr_09

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*The line at 450 bar separates 350 bar fills from 700 bar fills. It is slightly over the allowable 125% of nominal pressure (437.5 bar) from SAE J2601.

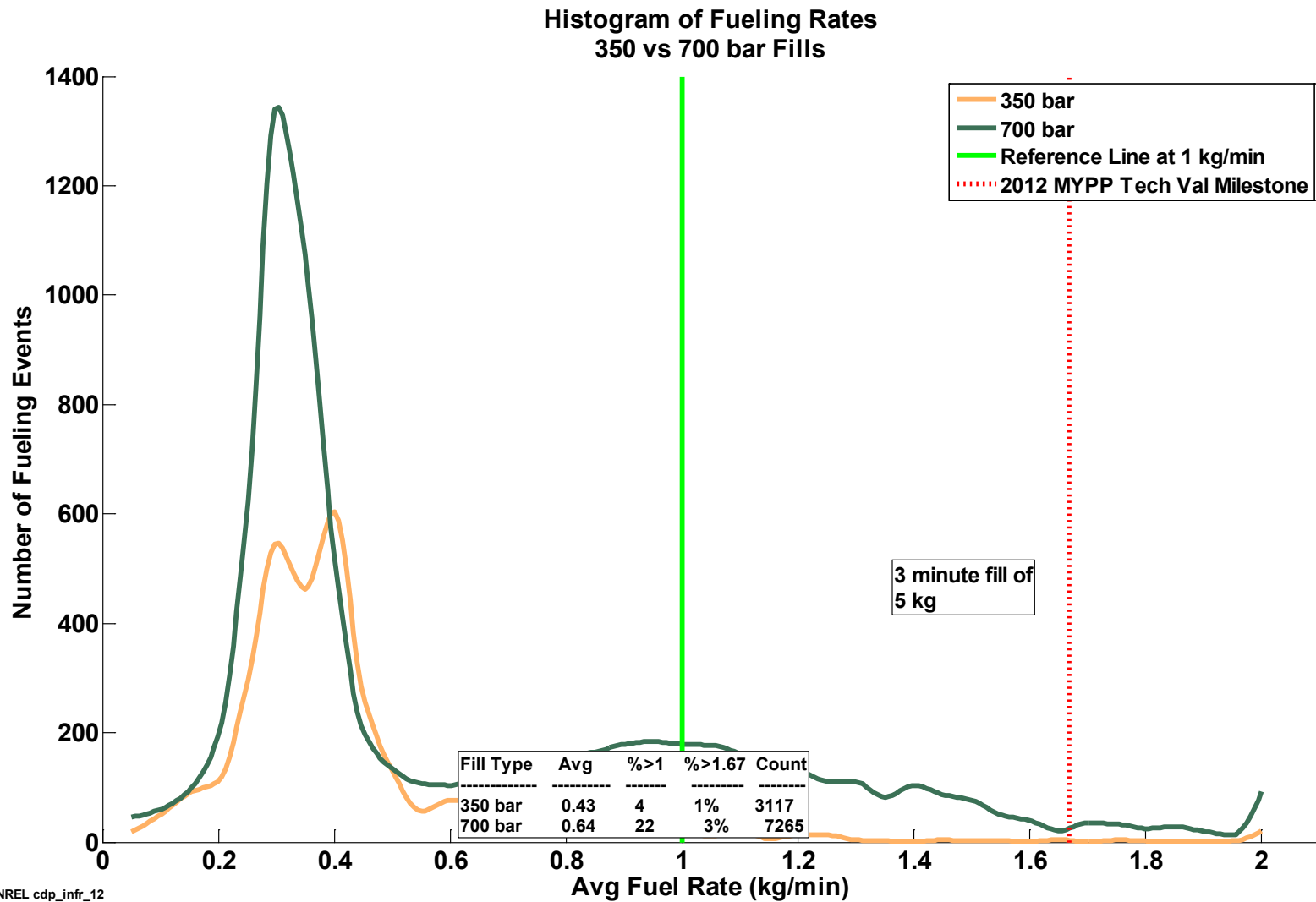


Hydrogen Stations by Type



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Fueling Rates 350 vs. 700 bar

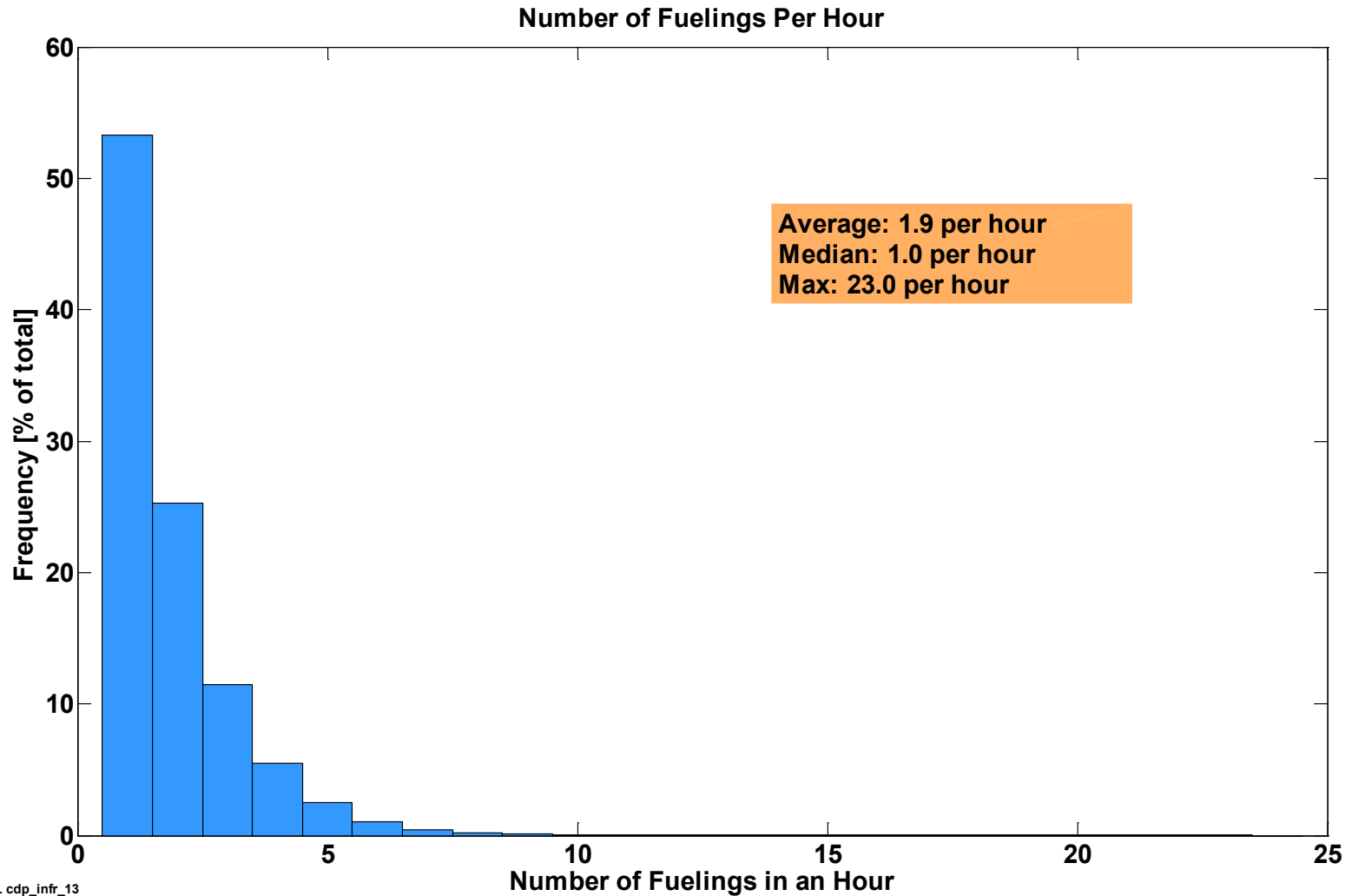


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Number of Fueling Events per Hour

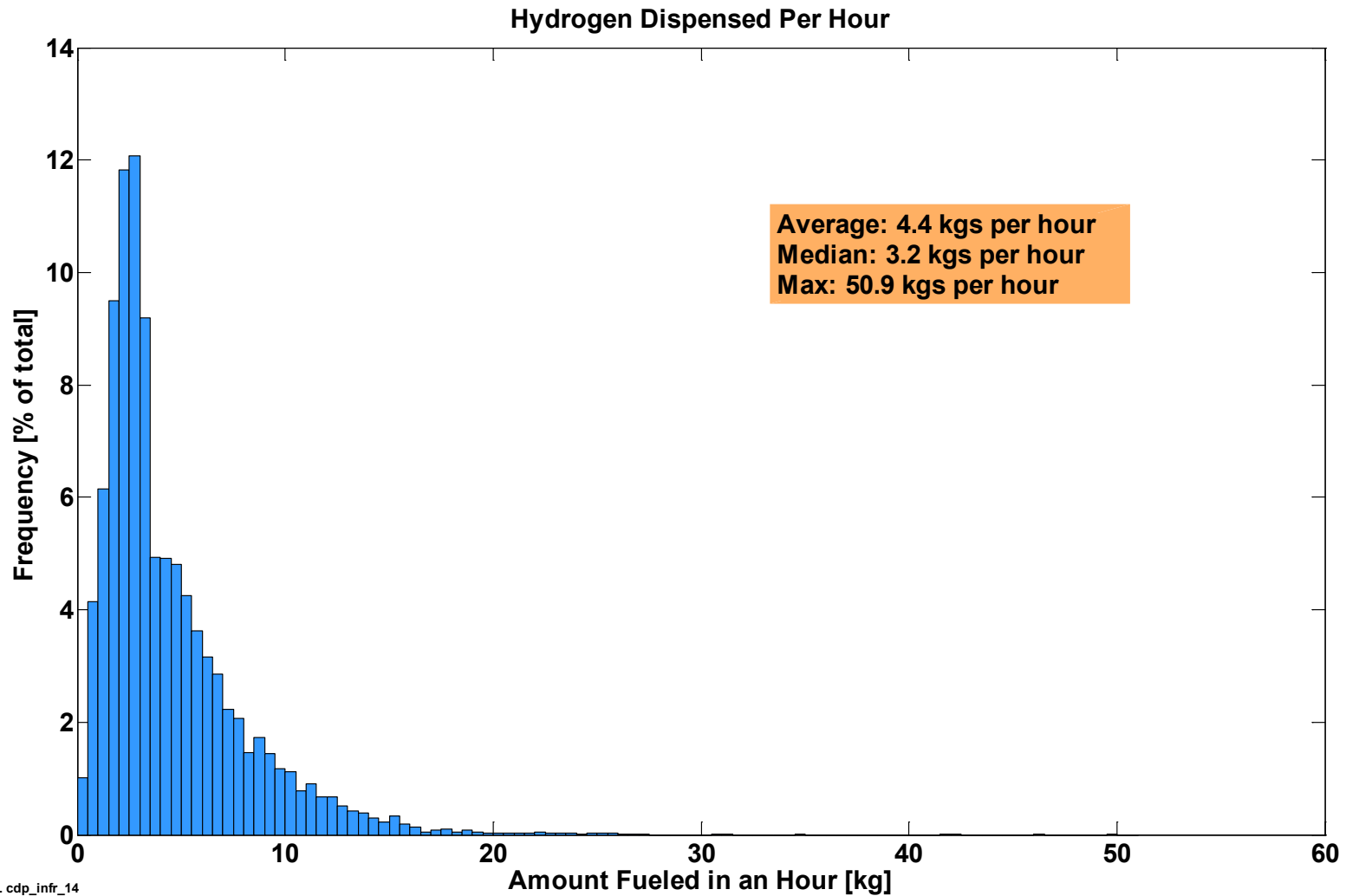


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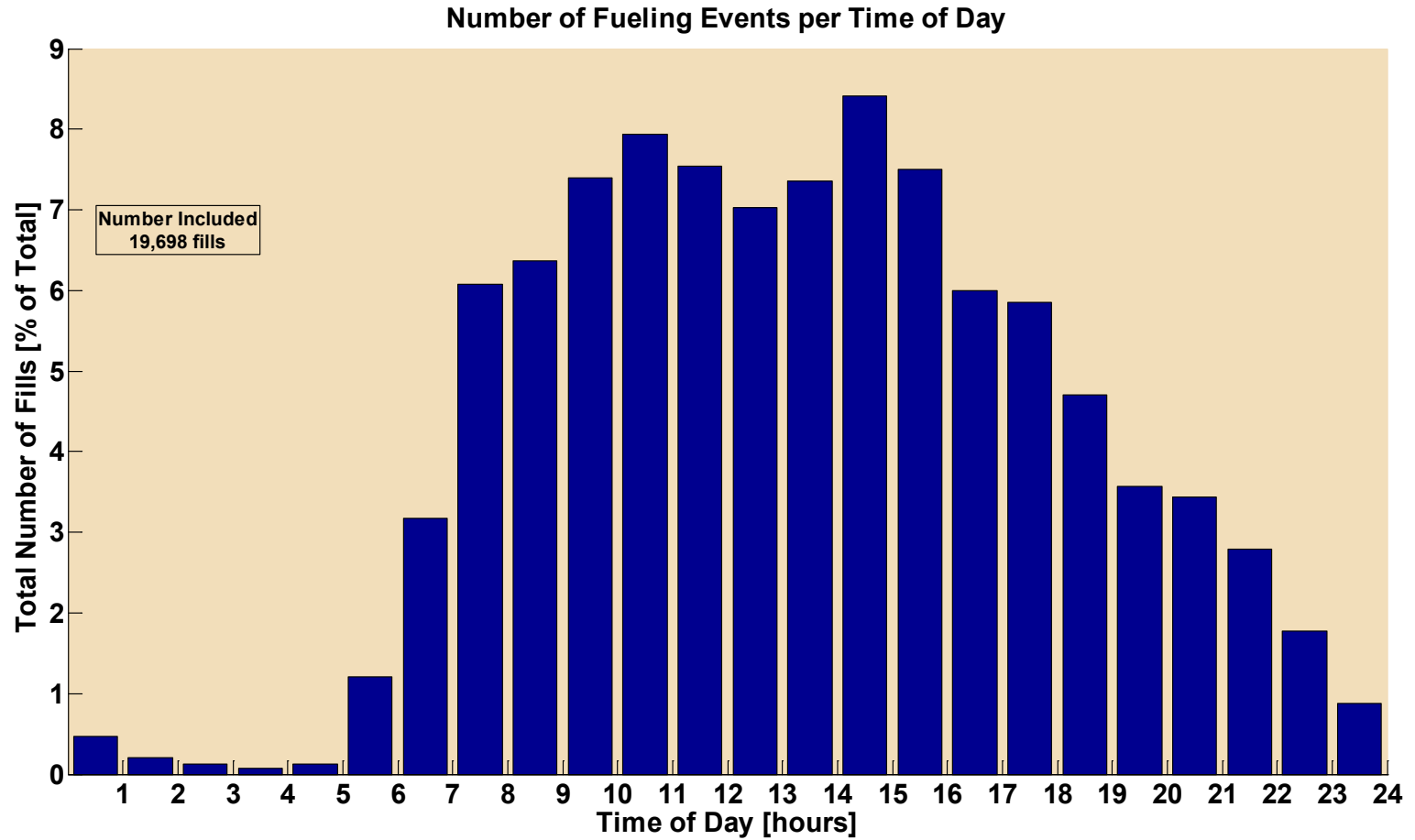
Hydrogen Dispensed per Hour



NREL cdp_infr_14

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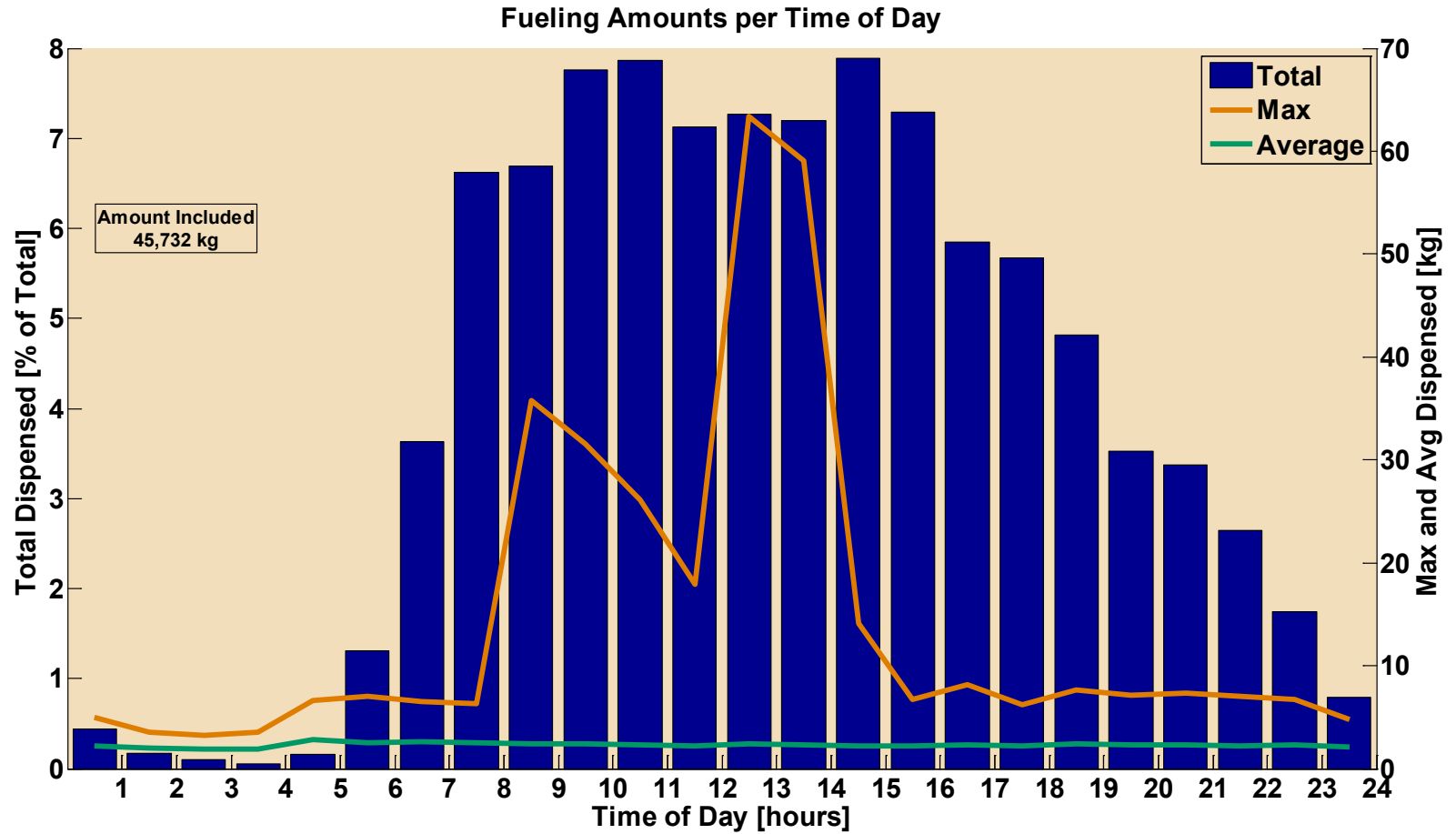
Number of Fills by Time of Day



NREL cdp_infr_15

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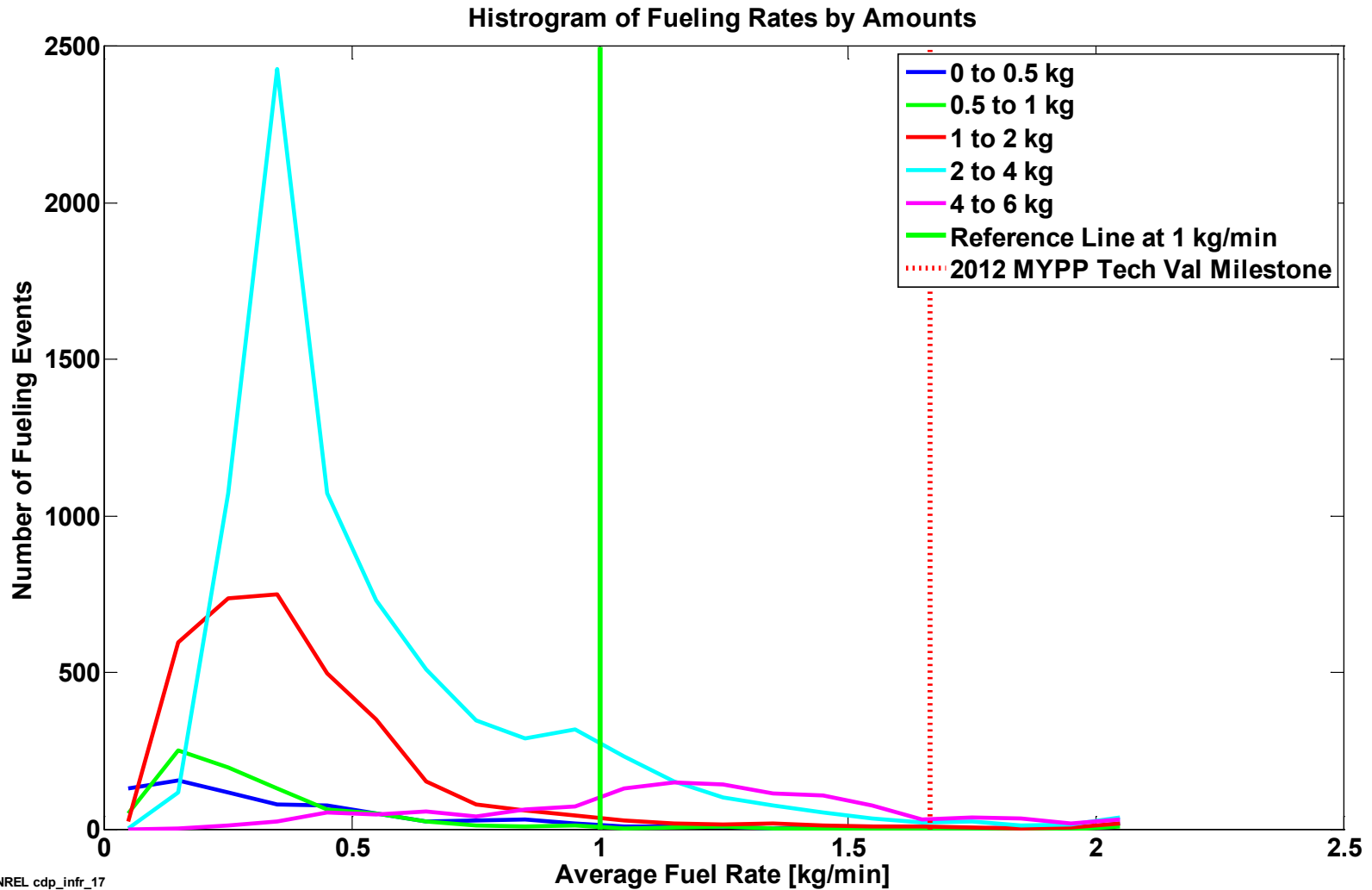
Fueling Amounts per Time of Day



NREL cdp_infr_16

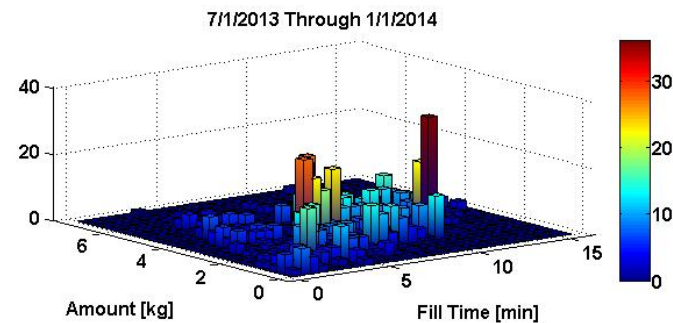
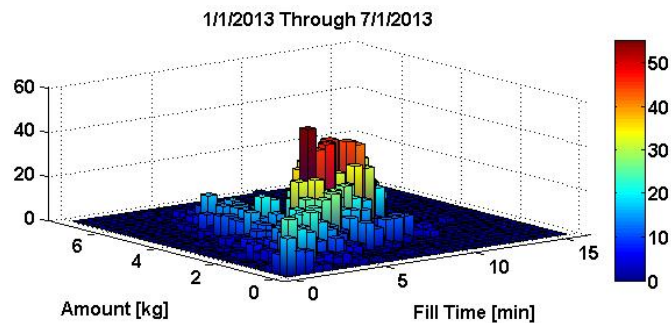
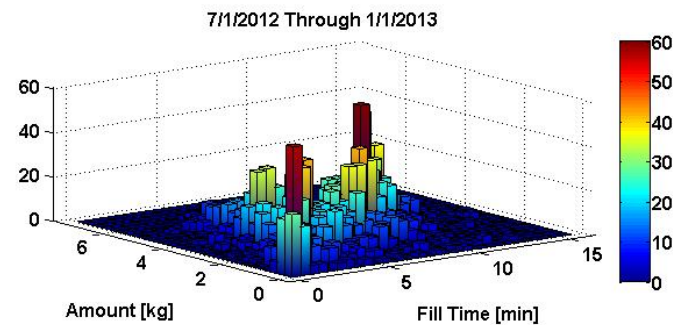
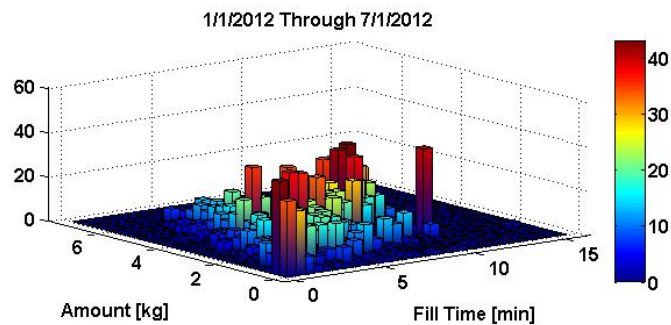
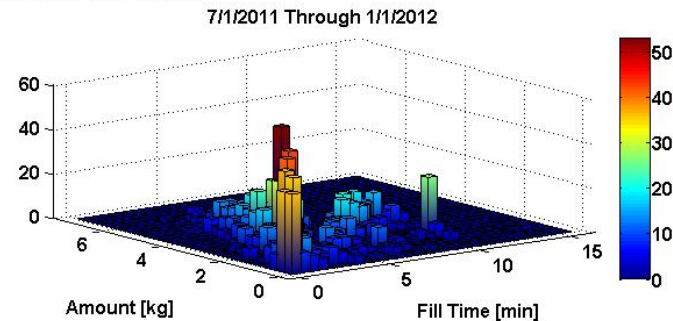
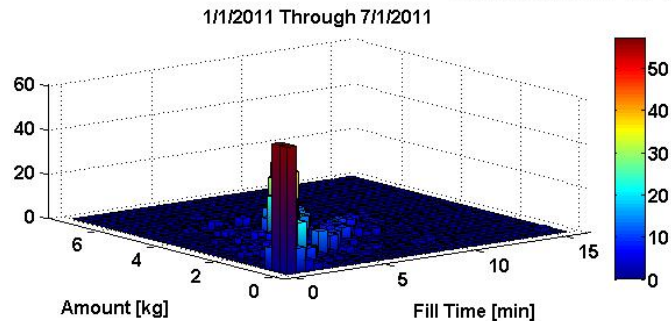
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Fueling Rates by Amount Filled



Fueling Amount vs. Time to Fill

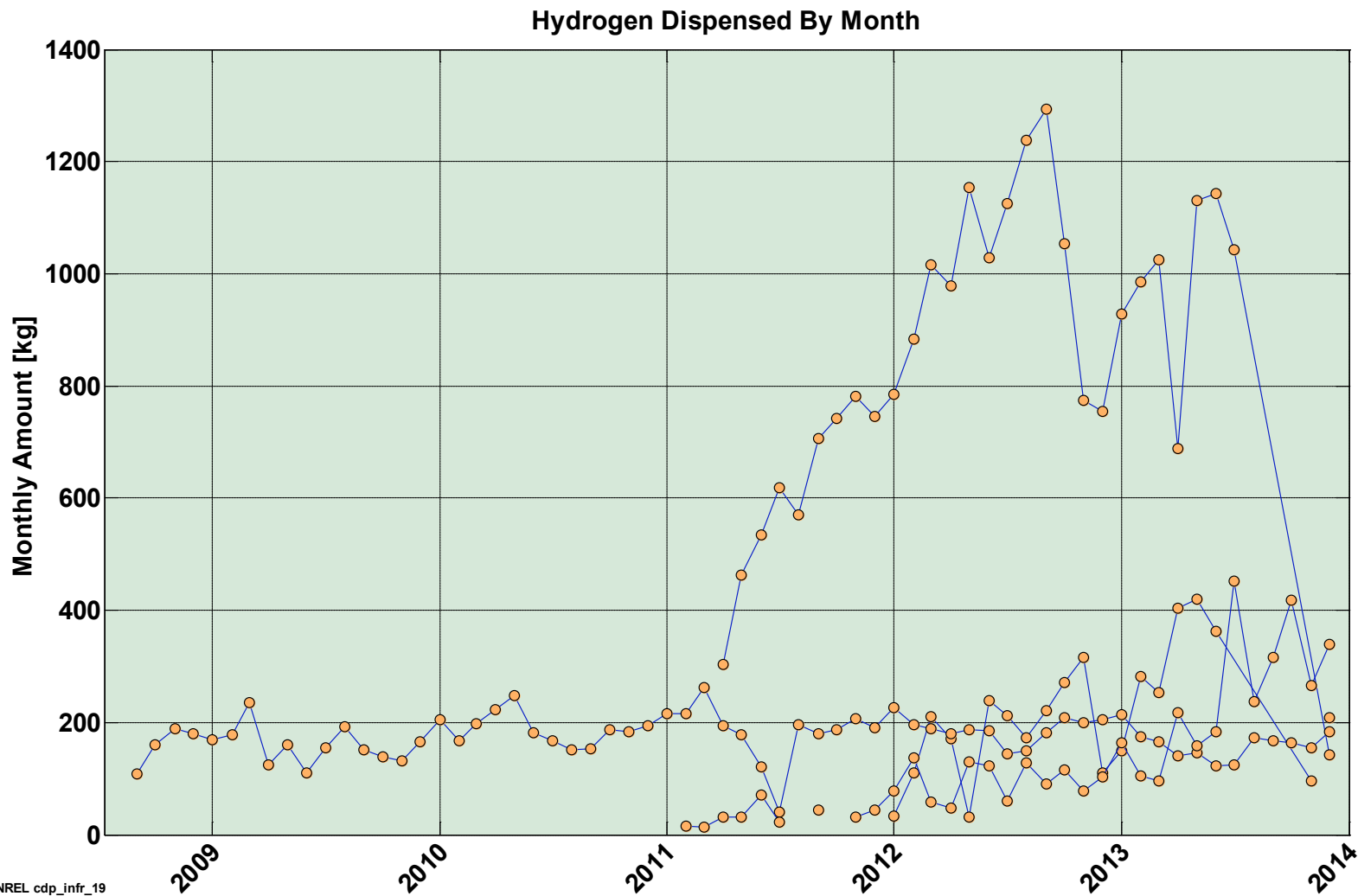
Histogram of Fueling Amount Vs Time



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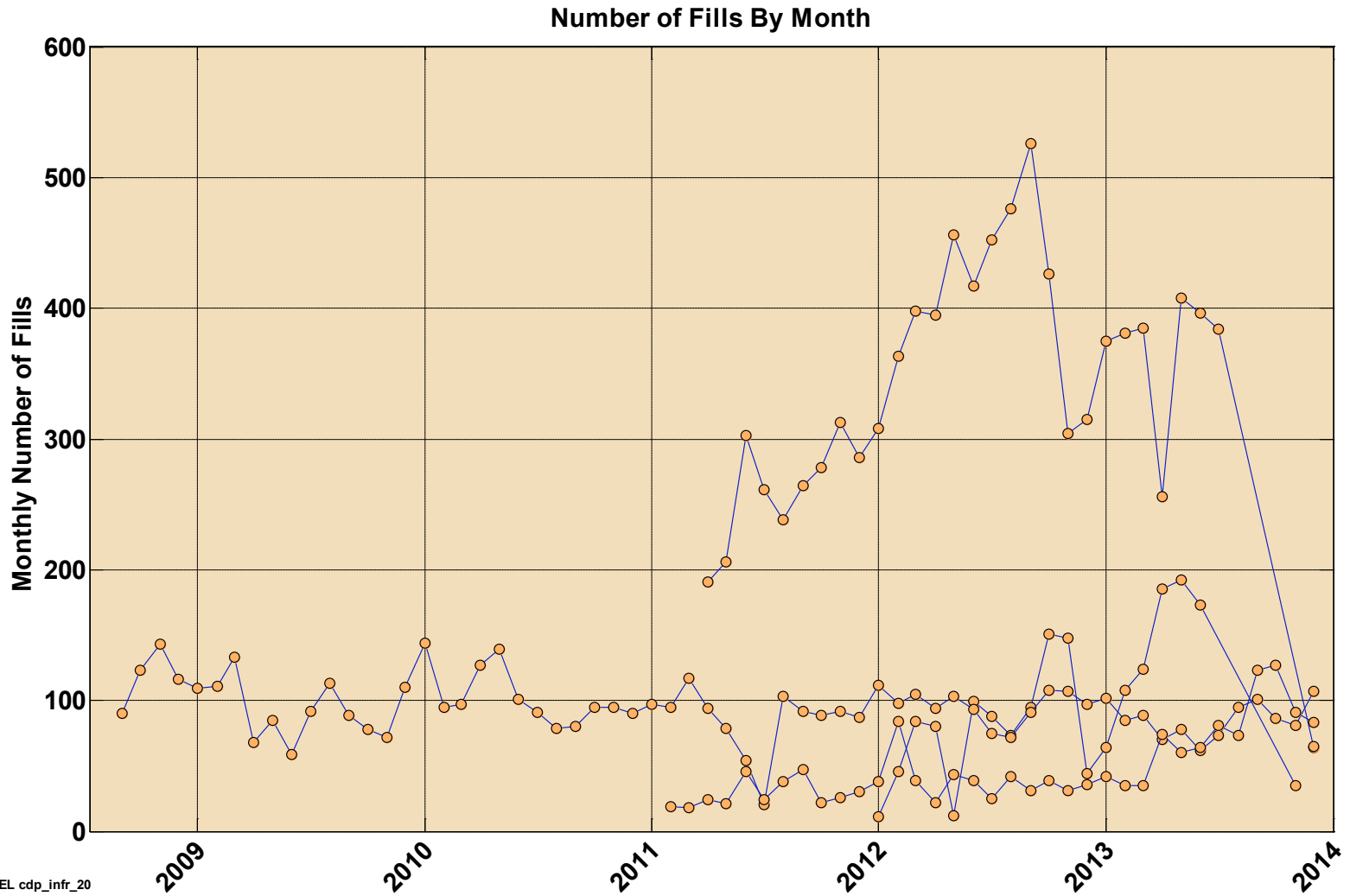
Hydrogen Dispensed by Month




NREL cdp_infr_19

Created: Apr-07-14 4:43 PM | Data Range: 2009Q1-2013Q4

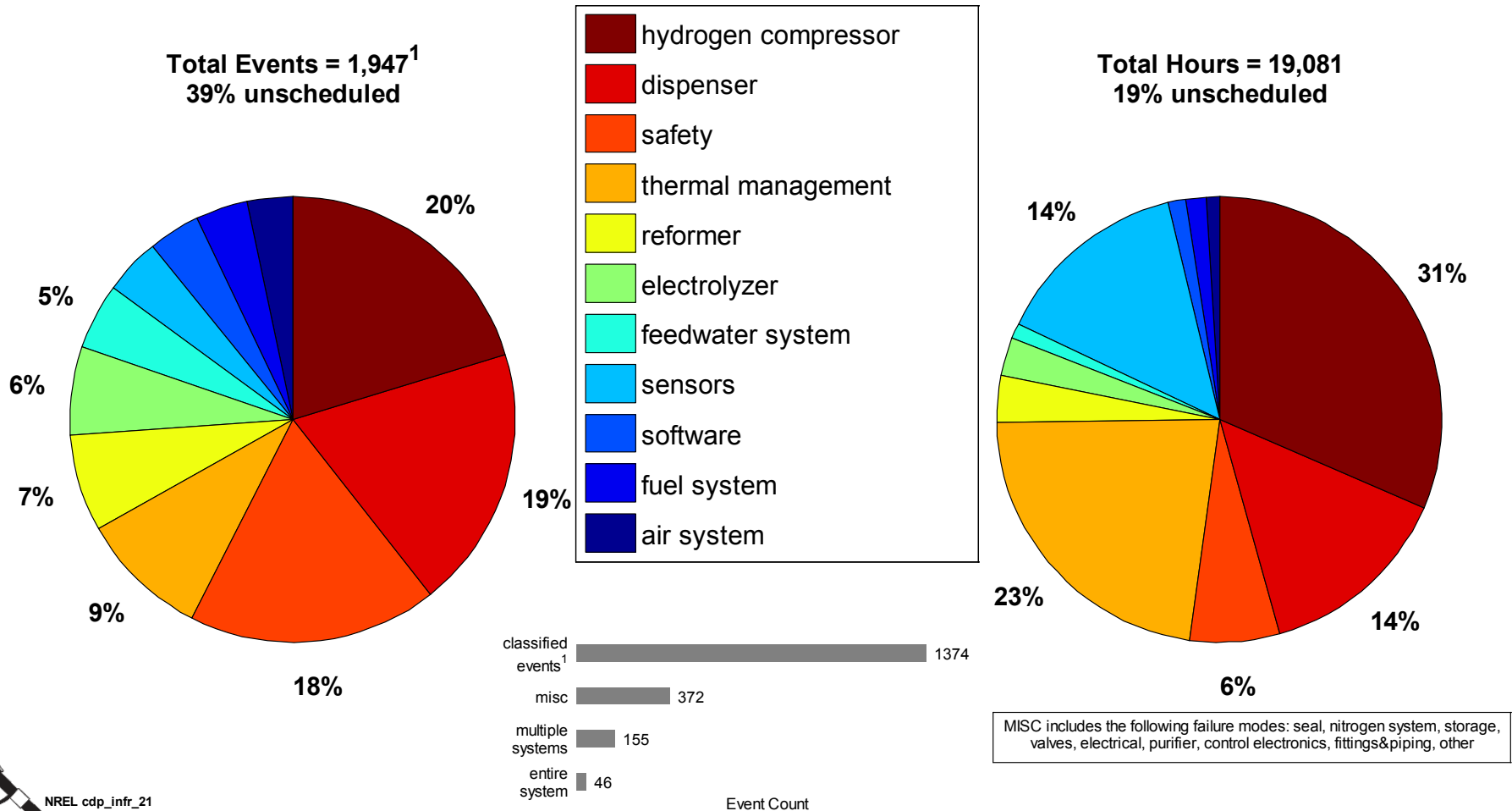
Number of Fills by Month



 NREL cdp_infr_20
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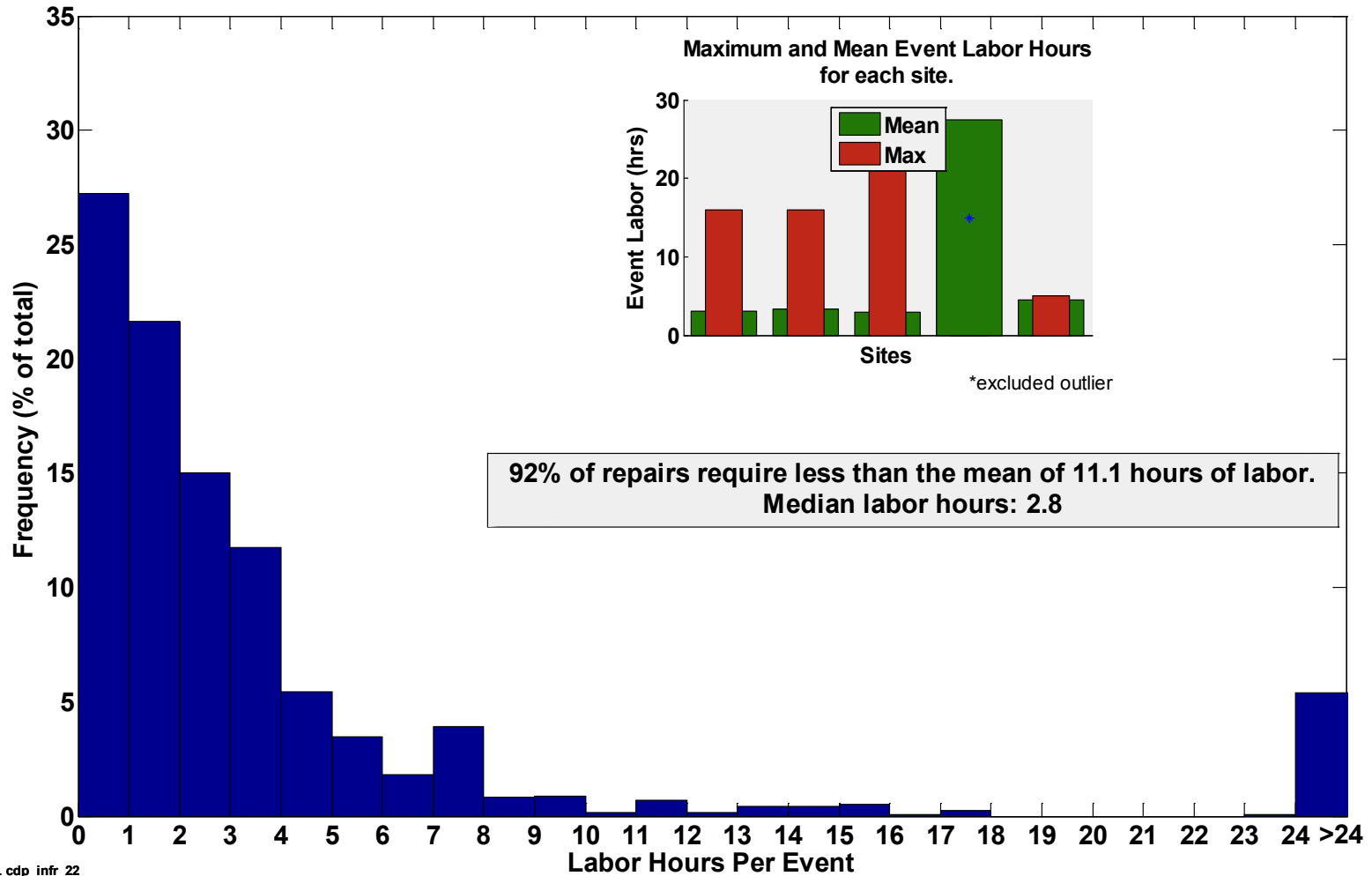
Maintenance by Equipment Type

Maintenance by Equipment Type



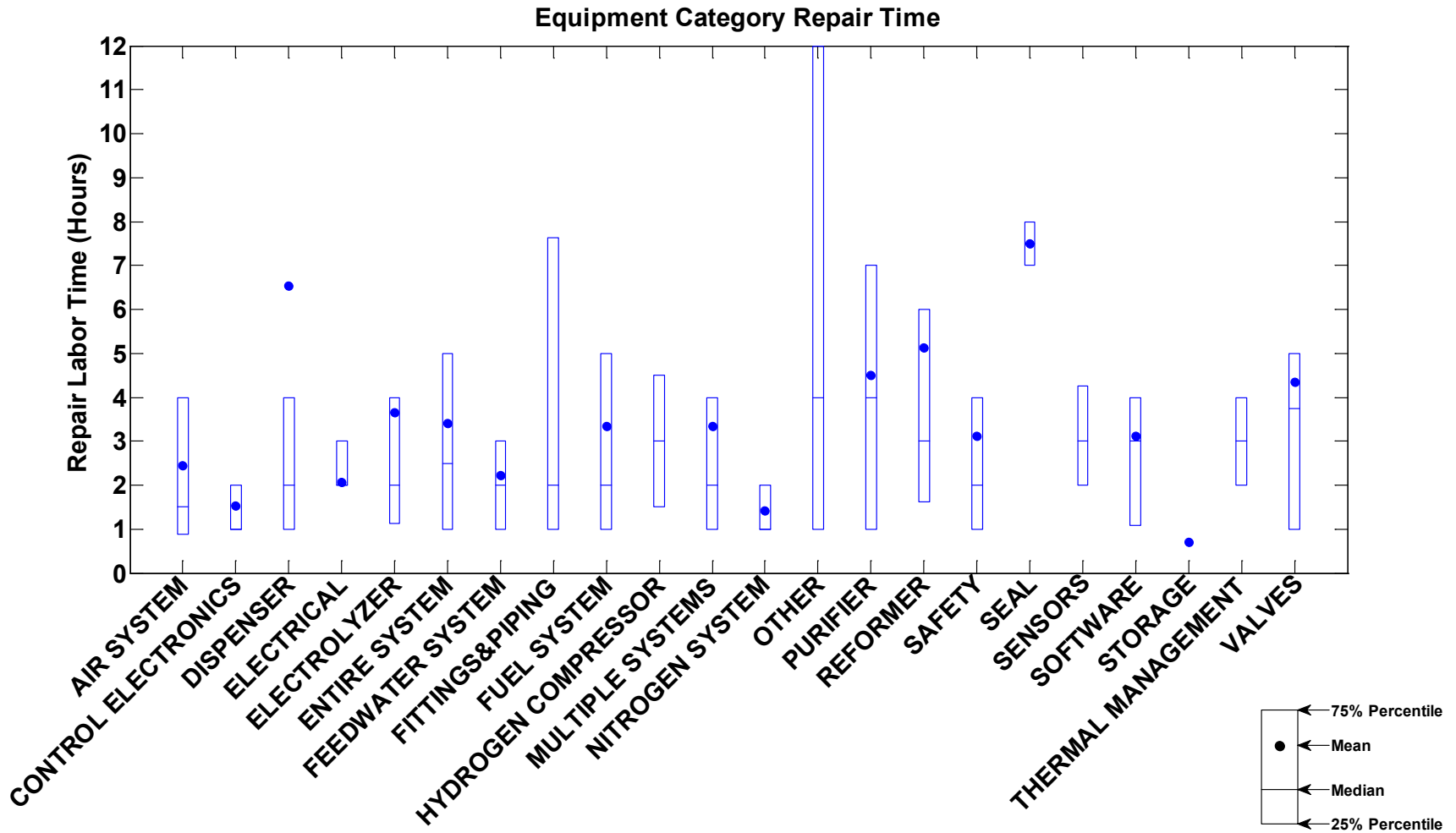
Maintenance Labor Hours Breakdown

Infrastructure Maintenance Labor Hours Breakdown



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Equipment Category Repair Time

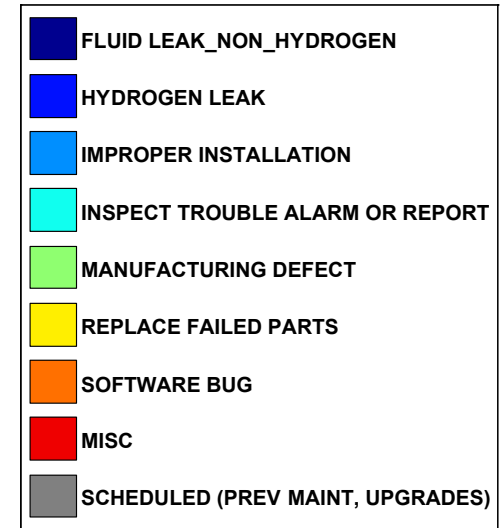
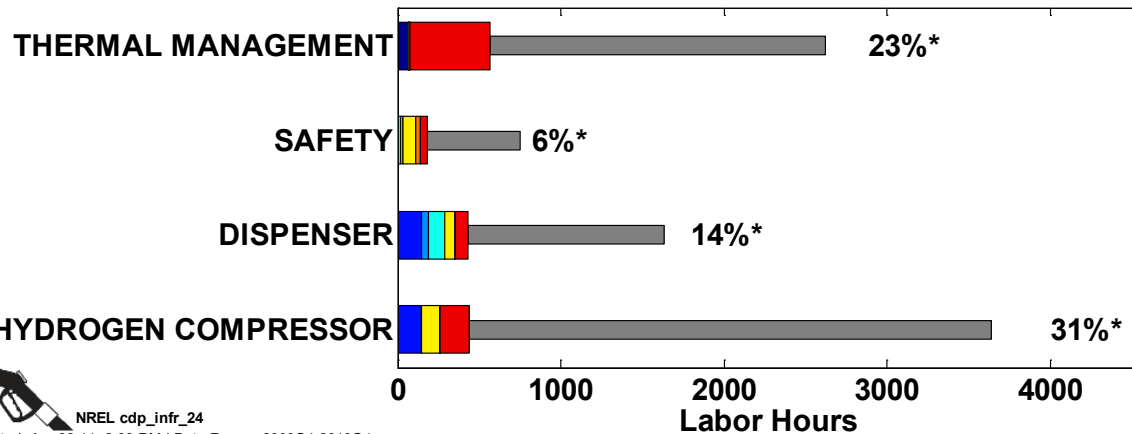
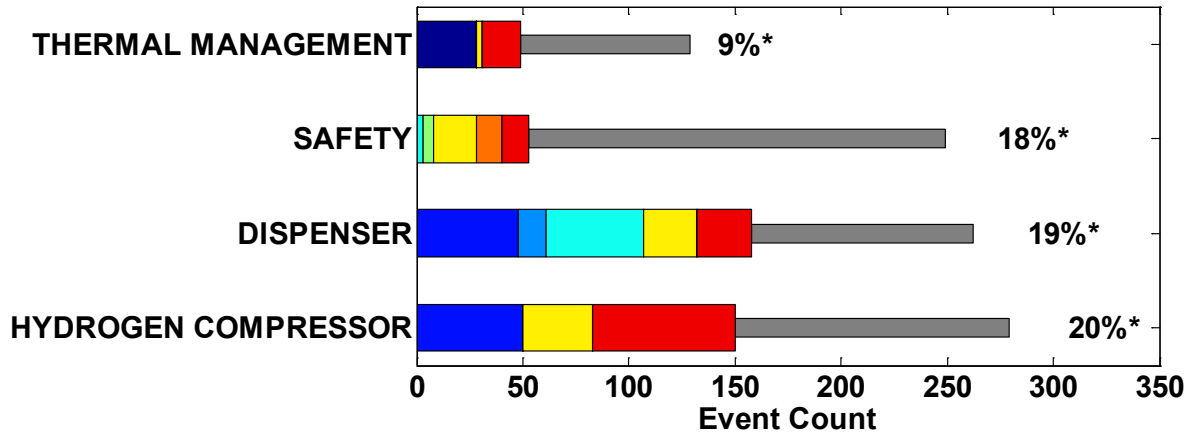


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Failure Modes for Top Equipment Categories

Failure Modes for Top Equipment Categories

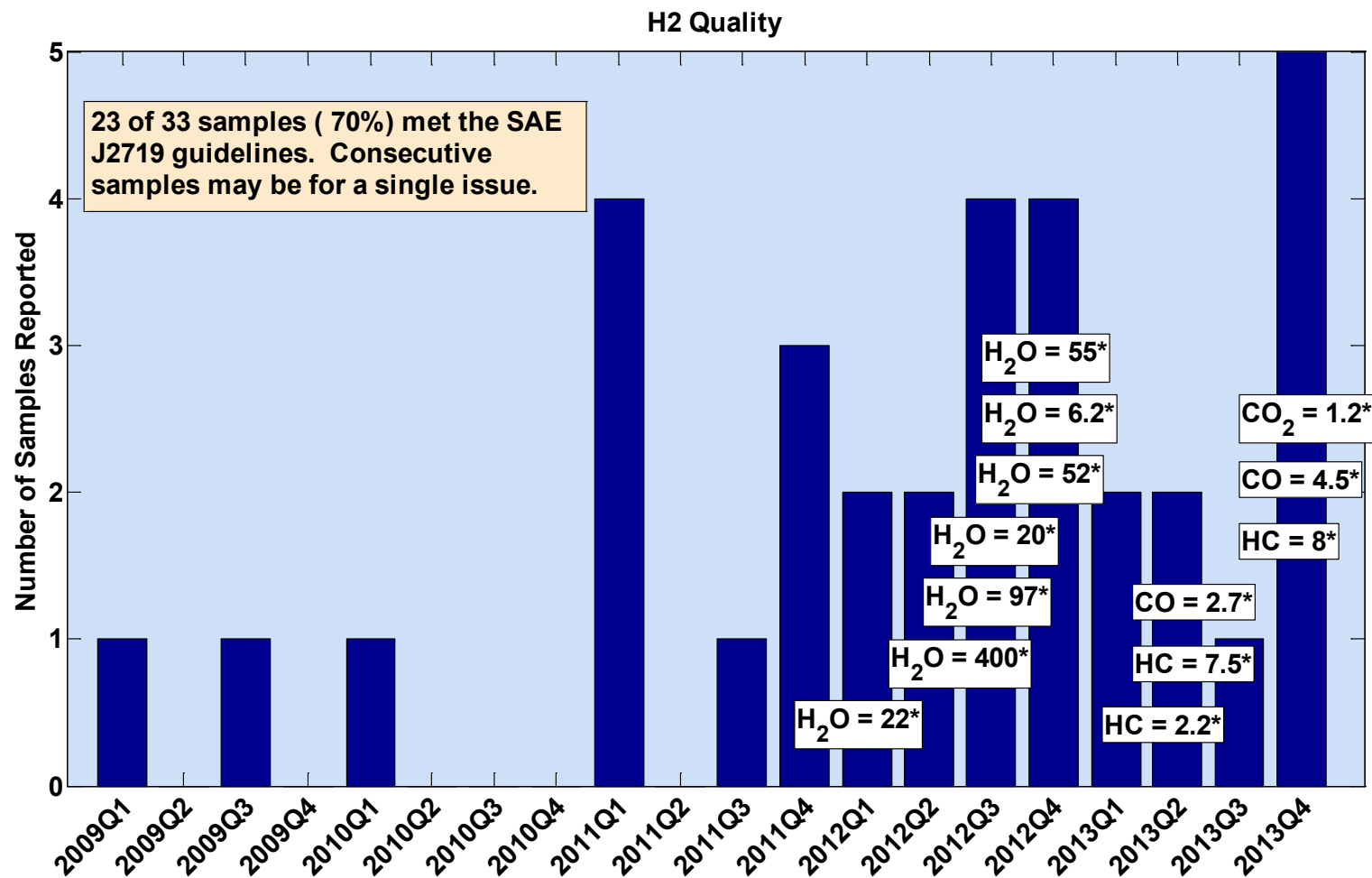


MISC includes the following failure modes: flow low, inspect trouble alarm or report, other, out of calibration, pressure high, software bug, other

* Percentage of total events or hours.

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Hydrogen Quality



*Values are in micromole/mole. Only values that exceed SAE J2719 guideline are shown in text.



NREL cdp_infr_25

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