



Technical Report
NREL/TP-5600-49630
September 2010

Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project

Fall 2010

Composite Data Products

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Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project



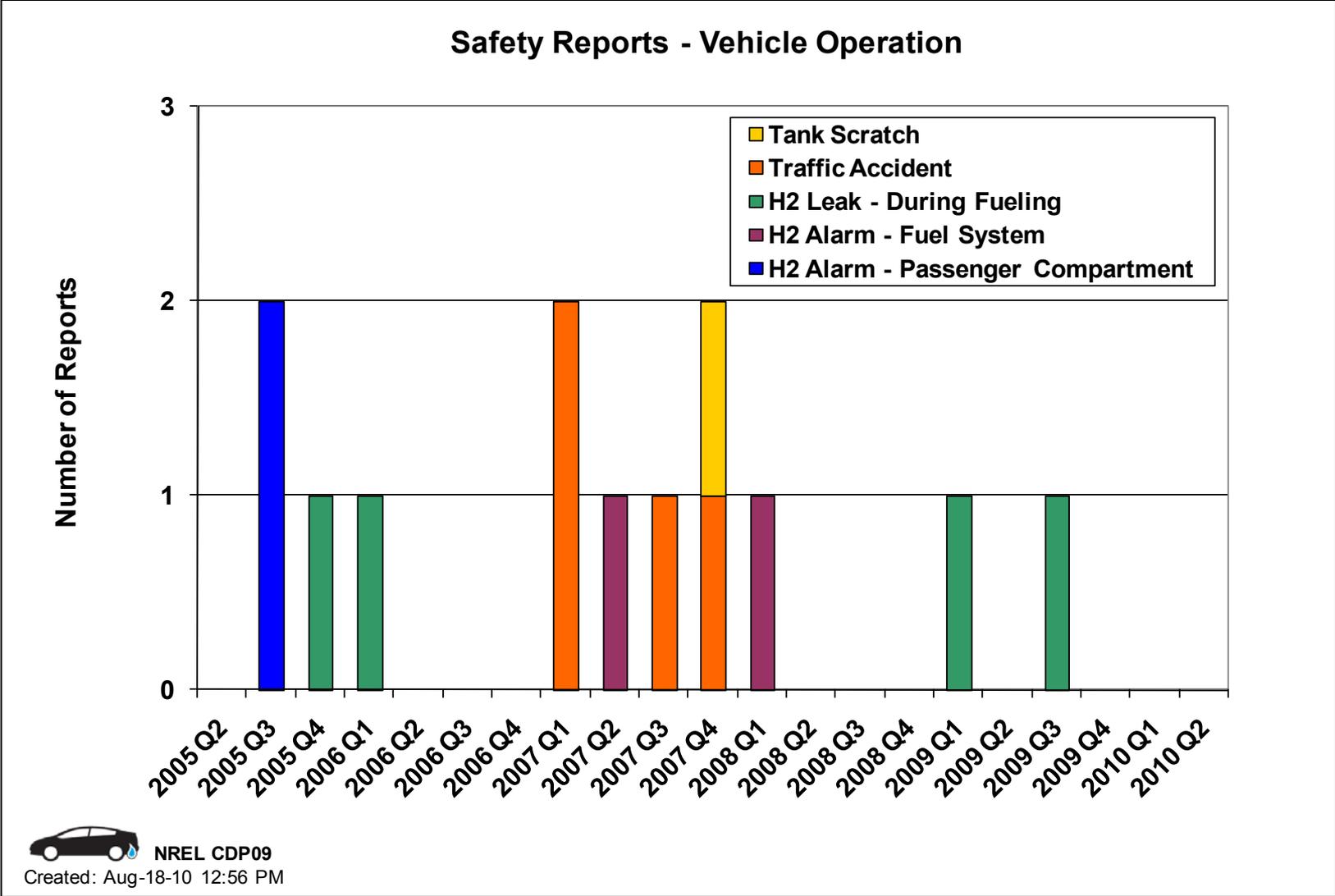
**Fall 2010
Composite Data
Products**

September 17, 2010

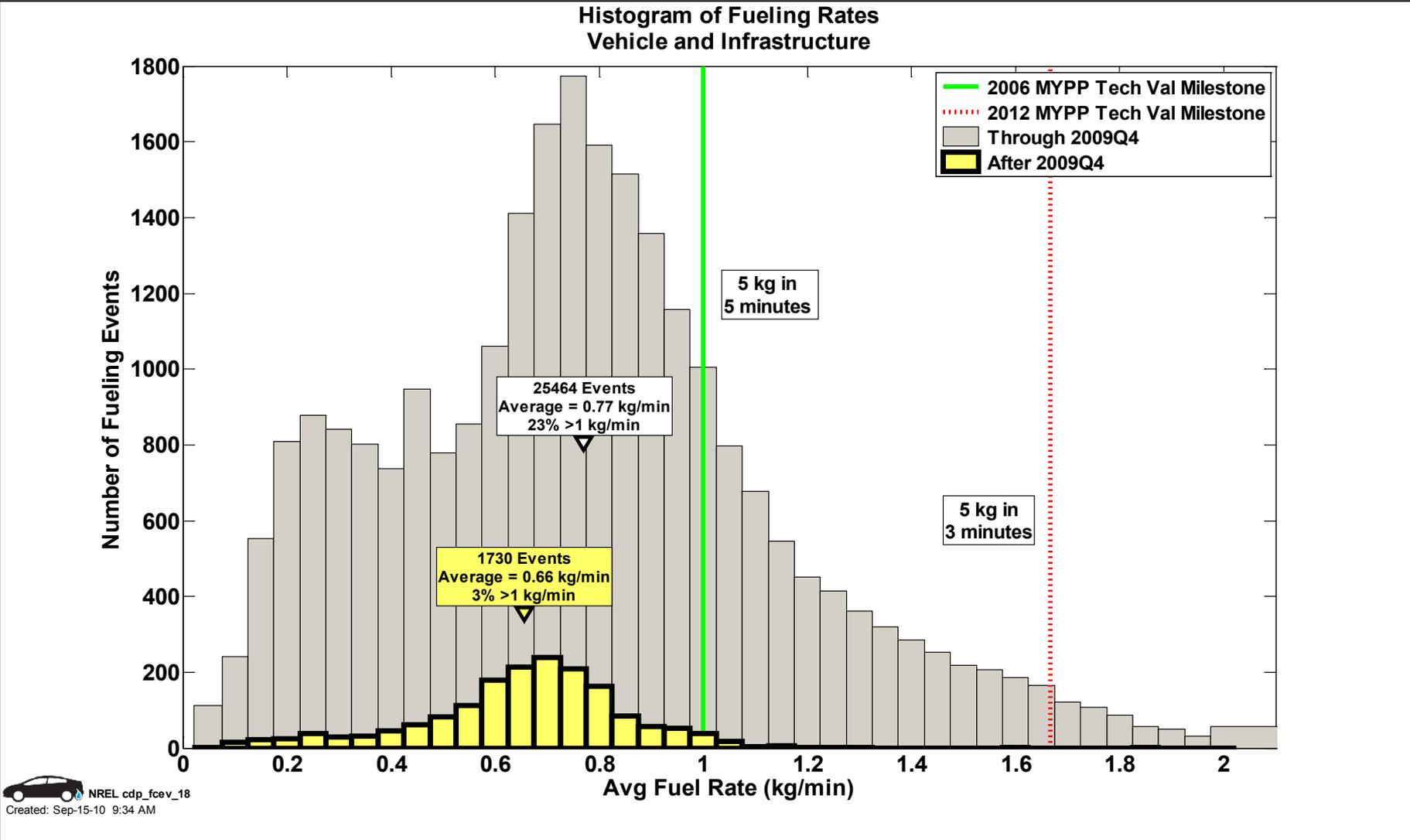
**Keith Wipke, Sam Sprik,
Jennifer Kurtz, Todd
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NREL/TP-5600-49630

CDP#9: Safety Reports – Vehicles

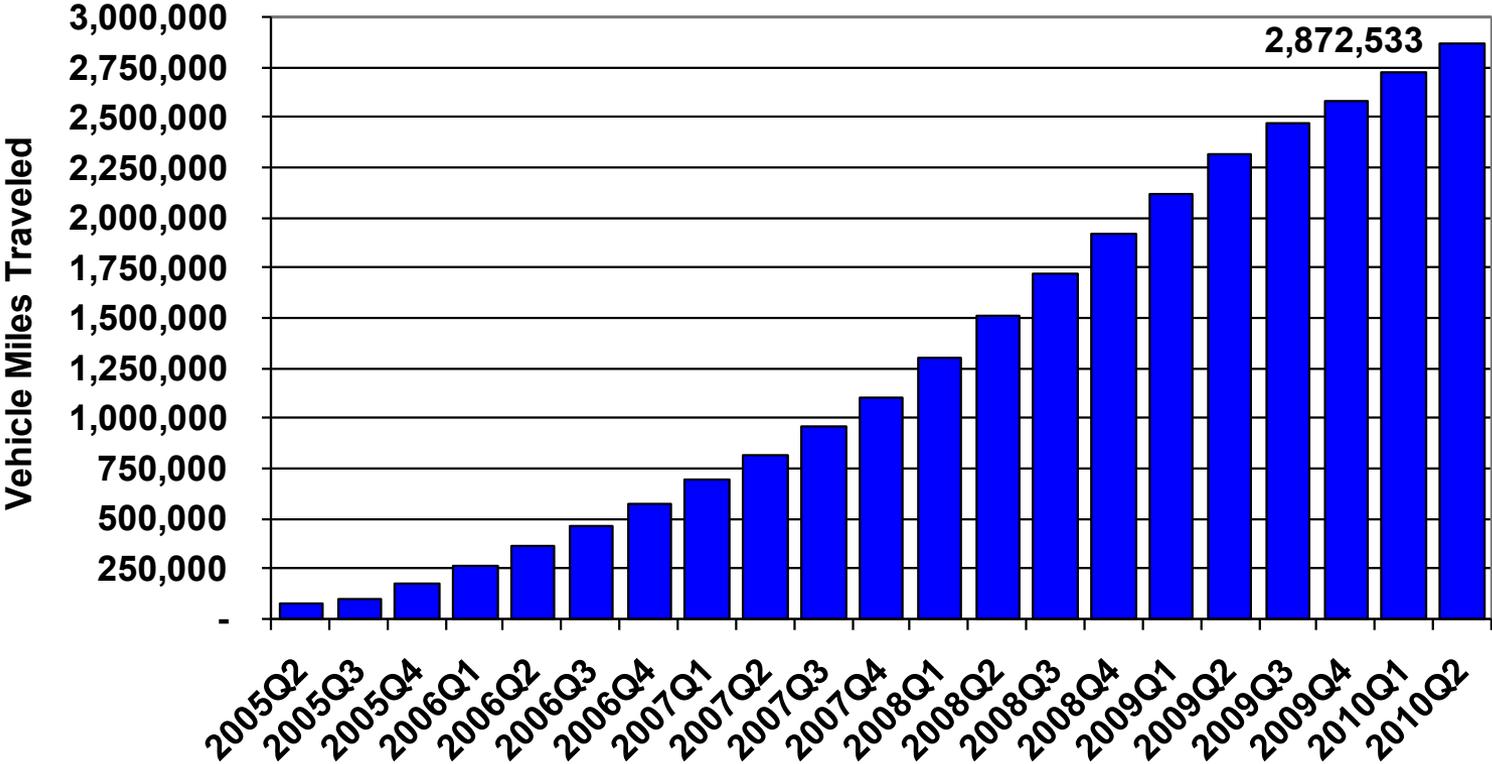


CDP#18: Refueling Rates

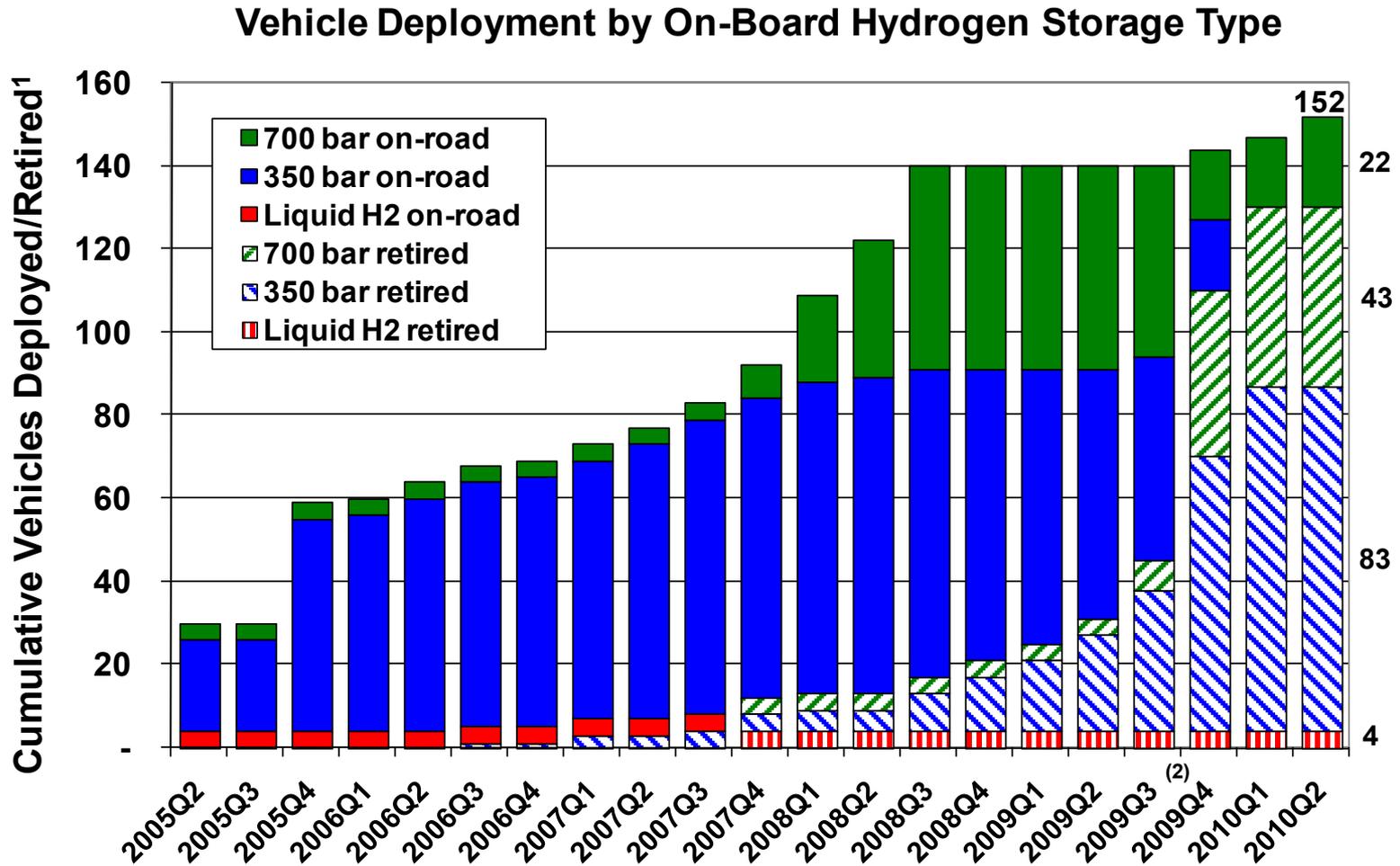


CDP#24: Cumulative Vehicle Miles Traveled

Cumulative Vehicle Miles: All OEMs, Gen 1 and Gen 2
Through 2010 Q2



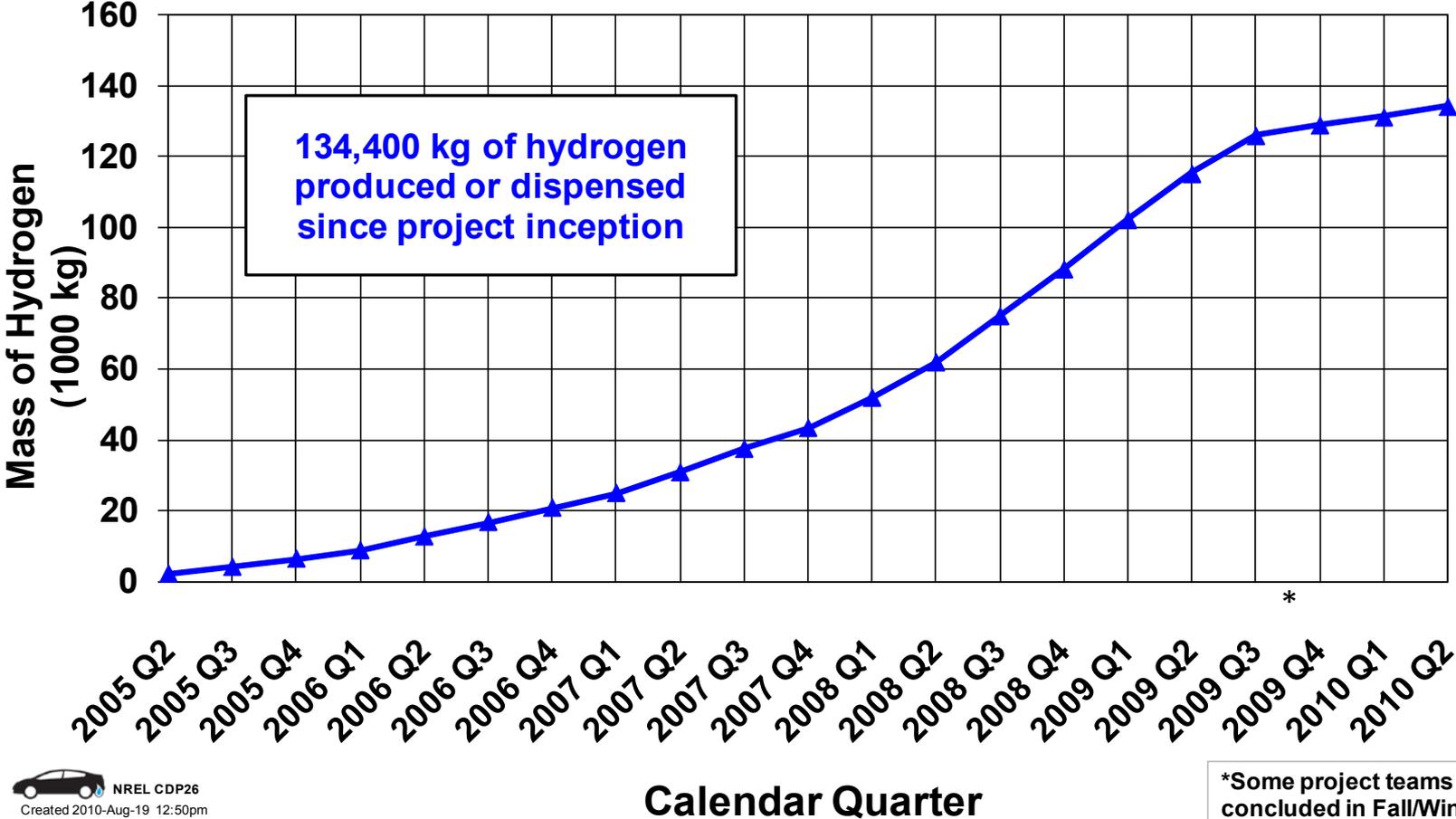
CDP#25: Vehicle H2 Storage Technologies



(1) Retired vehicles have left DOE fleet and are no longer providing data to NREL
(2) Two project teams concluded in Fall/Winter 2009

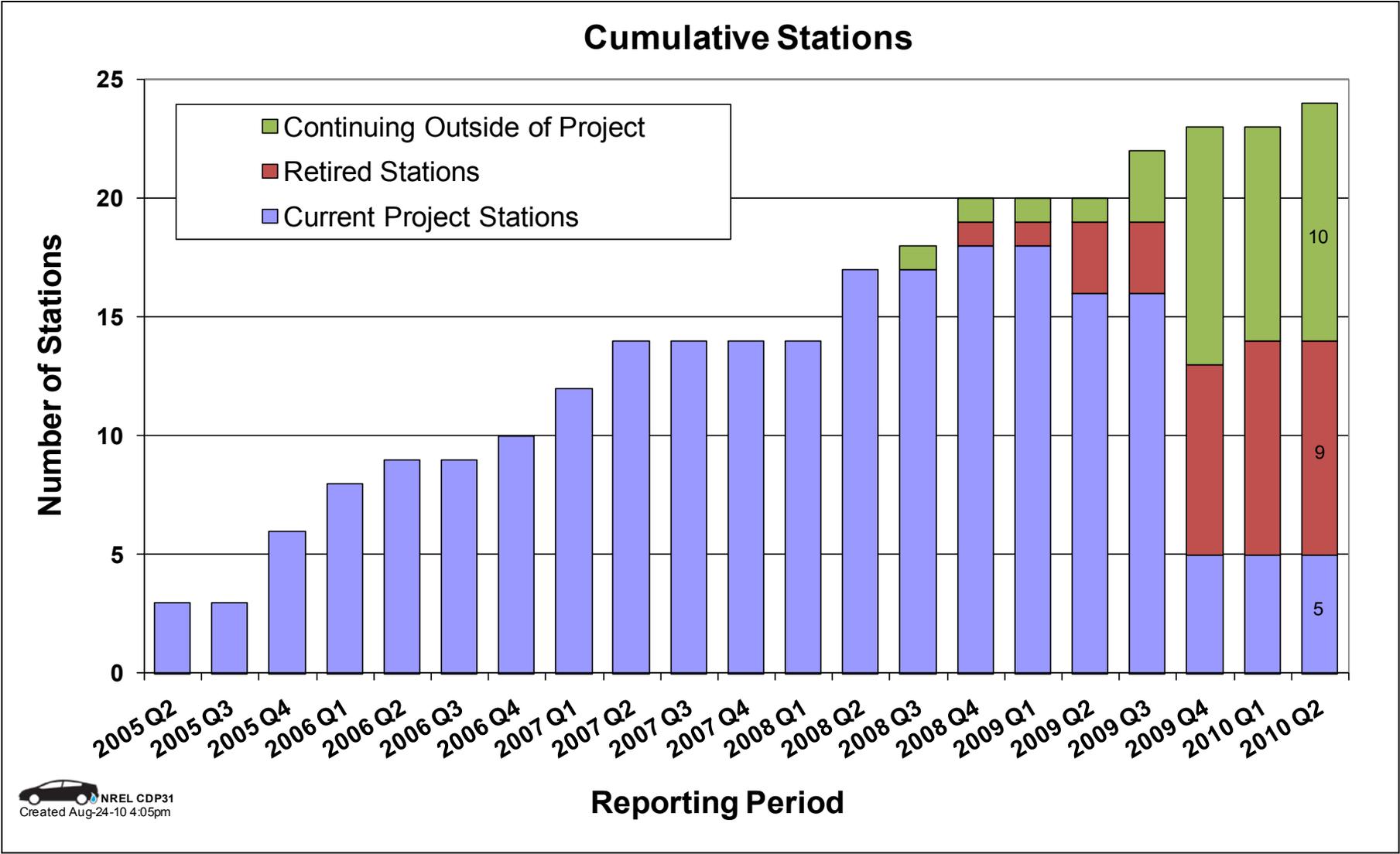
CDP#26: Cumulative H2 Produced or Dispensed

Cumulative Hydrogen Produced or Dispensed Through 2010 Q2



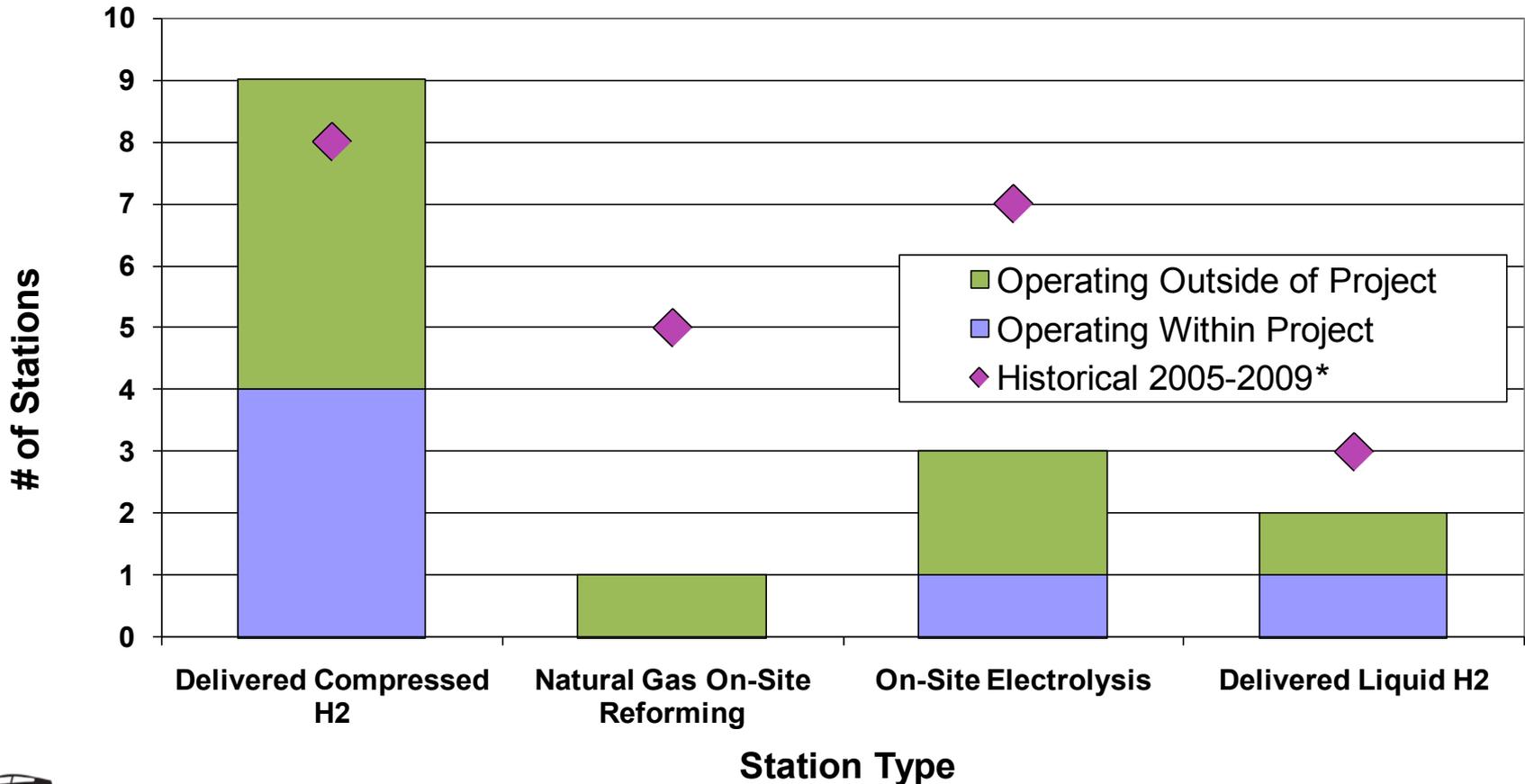
*Some project teams concluded in Fall/Winter 2009

CDP#31: Number of Online Stations



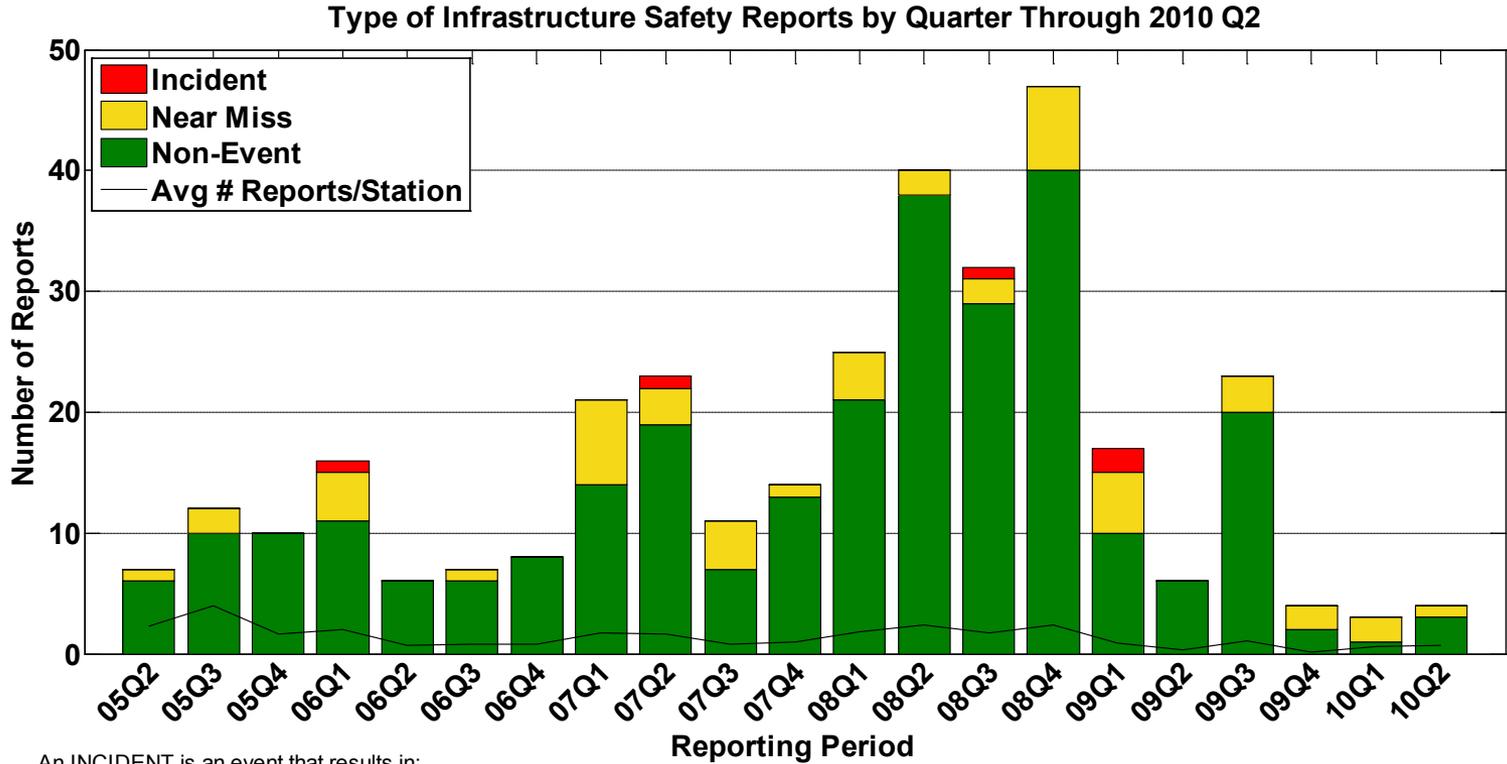
CDP#32: Infrastructure Hydrogen Production Methods

Learning Demonstration Hydrogen Stations By Type



*Some project teams concluded Fall/Winter 2009. Markers show the cumulative stations operated during the 2005-2009 period

CDP#36: Type of Infrastructure Safety Report By Quarter



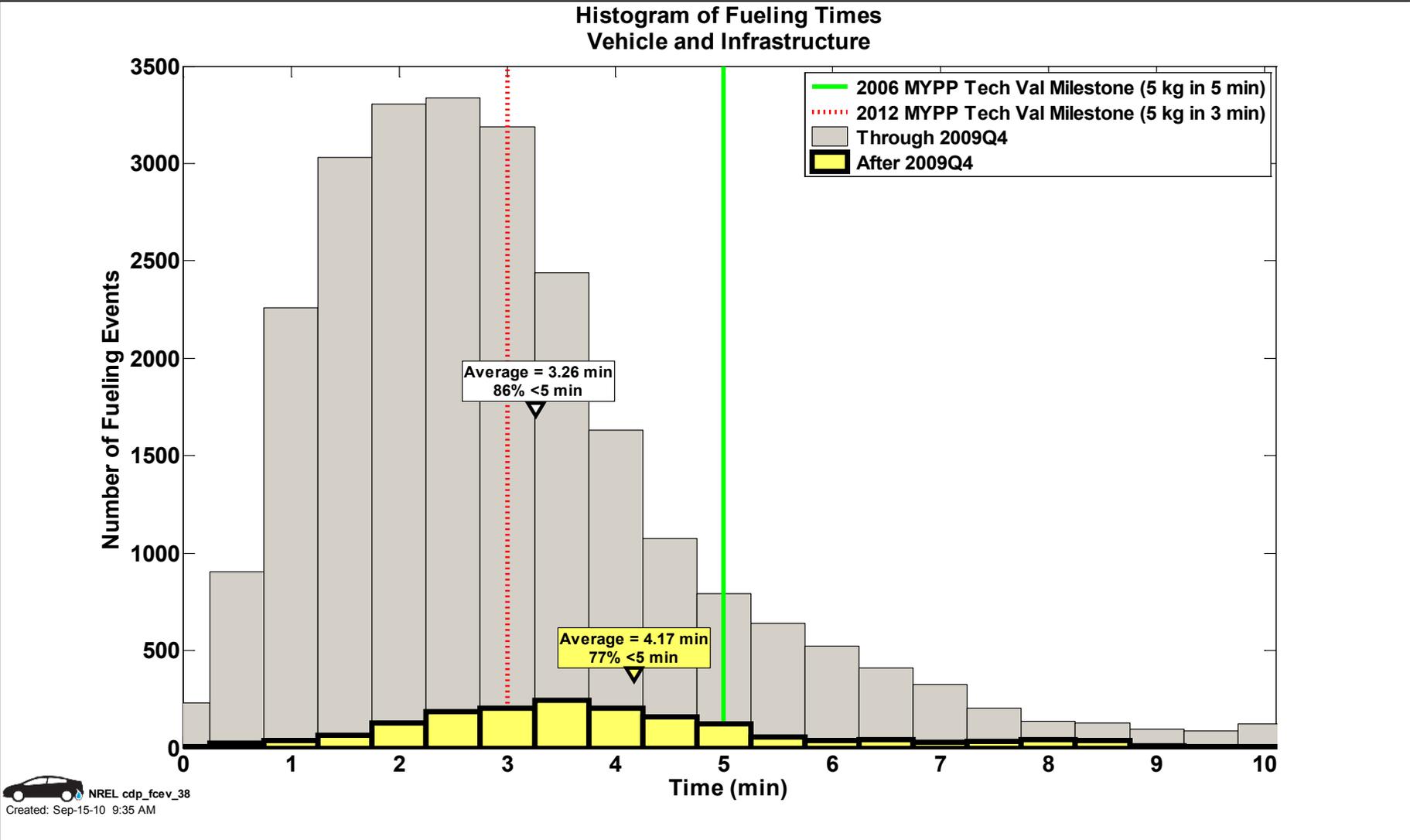
An INCIDENT is an event that results in:

- a lost time accident and/or injury to personnel
- damage/unplanned downtime for project equipment, facilities or property
- impact to the public or environment
- any hydrogen release that unintentionally ignites or is sufficient to sustain a flame if ignited
- release of any volatile, hydrogen containing compound (other than the hydrocarbons used as common fuels)

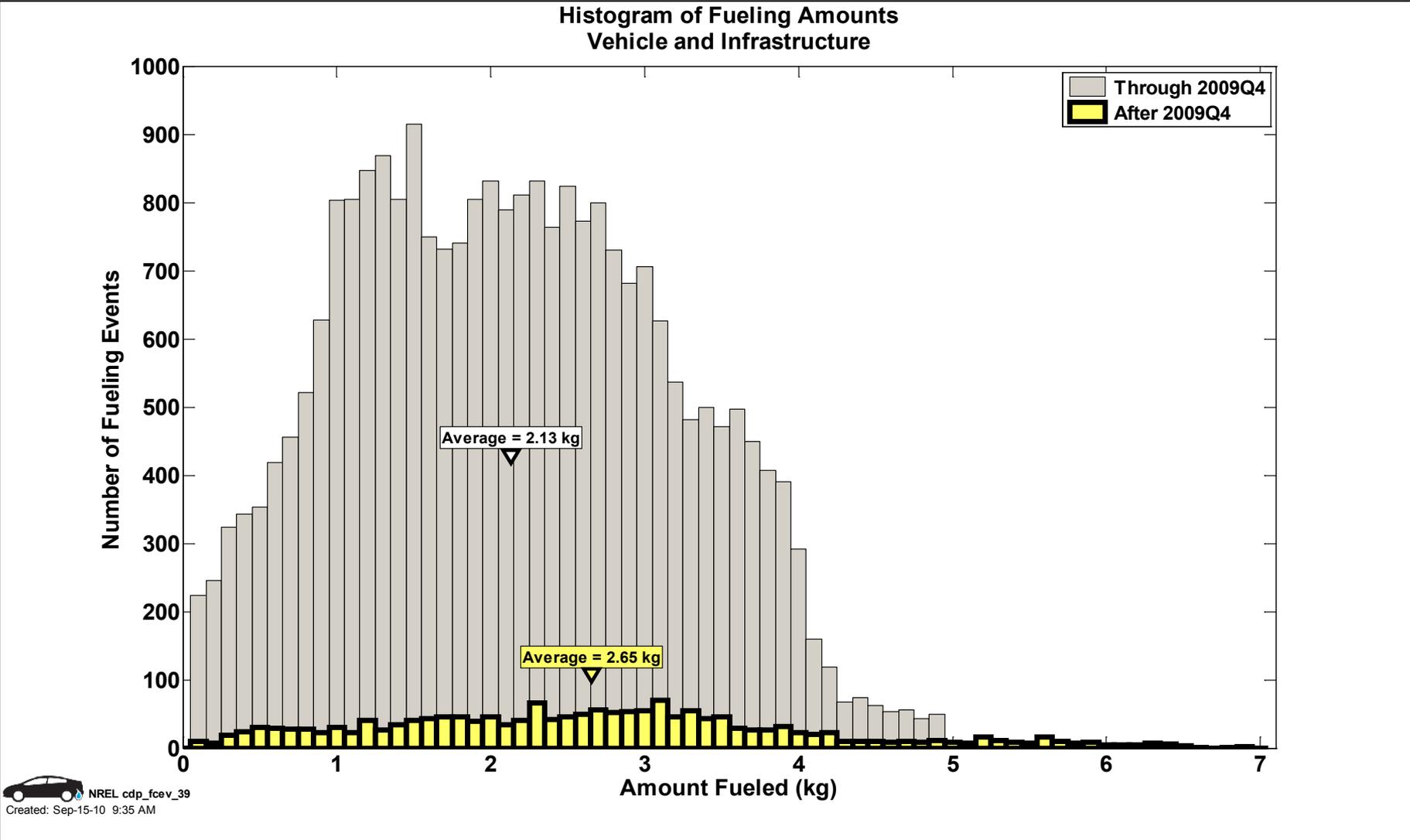
A NEAR-MISS is:

- an event that under slightly different circumstances could have become an incident
- unplanned H2 release insufficient to sustain a flame

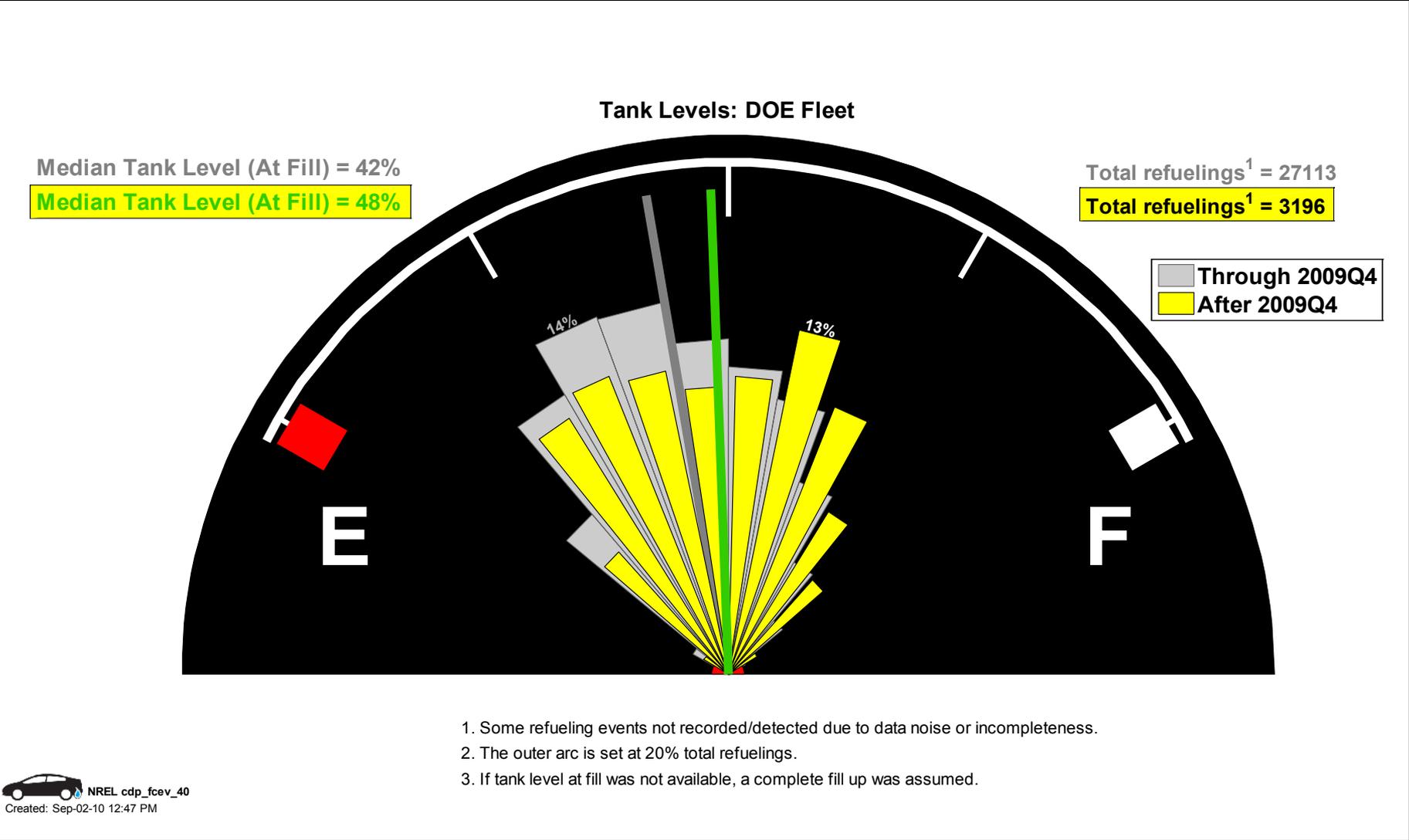
CDP#38: Refueling Times



CDP#39: Refueling Amounts



CDP#40: H2 Tank Level at Refueling



CDP#42: Refueling by Time of Day

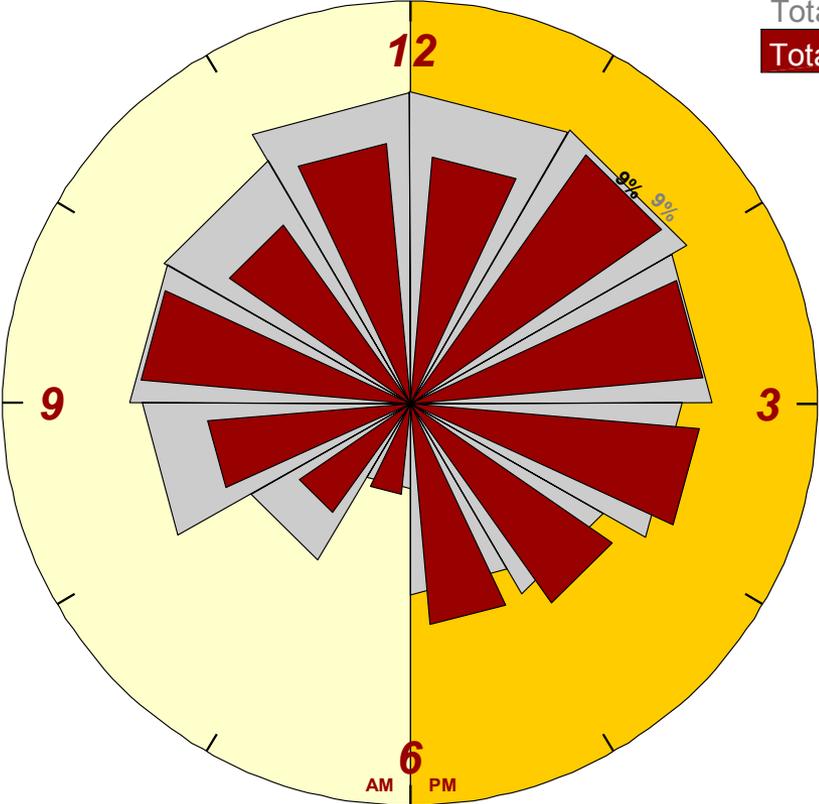
Refueling by Time of Day

% of fills b/t 6 AM & 6 PM: 89.7%

% of fills b/t 6 AM & 6 PM: 82.5%

Total Fill³ Events = 22657

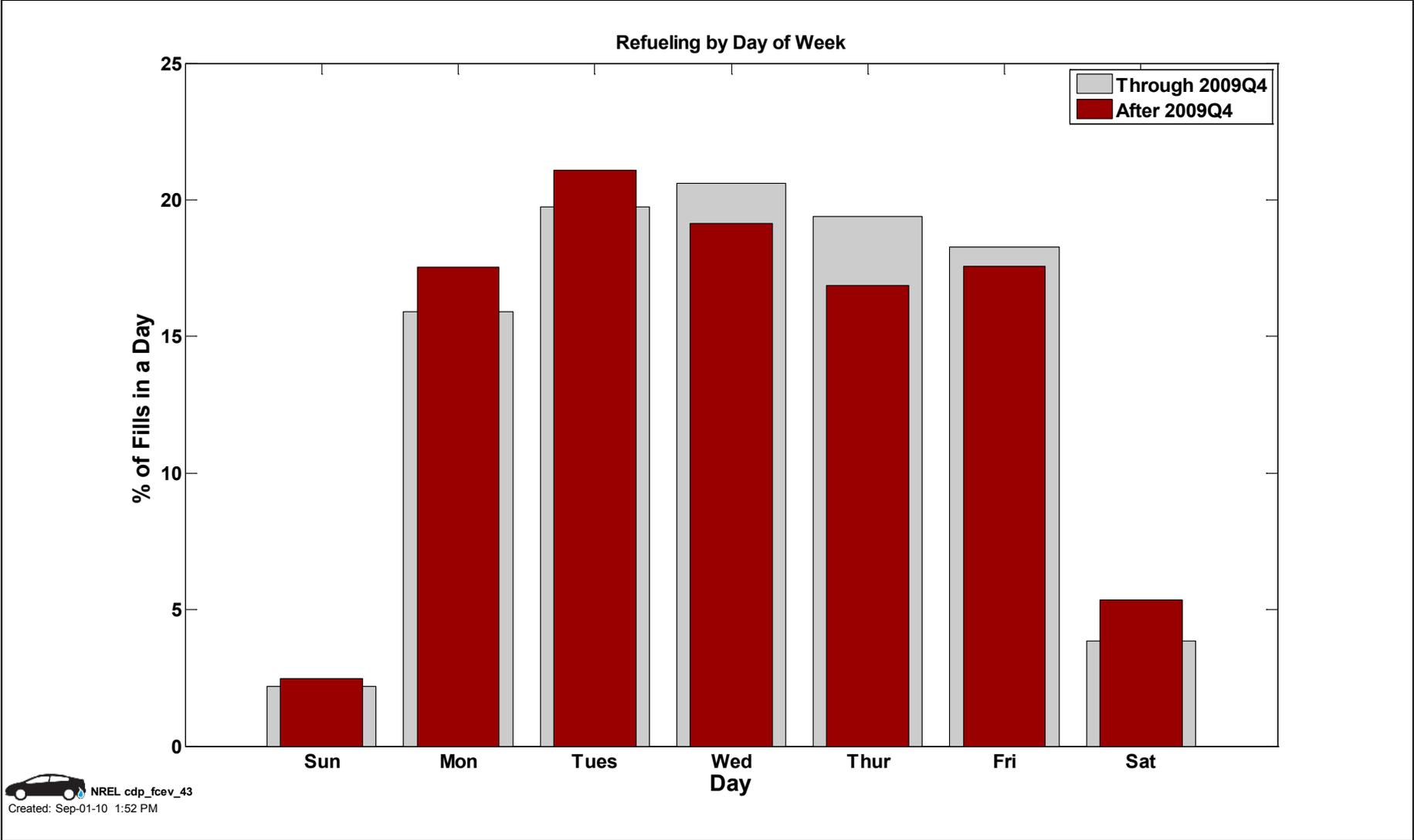
Total Fill³ Events = 3211



Through 2009Q4
After 2009Q4

- 1. Fills between 6 AM & 6 PM
- 2. The outer arc is set at 12 % total Fill.
- 3. Some events not recorded/detected due to data noise or incompleteness.

CDP#43: Refueling by Day of Week



CDP#44: Driving Start Time – Day

Driving by Time of Day

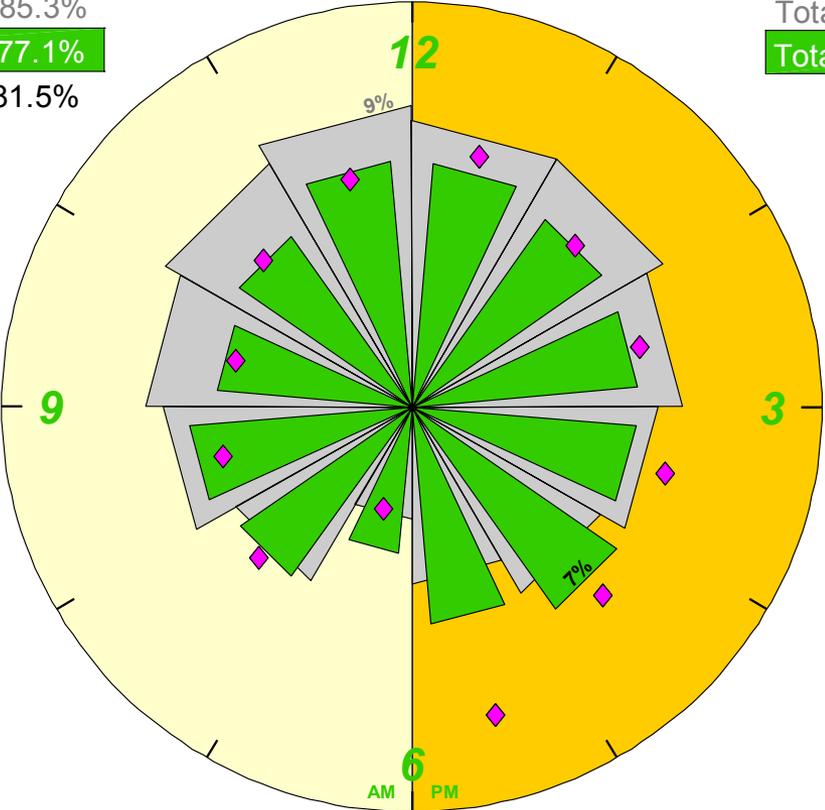
% of driving trips b/t 6 AM & 6 PM: 85.3%

% of driving trips b/t 6 AM & 6 PM: 77.1%

% of NHTS trips b/t 6 AM & 6 PM: 81.5%

Total Driving³ Events = 295222

Total Drive³ Events = 10646

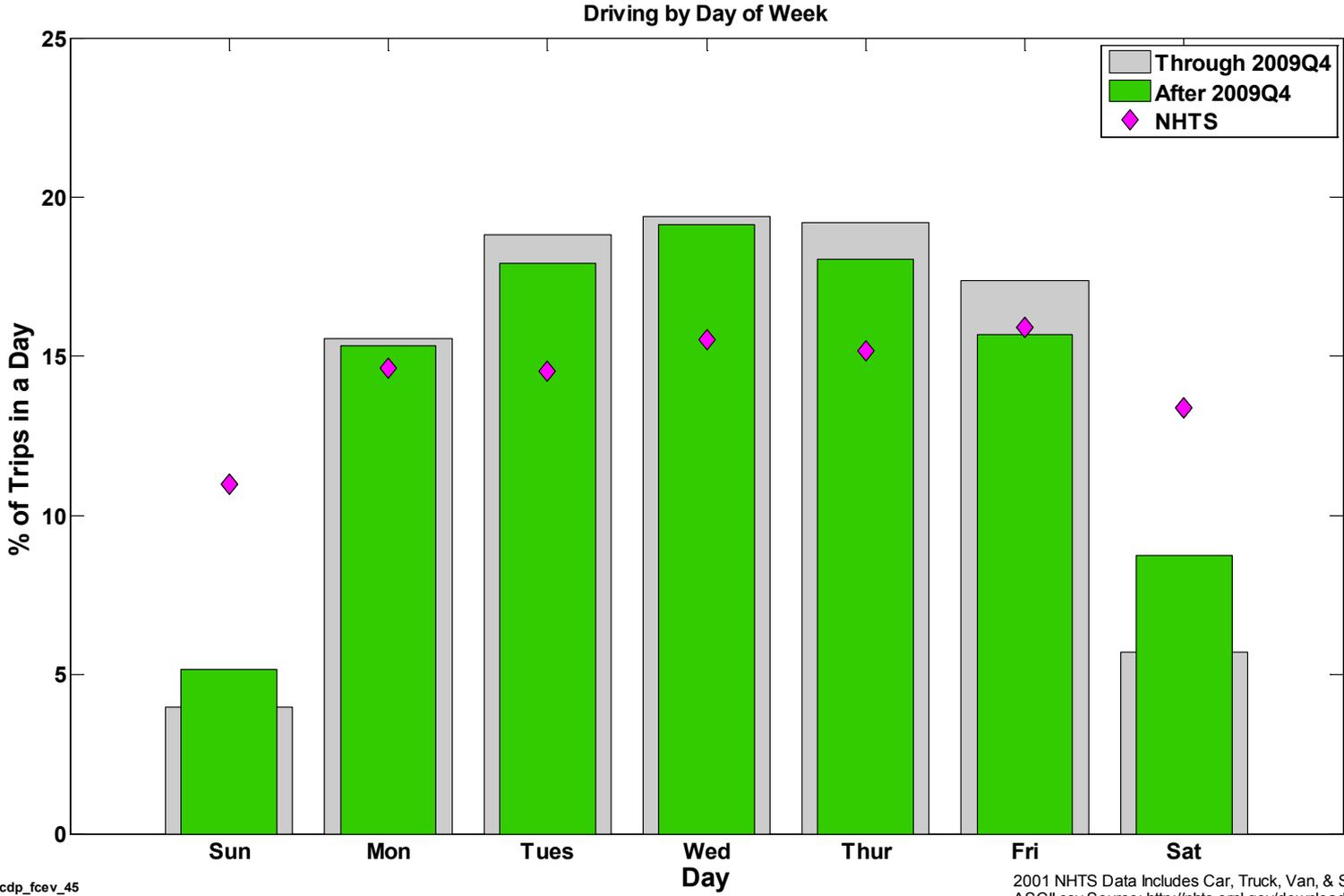


Through 2009Q4
 After 2009Q4
 NHTS

1. Driving trips between 6 AM & 6 PM
2. The outer arc is set at 12 % total Driving.
3. Some events not recorded/detected due to data noise or incompleteness.

2001 NHTS Data Includes Car, Truck, Van, & SUV day trips
 ASCII.csv Source: <http://nhts.ornl.gov/download.shtml#2001>

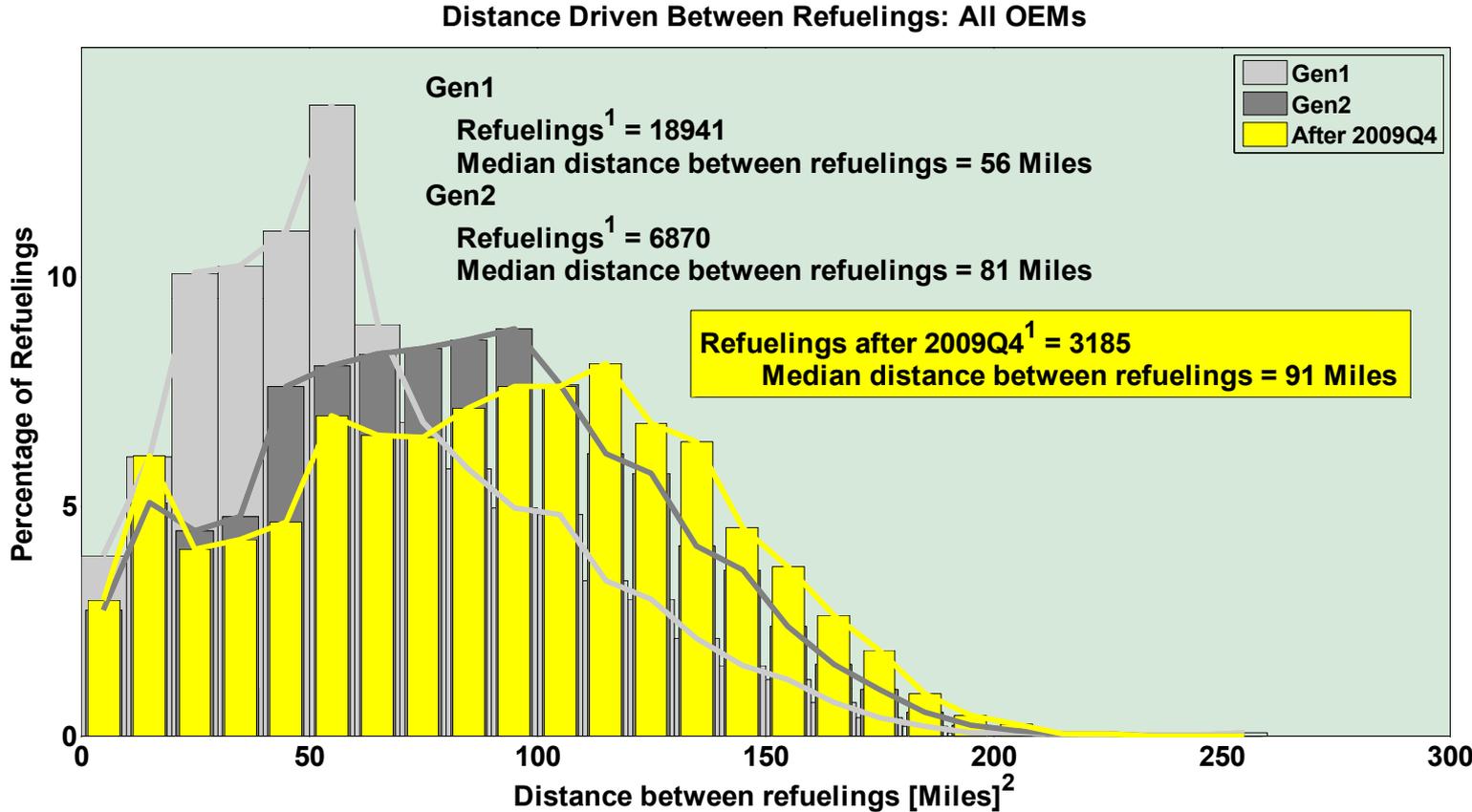
CDP#45: Driving by Day of Week



 NREL cdp_fcev_45
Created: Sep-01-10 1:52 PM

2001 NHTS Data Includes Car, Truck, Van, & SUV day trips
ASCII.csv Source: <http://nhts.ornl.gov/download.shtml#2001>

CDP#80: Miles Between Refuelings



1. Some refueling events are not detected/reported due to data noise or incompleteness.
 2. Distance driven between refuelings is indicative of driver behavior and does not represent the full range of the vehicle.