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NATIONAL RENEWABLE ENERGY LABORATORY

Technical Report
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April 2011

National FCEV Learning Demonstration

Spring 2011
Composite Data Products

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National Renewable Energy Laboratory

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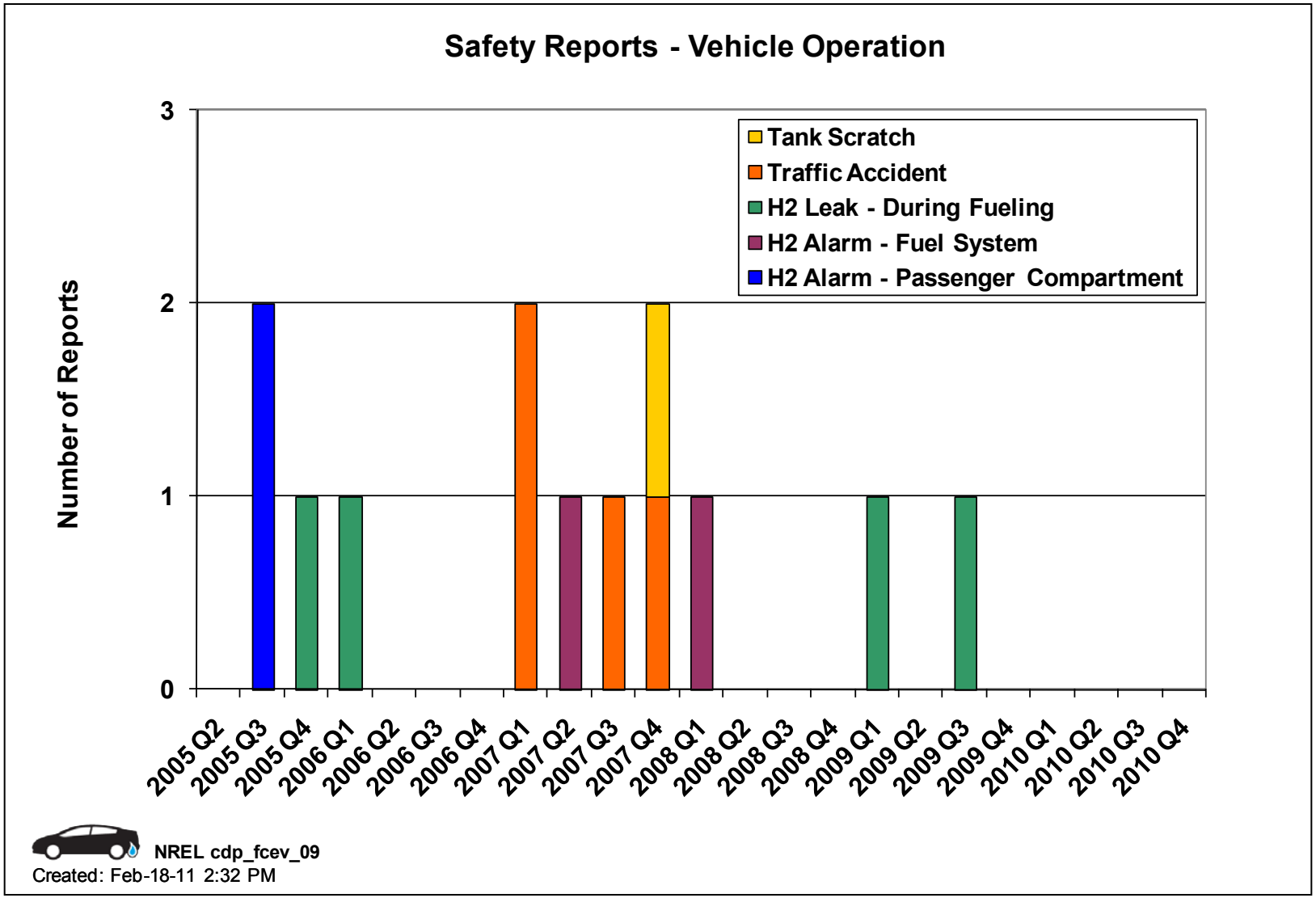
NATIONAL RENEWABLE ENERGY LABORATORY

Spring 2011 Composite Data Products: National FCEV Learning Demonstration

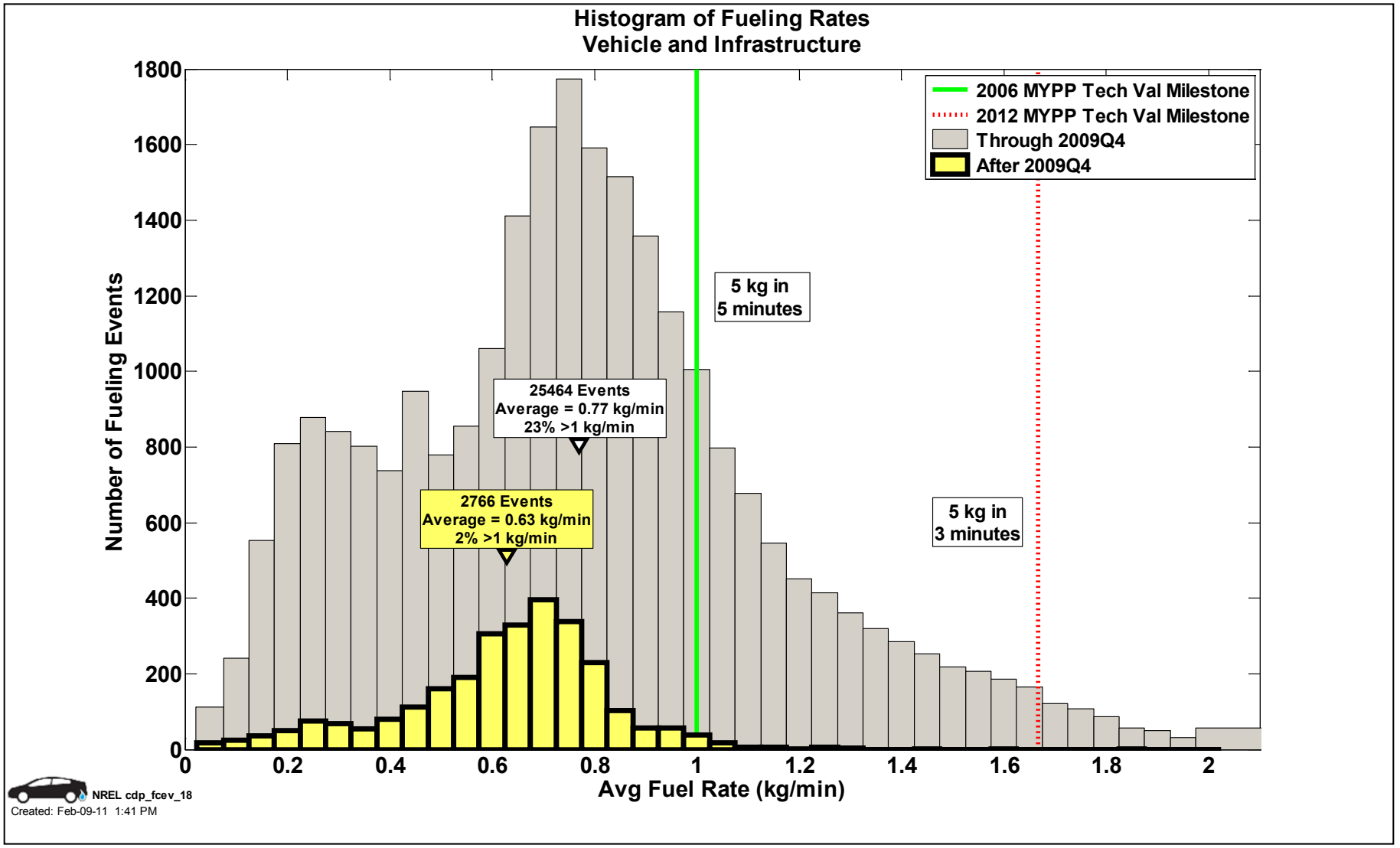
March 29, 2011

Keith Wipke, Sam Sprik, Jennifer Kurtz, Todd Ramsden

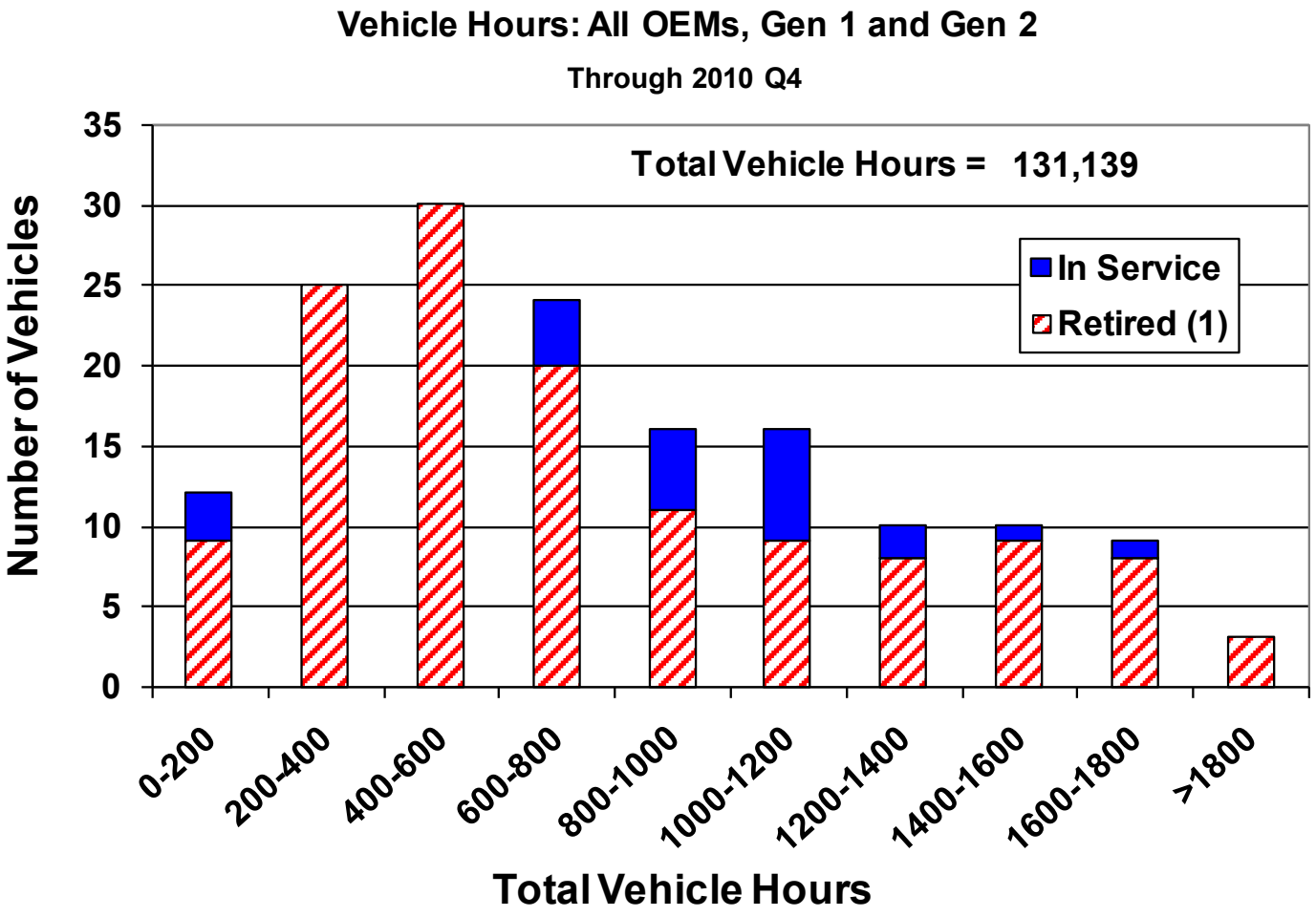
CDP#9: Safety Reports – Vehicles



CDP#18: Refueling Rates



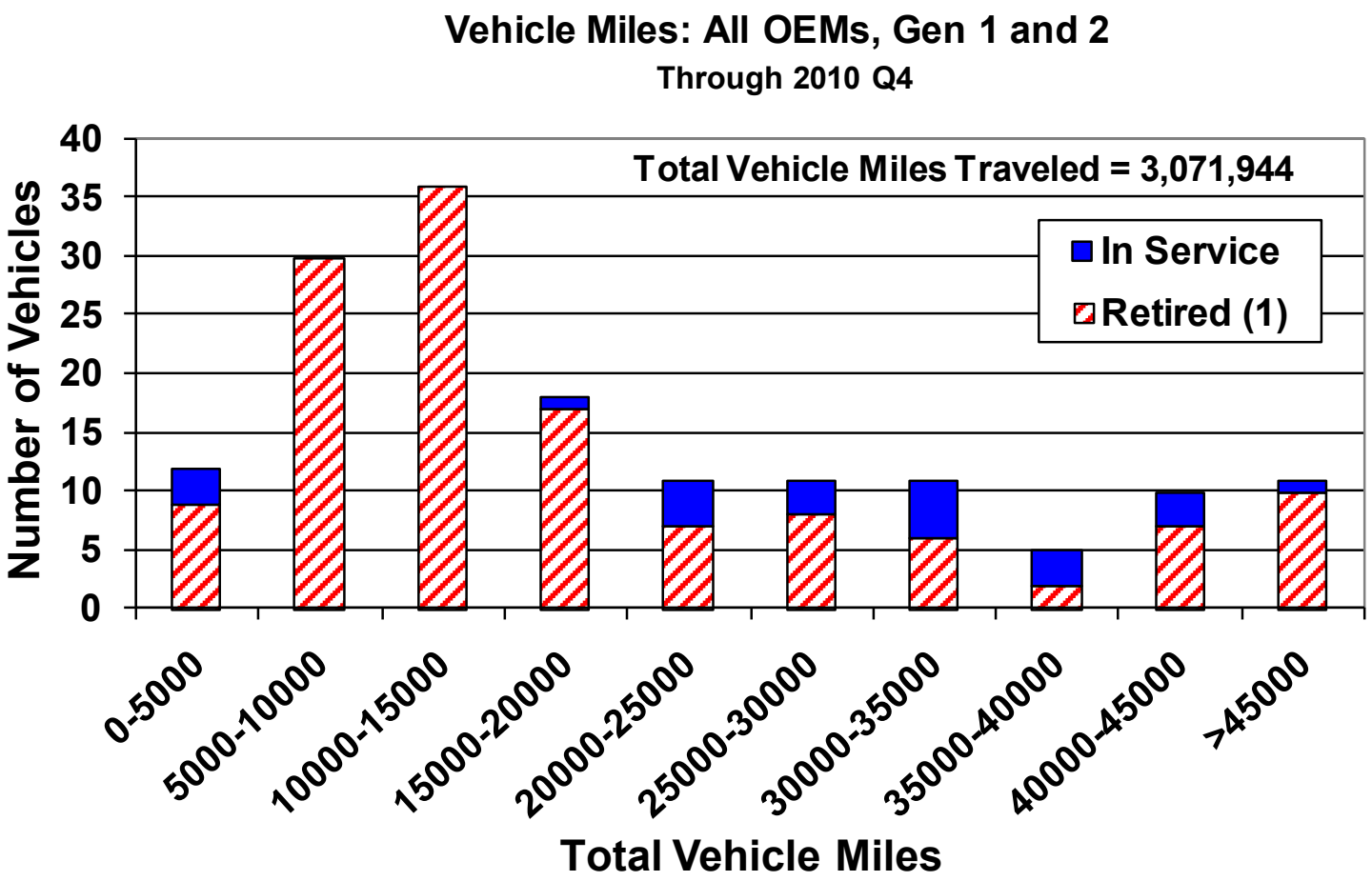
CDP#22: Vehicle Operating Hours



NREL cdp_fcev_22
Created: Mar-10-11 03:45 PM

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

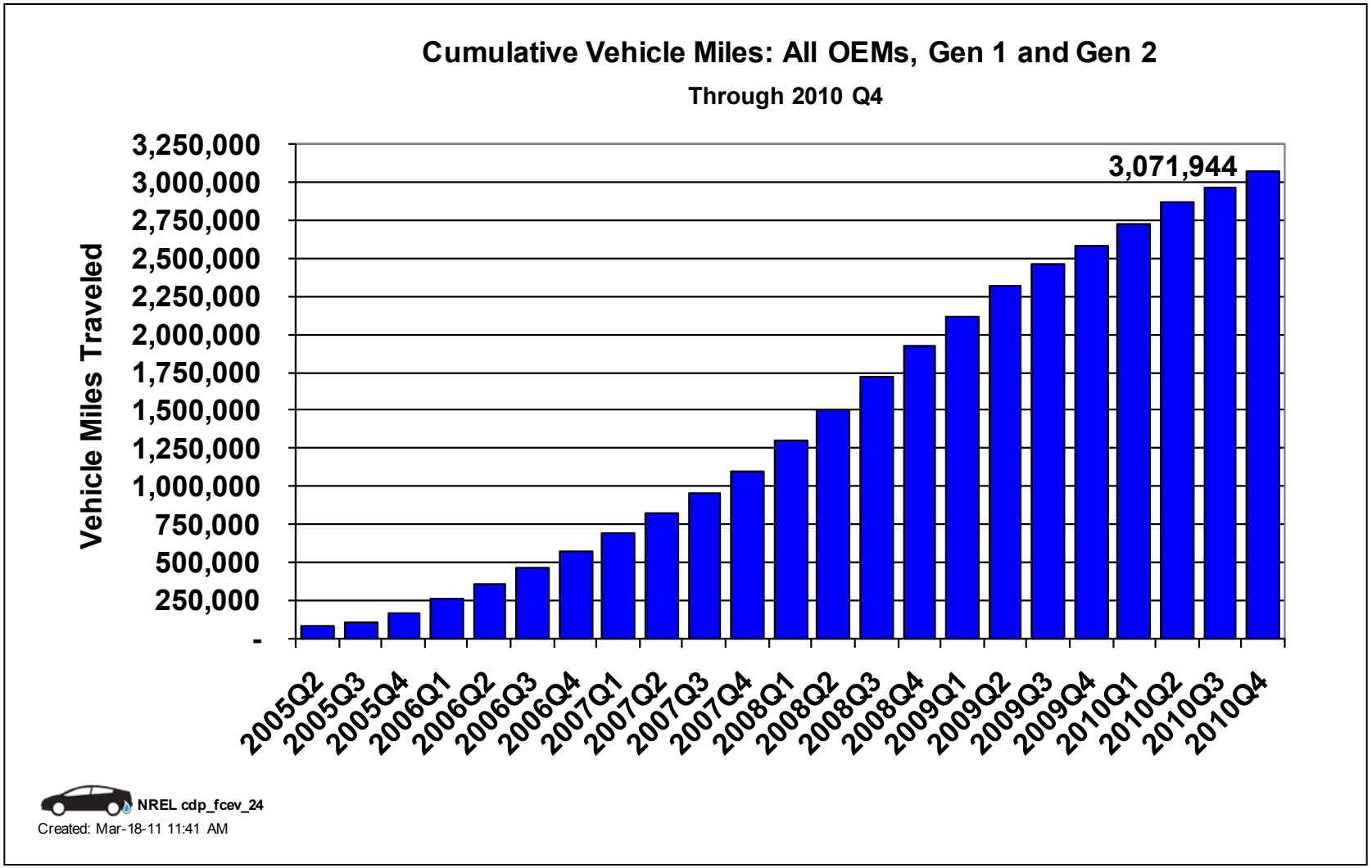
CDP#23: Vehicles vs. Miles Traveled



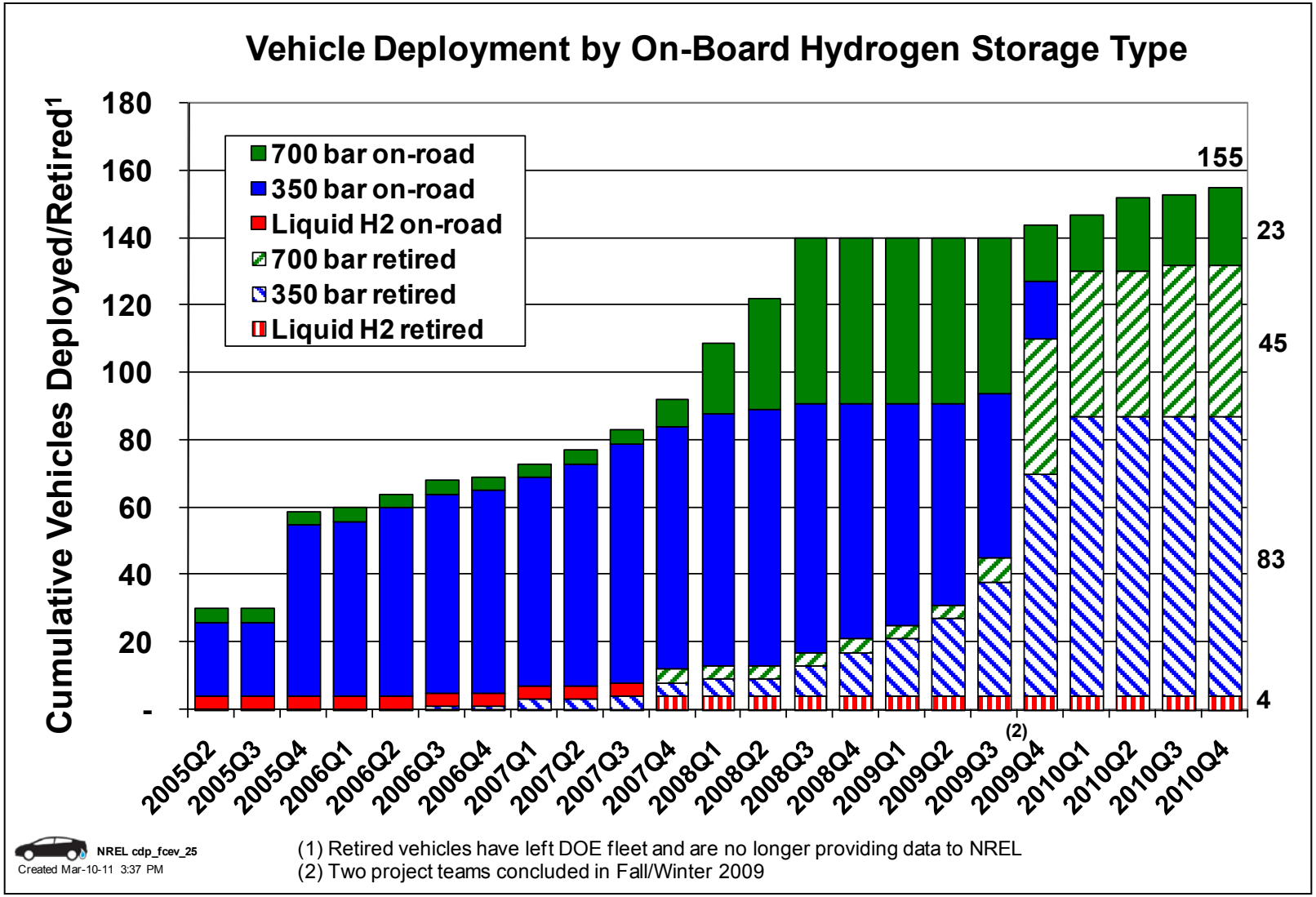
NREL cdp_fcev_23
Created: Mar-10-11 03:45 PM

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

CDP#24: Cumulative Vehicle Miles Traveled

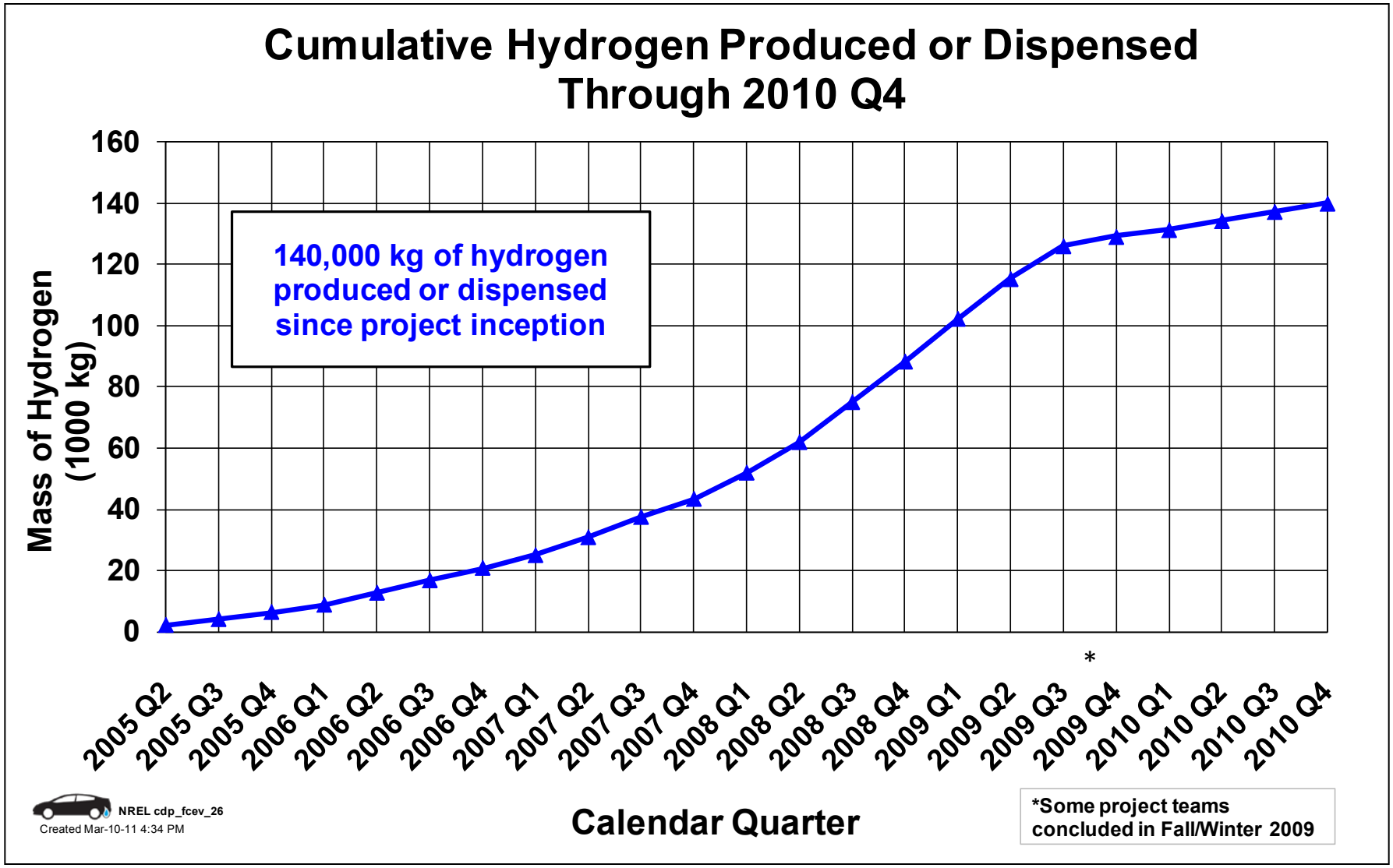


CDP#25: Vehicle H2 Storage Technologies

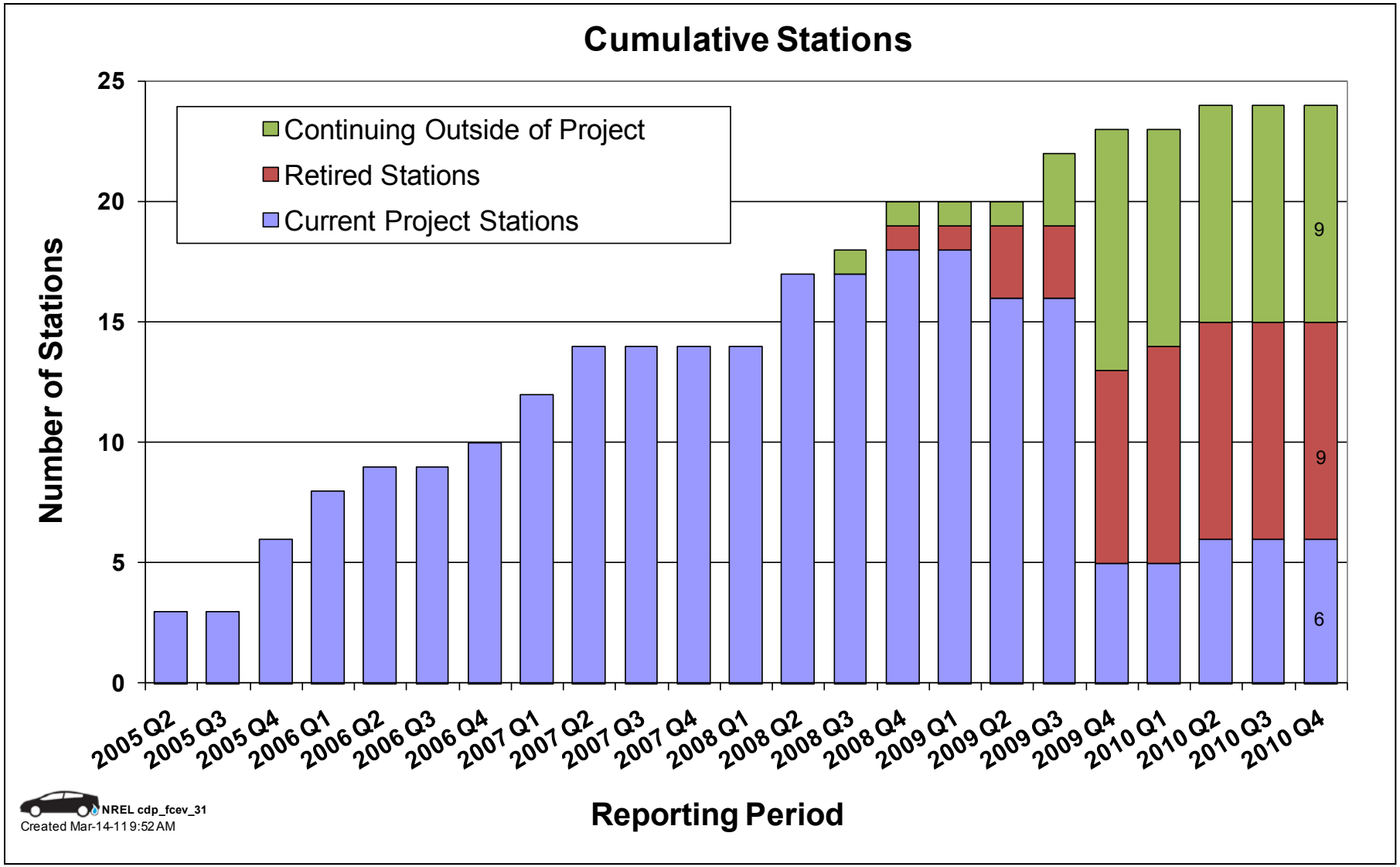


(1) Retired vehicles have left DOE fleet and are no longer providing data to NREL
(2) Two project teams concluded in Fall/Winter 2009

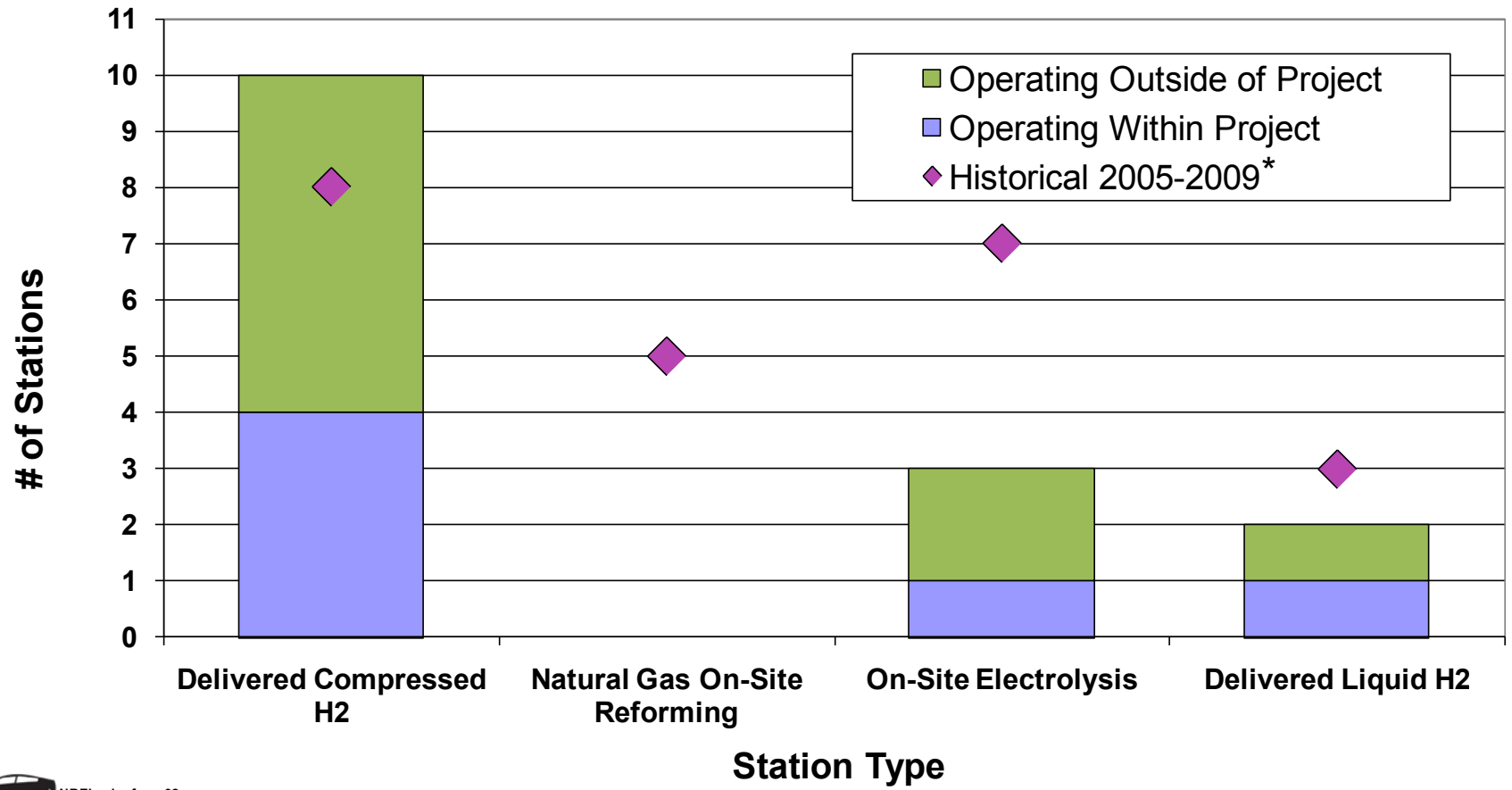
CDP#26: Cumulative H2 Produced or Dispensed



CDP#31: Number of Online Stations



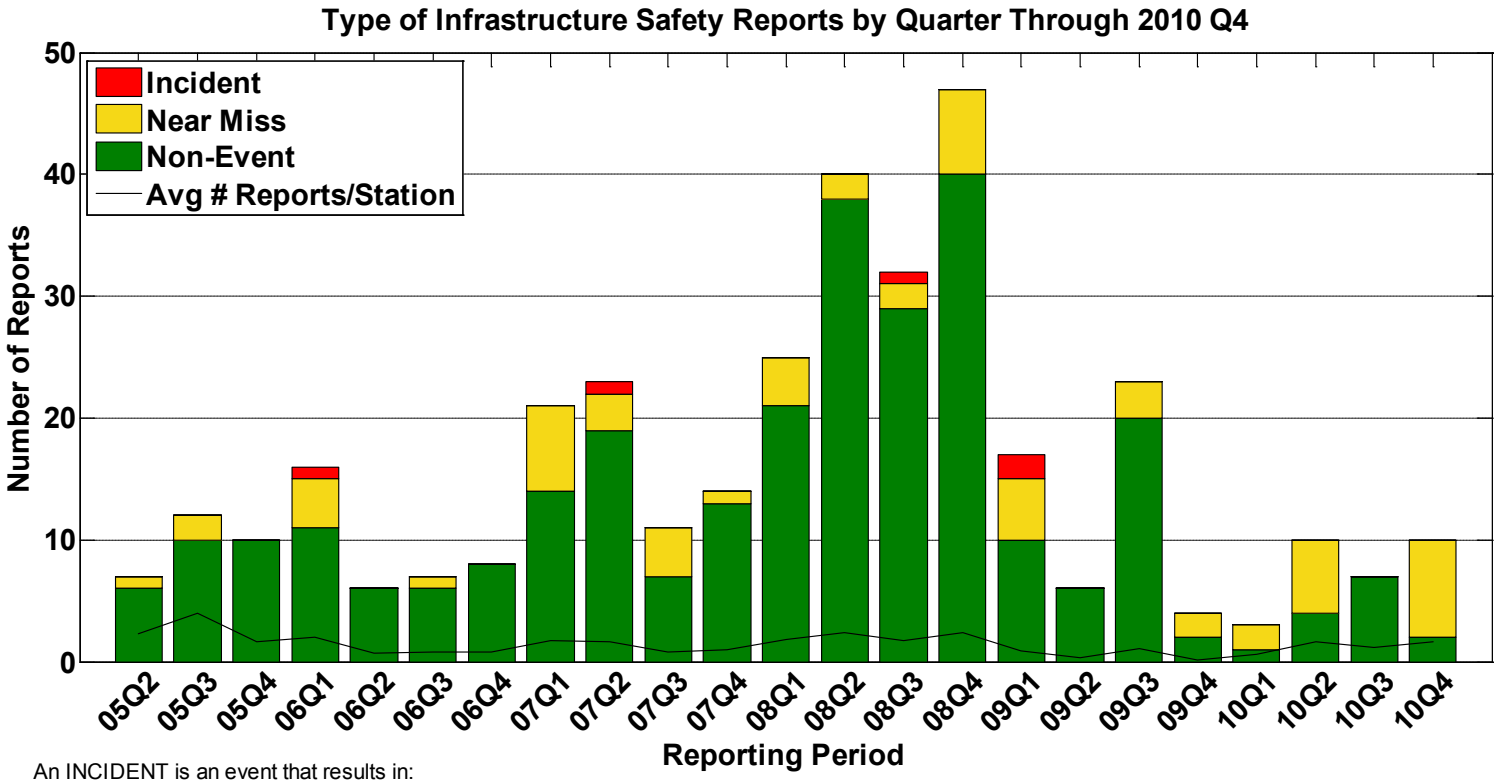
CDP#32: Infrastructure Hydrogen Production Methods



NREL cdp_fcev_32
Created Mar-10-11 4:18 PM

*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:

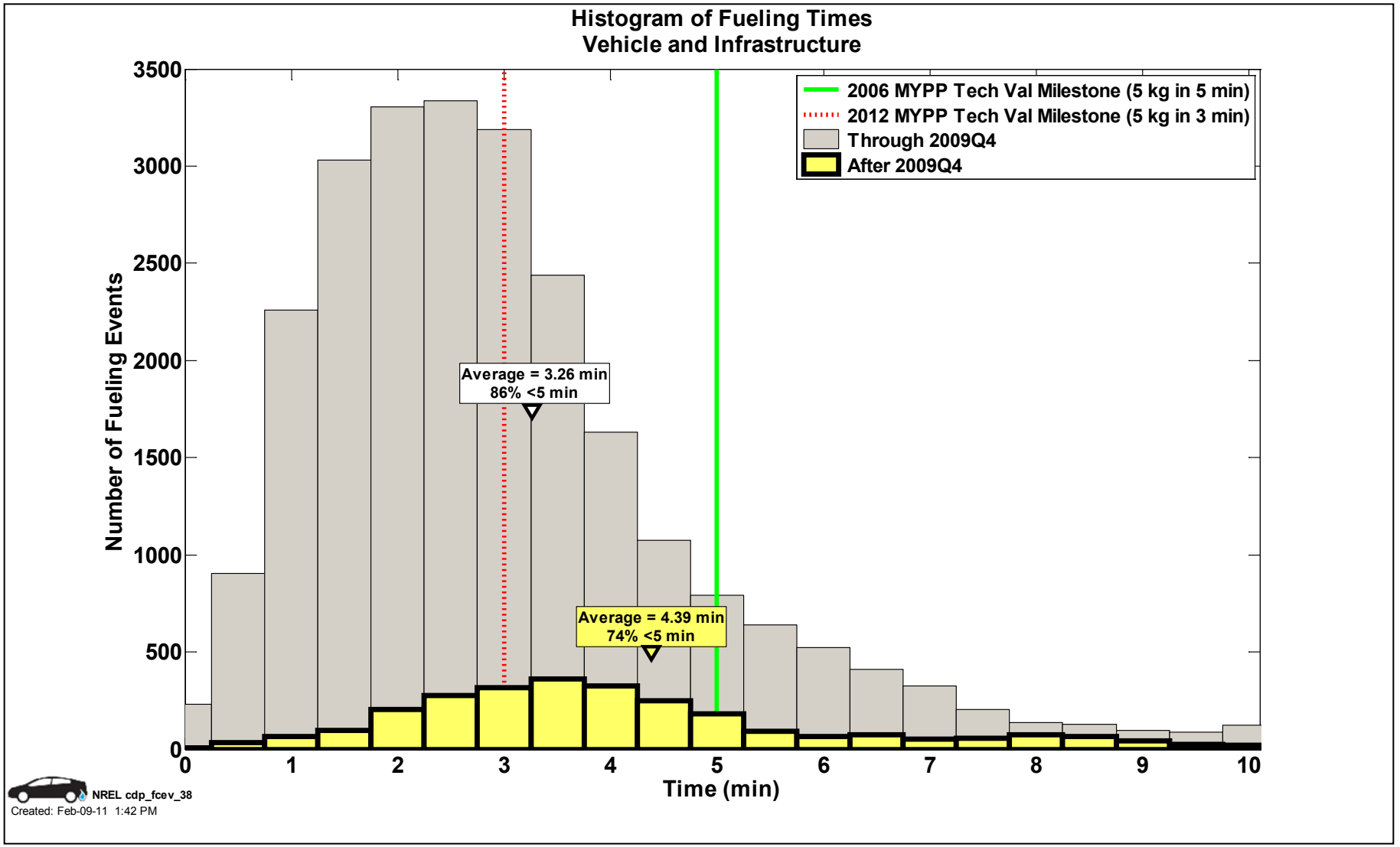
- a lost time accident and/or injury to personnel
- damage/unplanned downtime for project equipment, facilities or property
- impact to the public or environment
- any hydrogen release that unintentionally ignites or is sufficient to sustain a flame if ignited
- release of any volatile, hydrogen containing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

A NEAR-MISS is:

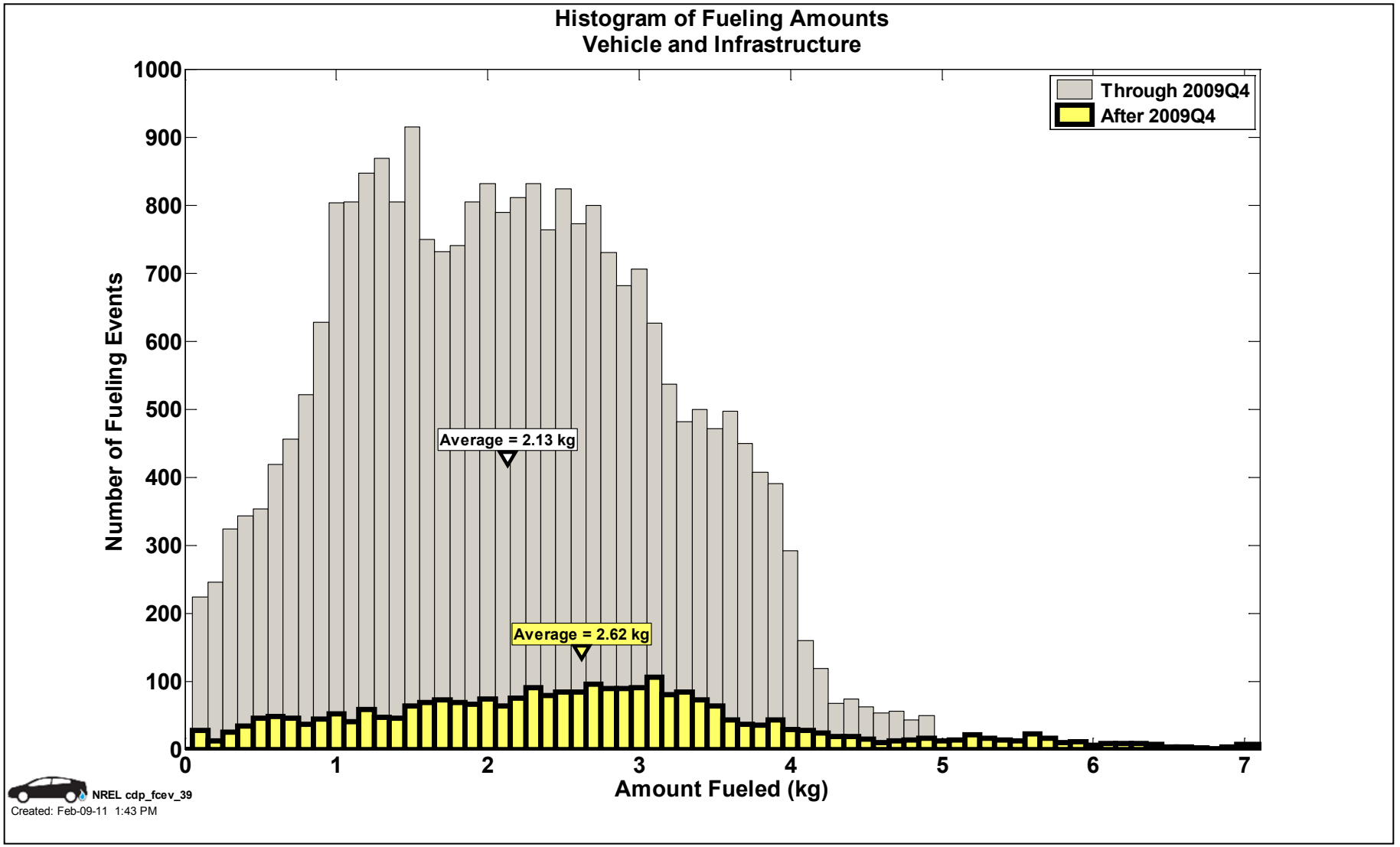
- an event that under slightly different circumstances could have become an incident
- unplanned H2 release insufficient to sustain a flame

NREL cdp_fcev_36
Created: Mar-14-11 11:18 AM

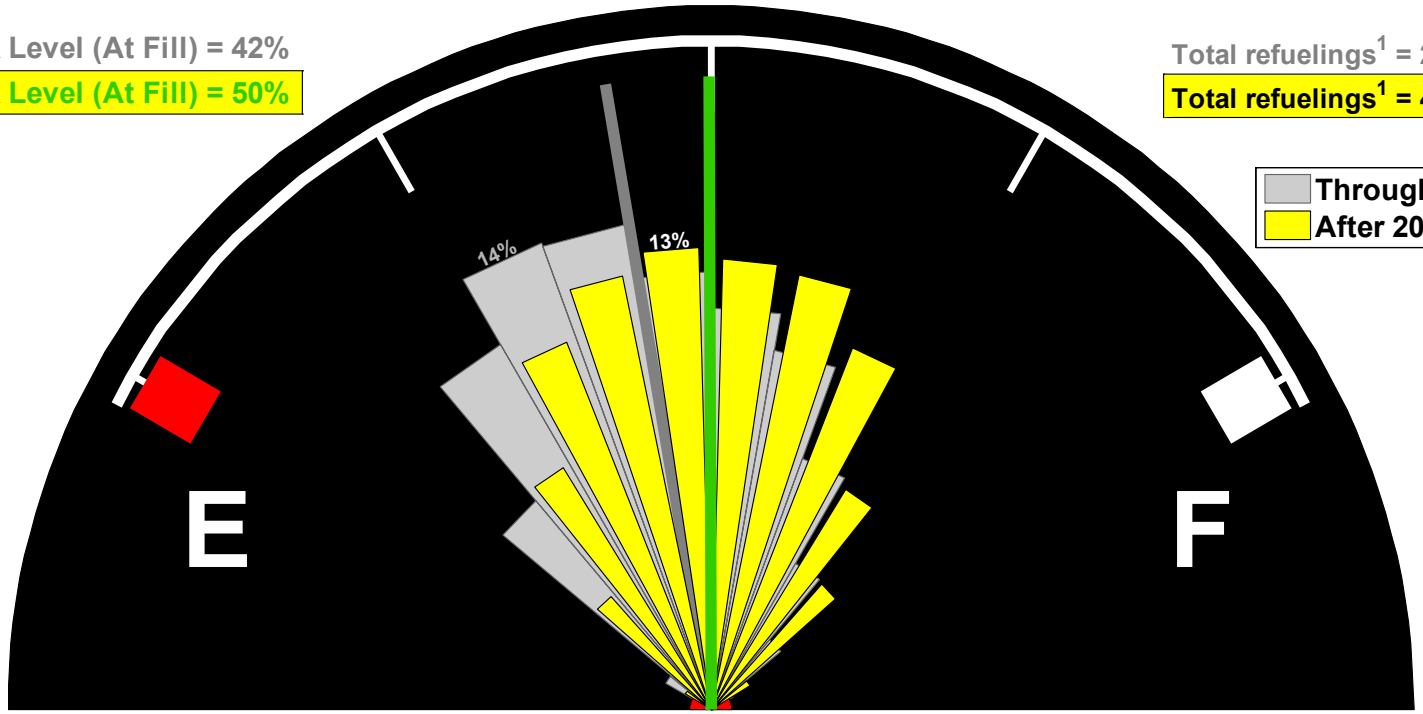
CDP#38: Refueling Times



CDP#39: Refueling Amounts



CDP#40: H2 Tank Level at Refueling



1. Some refueling events not recorded/detected due to data noise or incompleteness.
2. The outer arc is set at 20% total refuelings.
3. If tank level at fill was not available, a complete fill up was assumed.

NREL cdp_fcev_40
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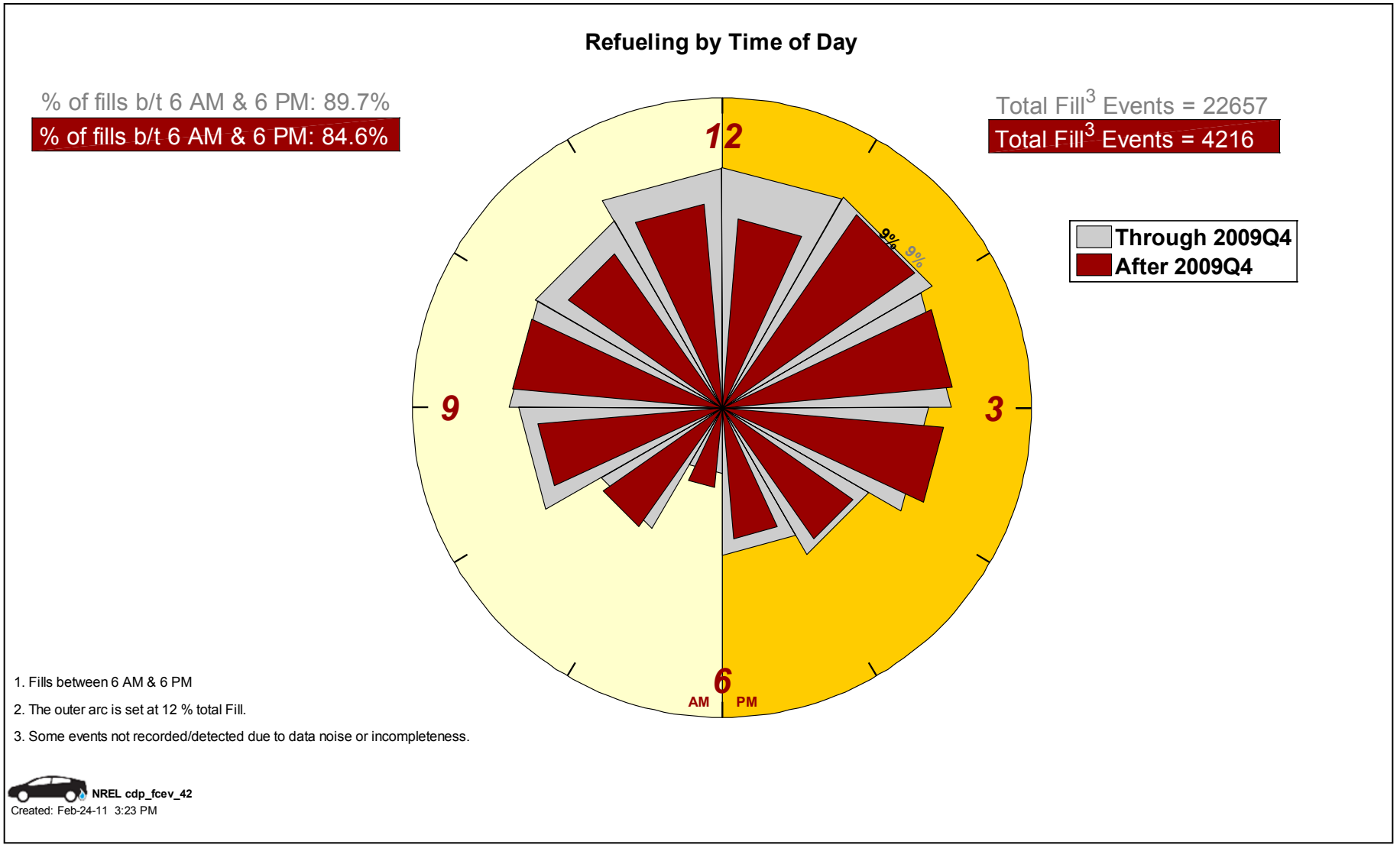
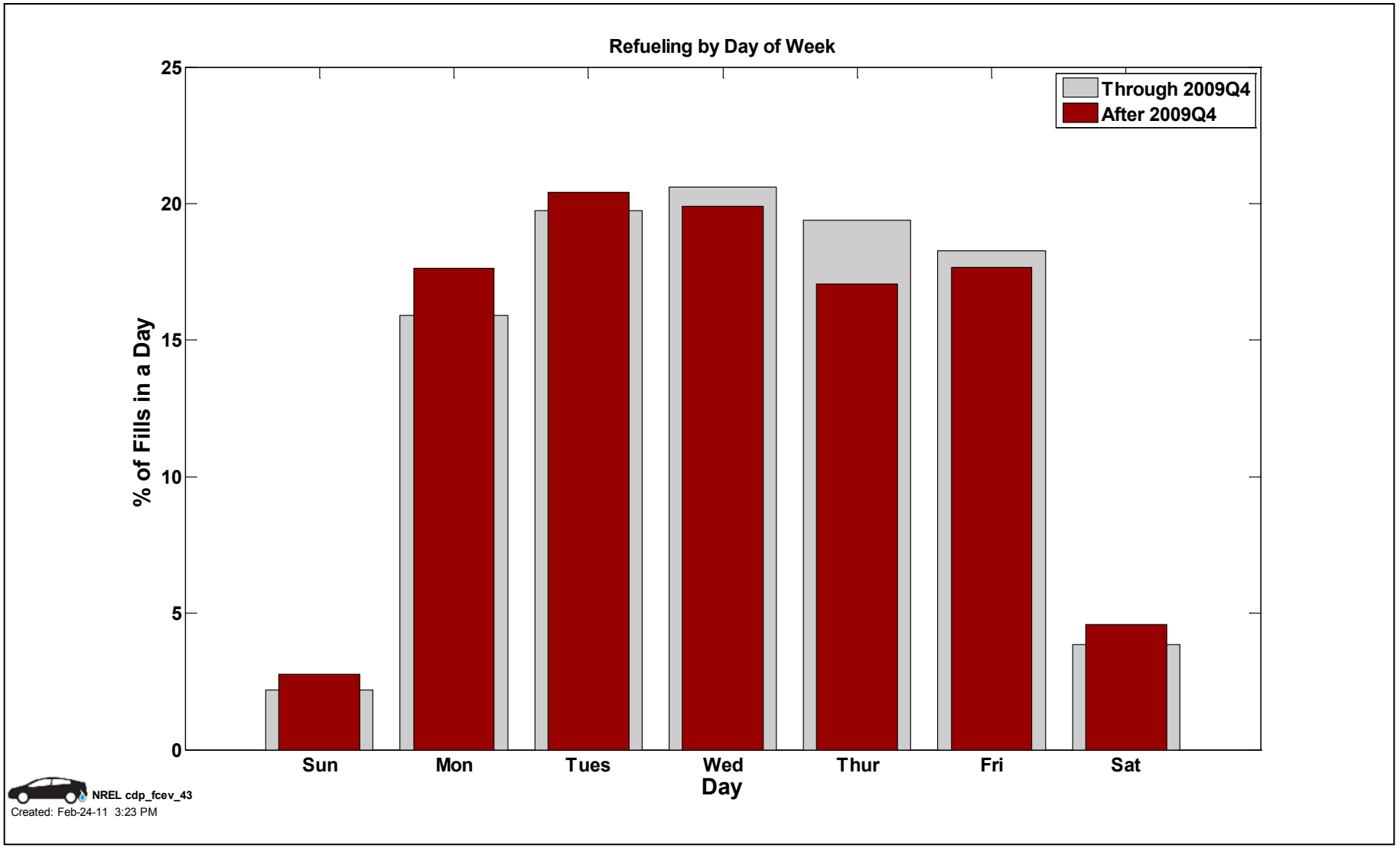
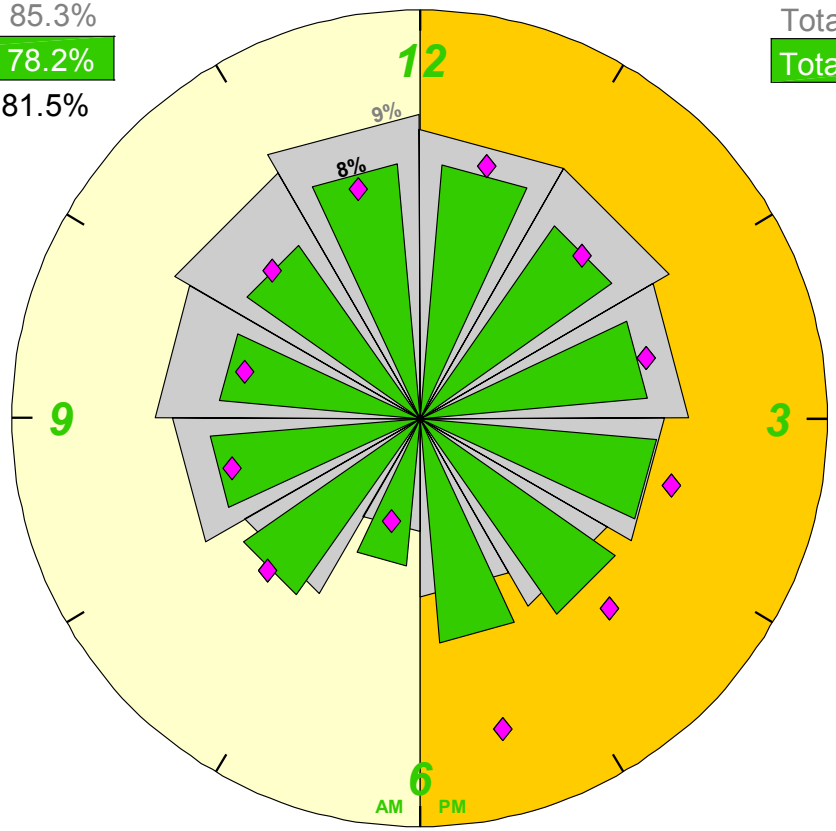
CDP#42: Refueling by Time of Day



CDP#43: Refueling by Day of Week



CDP#44: Driving Start Time – Day



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

% of driving trips b/t 6 AM & 6 PM: 78.2%

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

Total Driving[3] Events = 295222

Total Drive[3] Events = 18213

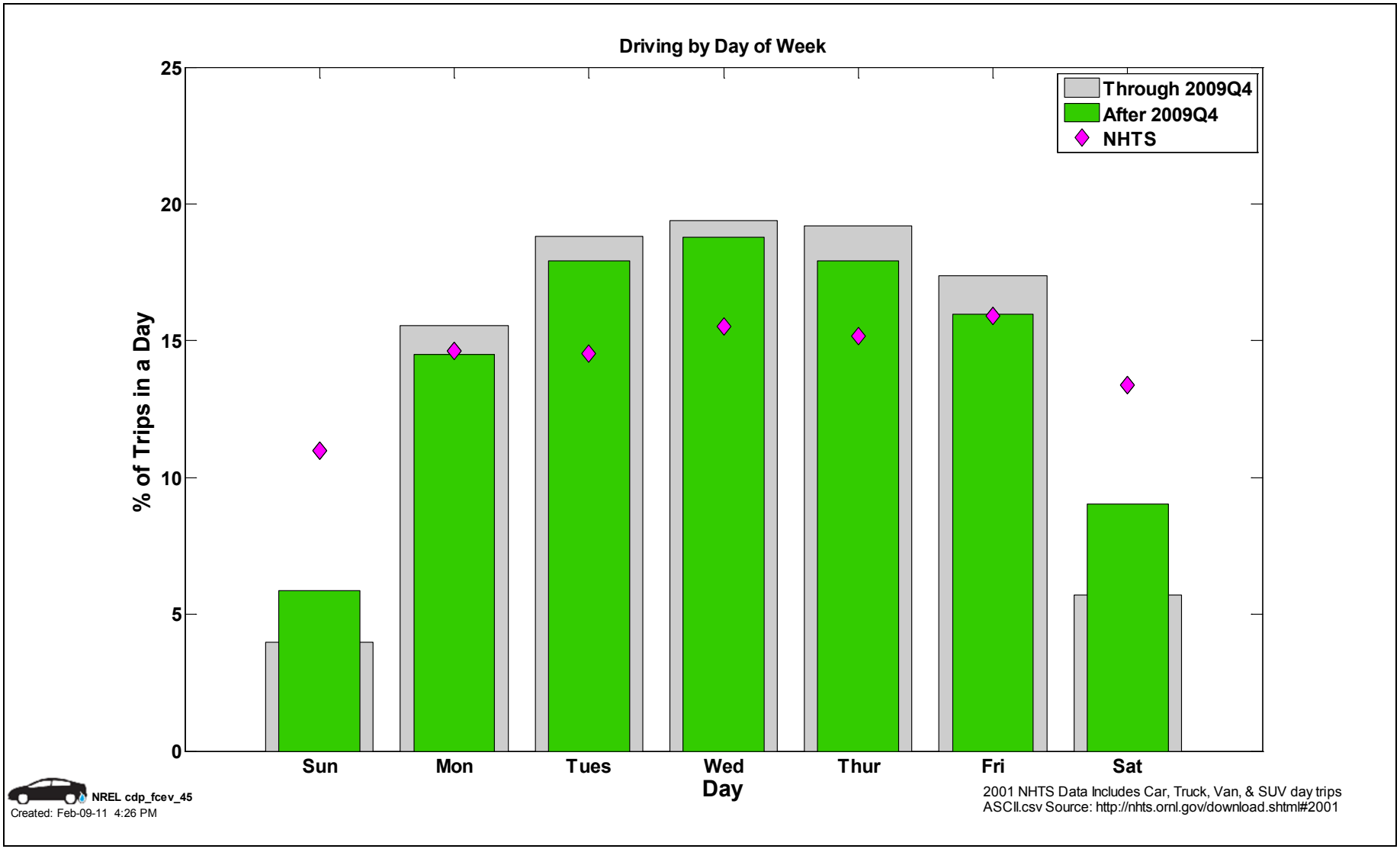
1. Driving trips between 6 AM & 6 PM
2. The outer arc is set at 12 % total Driving.
3. Some events not recorded/detected due to data noise or incompleteness.

2001 NHTS Data Includes Car, Truck, Van, & SUV day trips

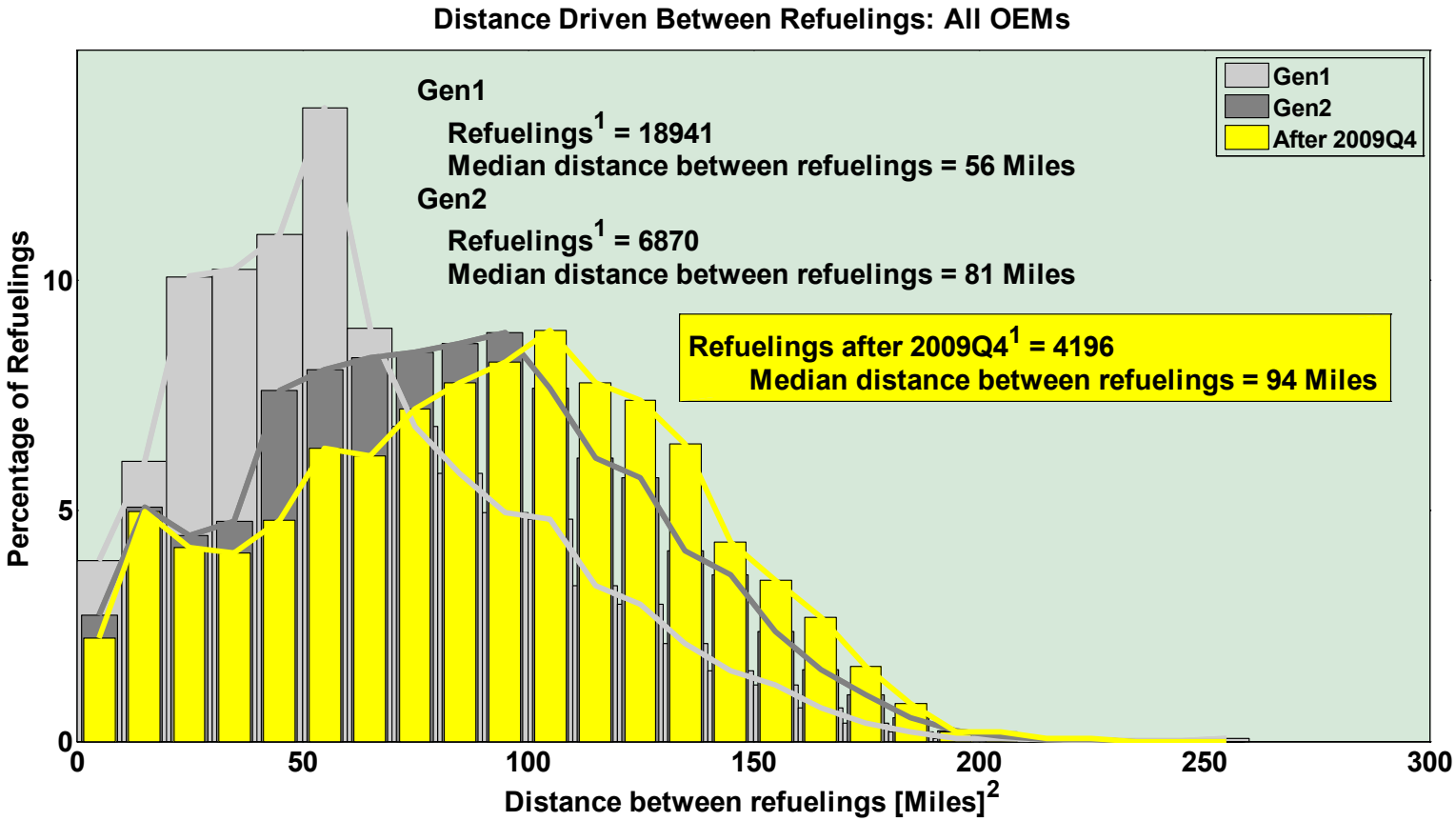
ASCII.csv Source: http://nhts.ornl.gov/download.shtml#2001

NREL cdp_fcev_44
Created: Feb-09-11 4:26 PM

CDP#45: Driving by Day of Week



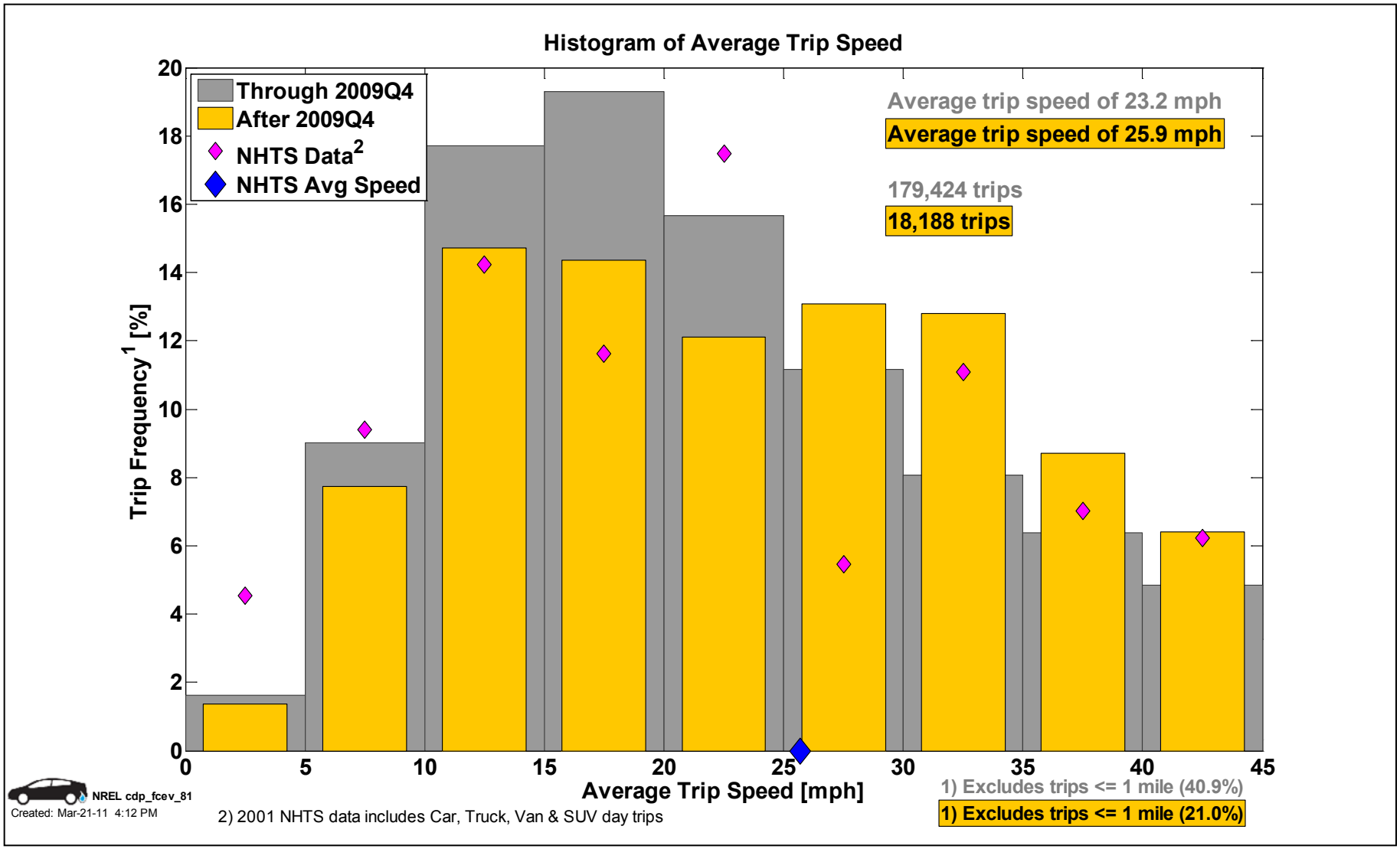
CDP#80: Miles Between Refuelings



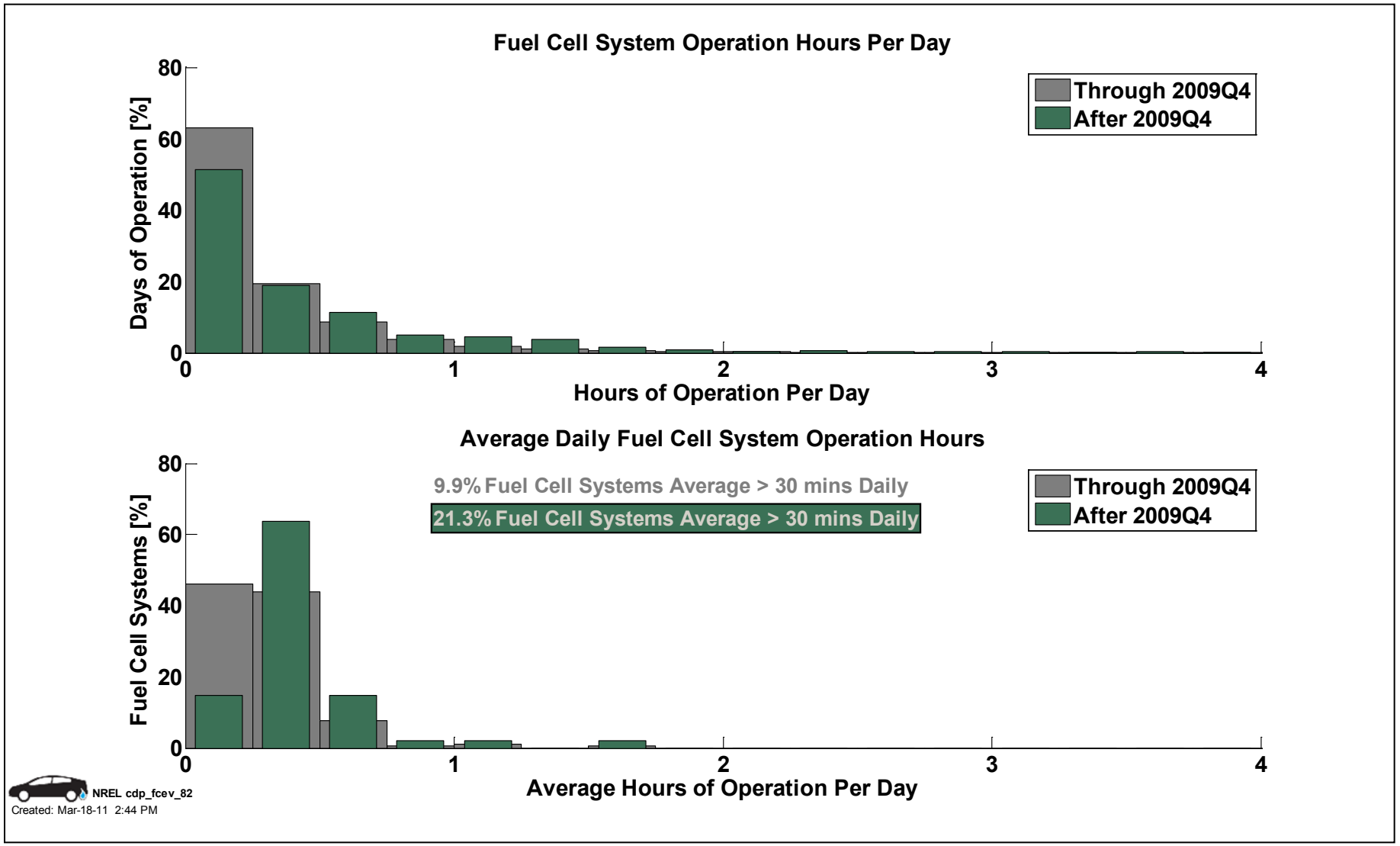
1. Some refueling events are not detected/reported due to data noise or incompleteness.
2. Distance driven between refuelings is indicative of driver behavior and does not represent the full range of the vehicle.

NREL cdp_fcev_80
Created: Feb-24-11 3:25 PM

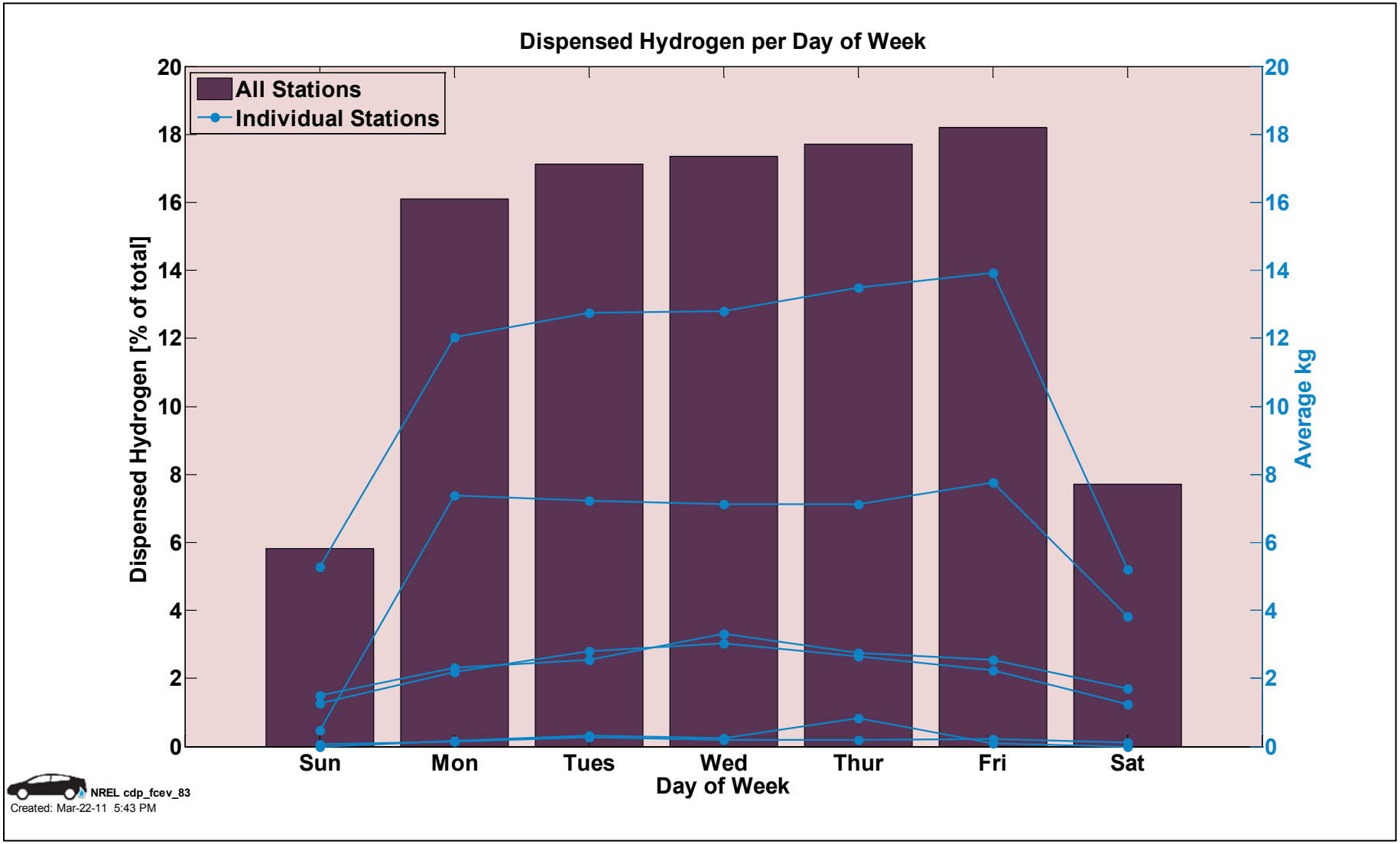
CDP#81: Average Trip Speed



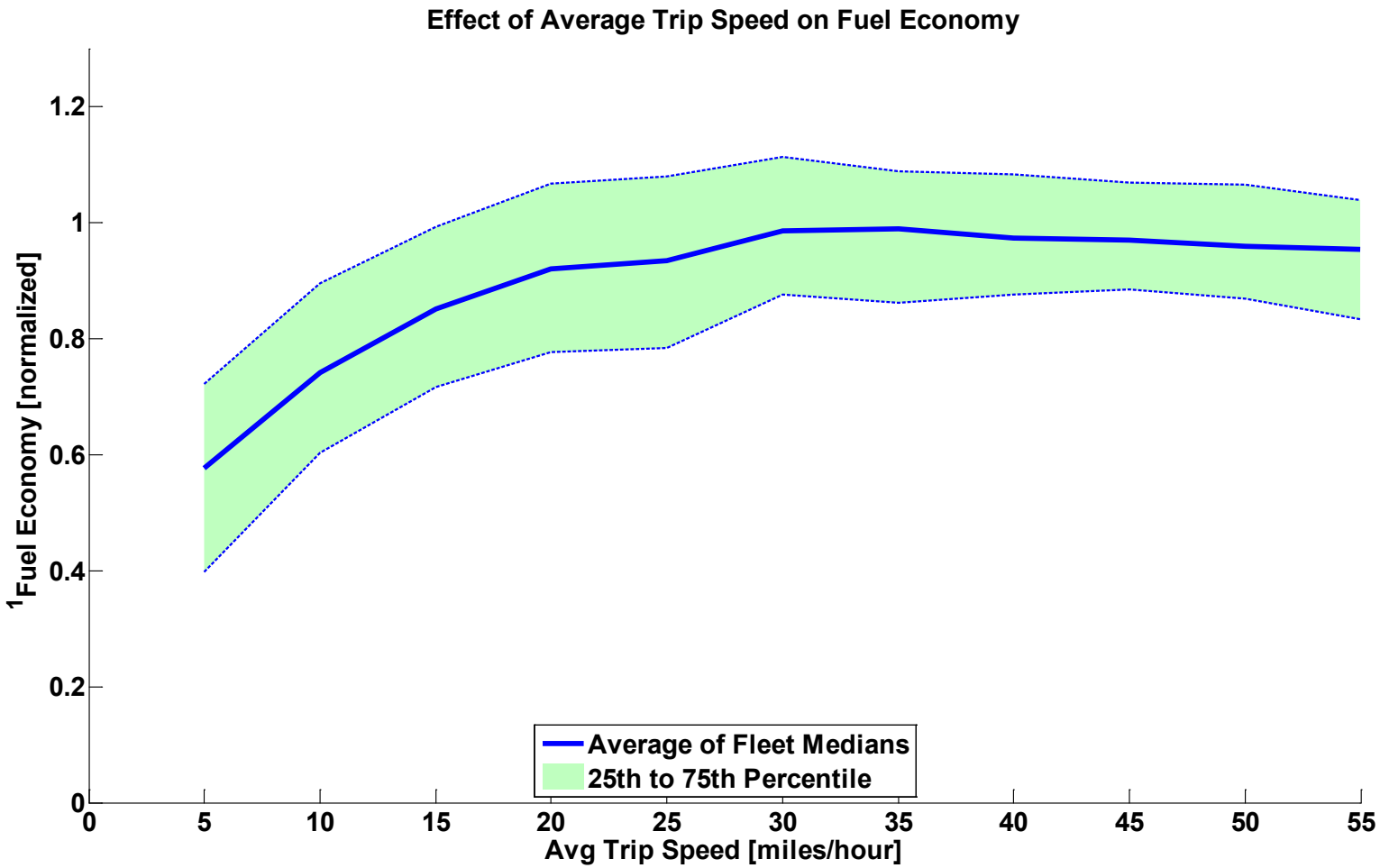
CDP#82: Daily FC Operation Hours in Automotive Application



CDP#83: Hydrogen Dispensed by Day of Week



CDP#84: Effect of Average Trip Speed on Fuel Economy



(1) Data after 2009Q4. The data has been normalized to the max of the median curve for each fleet. Data binned every 5 mph for calculating median and percentiles.

NREL cdp_fcev_84
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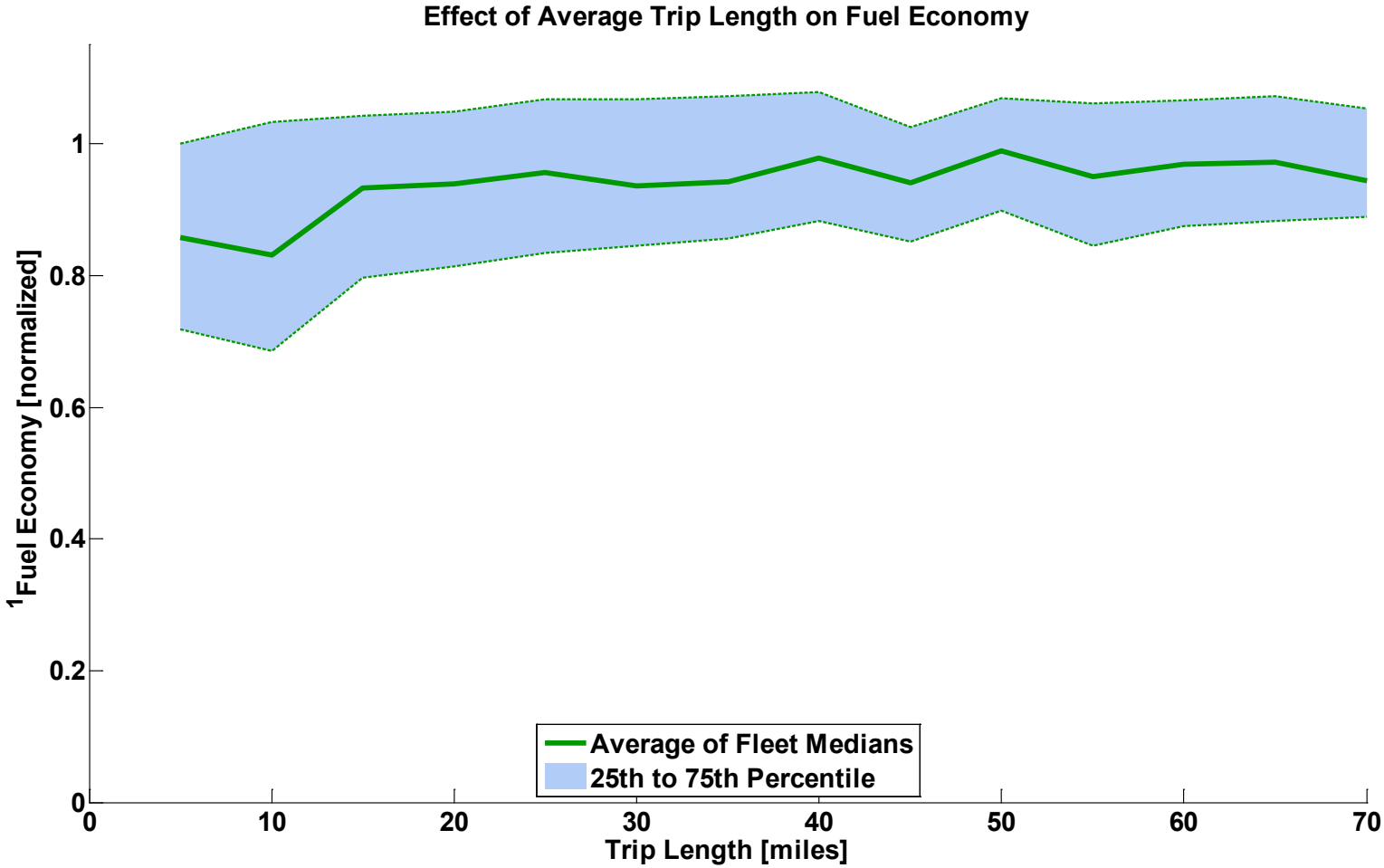
CDP#85: Effect of Trip Length on Fuel Economy



(1) Data after 2009Q4. The data has been normalized to the max of the median curve for each fleet. Data binned every 5 miles for calculating median and percentiles.

NREL cdp_fcev_85
Created: Mar-18-11 11:46 AM