Police Vehicle Evaluation

Model Year 2018

MICHIGAN STATE POLICE

JTIC
Justice Technology Information Center

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and

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2018 Model Year

Police Vehicle Evaluation Program

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TABLE OF CONTENTS

PREFACE

The Michigan State Police Vehicle Test Team is pleased to announce the results of the 2018 Model Year Police Vehicle Evaluation. This year we tested thirteen patrol vehicles and seven police motorcycles. We appreciate your continued support and encouragement. The vehicles evaluated this year included the following:

POLICE CATEGORY

Chevrolet Tahoe 5.3L RWD
Chevrolet Tahoe 5.3L 4WD
Dodge Charger 3.6L RWD
Dodge Charger 5.7L AWD
Dodge Charger 5.7L RWD
Ford Police Interceptor Sedan 3.5L EcoBoost AWD
Ford Police Interceptor Sedan 3.5L FWD
Ford Police Interceptor 3.7L AWD
Ford Police Interceptor 2.0L EcoBoost FWD
Ford Police Responder Hybrid Sedan
Ford Police Interceptor Utility 3.5L EcoBoost AWD
Ford Police Interceptor Utility 3.7L AWD
Ford F-150 Police Responder EcoBoost 3.5L

MOTORCYCLES

BMW R1200 RT-P
Harley-Davidson FLHP
Harley-Davidson FLHP Stage II
Harley-Davidson FLHTP Stage I
Harley-Davidson FLHTP Stage IV
Yamaha FJR1300
Zero DSRP

GENERAL INFORMATION

All the patrol vehicles were tested with a clean roof (no overhead light or light bar) and without “A” pillar mount spotlights. We believe this is the best way to ensure all of the vehicles are tested on an equal basis. Remember that once overhead lights, spotlights, radio antennas, sirens, and other emergency equipment are installed, overall performance may be somewhat lower than we report.

Each vehicle was tested with the tires that are available as original equipment on the production model. Specific tire information for each vehicle is available in the Vehicle Description portion of this report. All vehicles listed in this report were equipped with electronic speed limiters unless otherwise noted, or with the exception of certain motorcycles.

Motorcycles were tested with equipment installed as provided by their respective manufacturer. Harley-Davidson chose to test their bikes with minimal equipment. BMW, Yamaha, and Zero chose to test their bikes with the majority of the equipment installed.

The manufacturers were allowed to submit a one-half page highlight of their vehicle. These highlights will be included with the vehicle description and photograph. This information is direct from the manufacturer and is not an opinion or endorsement from the Michigan State Police. It is only an attempt to give the consumer the most information about the vehicle.

Fiat Chrysler Automobiles (FCA) Proving Grounds - Acceleration, Top Speed, & Braking Tests

Acceleration and Top Speed tests were performed at the FCA Proving Grounds. This 4.7 mile 140 mph neutral steer banked oval provides ample space to obtain accurate test results in these areas.

The Brake test is also performed at the FCA Proving Grounds. The surface used for testing this year was changed due to construction. The new surface had a coefficient of friction of .87 as compared to the .93 coefficient of friction on the surface used previously.

We would like to thank Mr. Greg Spicher and Mr. Craig Latta for the assistance we received from the staff at the FCA Proving Grounds.

Precision Driving Unit - Motorcycle Brake Test

Motorcycle Brake testing was performed at the Michigan State Police Precision Driving Unit. The east straightaway has been used for brake testing since the 2011 model year and provides a consistent surface to gauge brake performance from year to year.

Grattan Raceway - Motorcycle Dynamics Test

Motorcycle Dynamics testing was performed at Grattan Raceway. This two mile road course provides a taxing environment to test motorcycles in dynamics and continues to produce comprehensive results regarding durability and performance.

We appreciate the support we received from BMW, Harley-Davidson, and Yamaha during testing. This was the twelfth year of police motorcycle testing and we continue to get great feedback on this important component to the testing lineup.

Grattan Raceway - Vehicle Dynamics Test

Vehicle Dynamics testing was performed at Grattan Raceway. This two mile road course provides a realistic environment to test vehicles in dynamics and continues to produce comprehensive results regarding durability and performance.

We appreciate the support we received from Fiat Chrysler Automobiles (FCA), Ford Motor Company, and General Motors during testing.

EVALUATION INFORMATION

MOTORCYCLES:

Grattan Raceway – Motorcycle Dynamics Testing – Yamaha FJR1300P-AB

During run three of dynamics testing, the motorcycle experienced an unexpected ABS activation as the rider entered turn one. This activation reduced the braking effort and the rider elected to ride straight into the gravel trap rather than attempting to negotiate the turn. The motorcycle was inspected for function and damage by Yamaha representatives and then returned to service to complete testing.

AUTOMOBILES:

Optional Equipment

All of the Dodge Charger platforms were tested with the optional P245/55R18 sized tires rather than the standard P225/60R18 tire. The Ford Police Interceptor Utility 3.5L Ecoboost AWD was tested with the optional Power Transfer Unit cooler.

Grattan Raceway – Automobile Dynamics Testing – Ford F150 Police Responder

During the Vehicle Dynamics testing at Grattan Raceway, the F150 Police Responder had an occurrence of transmission fluid venting through the breather tube during the first 8-lap session. The Ford engineers identified that the transmission was overfilled due to using an outdated technical instruction during the preparation process. As the transmission heated, the fluid expanded and began to vent from the transmission resulting in an under filled condition. The fluid level was adjusted by adding 8 ounces of fluid after the second session. The remaining two sessions were conducted with no further issues. Between sessions, a fan was used to cool the transmission to the correct temperature to confirm the original overfill condition.

Grattan Raceway – Automobile Dynamics Testing – Chevrolet Tahoe

Due to the crash during testing of the 2015 model year Chevrolet Tahoe, a safety inspection for brake pad condition and thickness was performed on the left front brake location on both models of the Tahoe. This inspection was agreed upon between GM engineers and MSP prior to testing. The inspection found that there was sufficient pad thickness to complete the fourth series of dynamics testing without concern.

We recommend you review the information contained in this report and then apply it to the needs of your agency. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job effectively and safely. If anything in this report requires further explanation or clarification, please call or write.

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VEHICLE TESTING HISTORY, PURSUIT RATINGS, AND PURCHASING SPECIFICATIONS

The Michigan State Police (MSP) began testing patrol cars in the 1950s. At that time, quotations were requested from manufacturers and only the vehicle with the lowest quotation was tested to see if it met the purchase requirements. Years later, the quotations received from manufacturers were only four dollars apart. At that point, the MSP decided to test all vehicles in order to select the best vehicle. The equipment used to measure speed and distance has evolved from tape measure to global positioning systems providing more accurate measurements, making the MSP vehicle testing an internationally recognized resource for law enforcement agencies.

The term pursuit rated vehicle has recently been called into question as no one fully understands what this term represents. The term pursuit capable is more appropriate as there is no sanctioning body, or specific performance criteria, to determine if the vehicle meets a specialized designation. Each vehicle has been modified from a civilian vehicle to perform better under the rigors of police use. These vehicles are engineered to repetitively stop in a shorter distance, accelerate faster, and handle better than the base platform. Modifications to engines, cooling systems, transmissions and shifting parameters, brakes, tires, stability control programming, and other changes may all be included as part of the manufacturers police package.

The manufacturers provide upcoming model year vehicles to both the MSP and Los Angeles County Sheriff's Department to be tested for suitability in their respective operations. Historically, successful results at both test sites have validated the manufacturers' engineering efforts in building a car capable of handling the stress associated with police pursuits. Neither the MSP, nor the Los Angeles County Sheriff's Department, has the authority or credentials to award the term pursuit rated to any vehicle.

The MSP has performance criteria attached to its purchasing specifications. The criteria has historically been that a vehicle must accelerate from 0 – 60 mph in 9.0 seconds, 0 – 80 mph in 14.9 seconds, and 0 – 100 mph in 24.6 seconds. The vehicle must reach 110 mph in 4,838 feet and 120 mph in 8,985 feet. The vehicle must maintain an average deceleration rate of 25.79 ft./sec^2 while performing twenty 60 – 0 mph threshold braking stops. The vehicle must also successfully complete all 32 laps of the Grattan Raceway dynamics testing without major component failure. Meeting these criteria does not certify a vehicle as being pursuit rated, rather it justifies a vehicle is capable of performing the job function the MSP requires in a police vehicle. When reading the testing results in this book, it is up to each agency to determine if the vehicle is suitable for the mission of their agency.

ACKNOWLEDGEMENTS

We would like to thank the following contributors. We are grateful for their support and encouragement toward our ultimate goal: a safe, successful testing program that benefits the law enforcement community nationwide and beyond.

Colonel Kriste Kibbey Etue, Director, Michigan Department of State Police
Lt. Colonel W. Thomas Sands, Deputy Director, Field Services Bureau
Lt. Colonel Richard T. Arnold, Deputy Director, State Services Bureau
Lt. Colonel Gary M. Gorski, Deputy Director, Specialized Services Bureau
Mr. Shawn Sible, Deputy Director, Administrative Services Bureau
Capt. Thomas Deasy, Commander, Training Division
Personnel from the Michigan Department of Technology, Management and Budget, Vehicle and Travel Services

The National Institute of Justice, Justice Technology Information Center, Mr. Alex Sundstrom, Leidos.

Mr. Greg Spicher, Mr. Craig Latta and personnel from FCA Proving Grounds
Mr. Sam Faasen and personnel from Grattan Raceway Park

Photographs by Mr. Ray Holt, Michigan State Police
Vehicle Evaluation book prepared by Ms. Gina Rosendall-Saucedo and Ms. Jamie Hansen, Michigan State Police Training Division.

The Michigan State Police Precision Driving Unit would like to extend a very special “thank you” to Fiat Chrysler Automobiles, Ford Motor Company, General Motors, BMW Motorrad USA, Harley-Davidson Motorcycles, Yamaha Motorcycles and Zero Motorcycles for their hard work in building and preparing the test cars and motorcycles. We are grateful for your dedication to law enforcement. Law enforcement officers rely on these vehicles to perform a vast array of duties.

Finally, thank you to all in the United States and Canada who represent law enforcement and purchasing agencies for your constant encouragement and support. We are proud to make a contribution to the law enforcement community.

Michigan State Police Vehicle Test Team:

Back Row: Sgt. Doug Schutter, Tpr. Jeremy Cupp, Lt. Mike McCarthy, Sgt. Rob Schwalm, Tpr. Jeff Mercer, Ret. Sgt. David “Doc” Halliday

Front Row: Ms. Jackie Fitzsimmons, Tpr. Jon Tibaudo, Sgt. Nick Darlington, Sgt. Pat Agema, Tpr. Tony VanLuchene, Sgt. Andy Douville, Ms. Gina Rosendall-Saucedo

Not Pictured: Sgt. Matt Rogers

TEST EQUIPMENT

The following test equipment is utilized during the Acceleration, Top Speed, Braking, and Vehicle Dynamics portions of the evaluation program.

Racelogic USA 27240 Haggerty Rd Suite E17 Farmington Hills, MI 48331	• VBox 3i Data Collection System
Schuberth Helmets Stegelitzer Straße 12 39126 Magdeburg Deutschland	• Motorcycle Helmet – C3 Pro
AMB i.t. US-INC 1631 Phoenix Blvd. Suite 11 College Park, GA 30349	• Orbits 5.2 Extended Loop Decoder • AMB TranX260 Transponders
Alpinestars USA 2780 W. 237th Street Torrance, CA 90505-5270	• Alpinestars Protective Riding Apparel
Stilo Helmets USA 9A Electronics Ave. Danvers, MA 01923	• Test Driver Helmet – WRC DES Composite
Motorola Solutions 1303 East Algonquin Road Schaumburg, IL 60196	• Mag One BPR 40 Two-Way Radios

TEST VEHICLE DESCRIPTIONS AND PHOTOGRAPHS

Chevrolet Tahoe
5.3L RWD

MAKE & MODEL	2018 Chevrolet Tahoe 2WD (9C1)
SALES CODE	CC15706
POWERTRAIN INFORMATION	
CUBIC INCHES	325
LITERS	5.3
HORSEPOWER SAENET	355 @ 5600 RPM
ALTERNATOR	170 AMP
TORQUE	383 @ 4100 RPM
BATTERY	720 CCA Primary (730 CCA Auxiliary)
TRANSMISSION	6-Speed Automatic
AXLE RATIO	3.08:1 (Rear-Wheel Drive (standard Heavy-Duty Locking Rear Differential)
STEERING	Electric Power-Assisted Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	39 Feet
TIRE SIZE, LOAD & SPEED RATING	Goodyear RSA P265/60/R17, All-season Load Rating 108, Speed Rating "V"
GROUND CLEARANCE, MINIMUM	8.5 inches
BRAKE SYSTEM	Heavy Duty 4-Wheel Anti-lock front & rear disc with Vacuum boost
FUEL CAPACITY	26 Gallons/98 Liters
GENERAL MEASUREMENTS	
WHEELBASE	116 inches
LENGTH	204 inches
CURB WEIGHT	5,224 lbs.
HEIGHT	72.4 inches
INTERIOR VOLUME	
FRONT	63.8 cu. ft.
REAR	56.9 cu. ft.
COMB	120.7 cu. ft.
MAX CARGO AREA	112.1 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,588 lbs. with 40/40 front seats (no center seat)
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	23
COMBINED	19

MANUFACTURER VEHICLE HIGHLIGHTS

The Tahoe PPV remains the only full-size, body-on-frame, pursuit-rated cruiser in the market. It provides excellent officer comfort, visibility, cargo capacity, up-fit capability, and true utility.

Tahoe interior showcases office-like ergonomics, innovative technologies, and a host of safety features to keep officers safe and connected behind the wheel. Standard are a Rear Vision Camera with 8" Display and backup sensors. New 8 inch MyLink infotainment radio with Bluetooth[1] cell phone connectivity and steering wheel mounted controls are also standard.

Also new is the optional **Enhanced Driver Alert Package** that includes **Forward Collision Alert**, **Low Speed Forward Automatic Braking, Lane Keep Assist** and exclusive **Safety Alert Seat**.
Just like before, the Tahoe PPV offers full pursuit capability with tremendous power, speed, braking, and agility. The 5.3L EcoTec3 V8 under the hood features direct injection, variable valve timing, and Active Fuel Management. It produces 355 horsepower (an increase of 35 over the 2014 model) and 383 lb-ft of torque (an increase of 48 over the 2014 model), all while yielding better gas mileage than the engine it replaced (up to 23 highway mpg). Also standard are dual batteries to handle the electrical draw of emergency equipment, and a tow package capable of up to 4,000 lbs. of tow capacity[2].

Whether it's high-speed emergency vehicle operations, city patrol, HAZMAT, K-9 unit, medical first responder, or tactical operations, the 2018 Tahoe PPV reaffirms that the SUV is thriving and ready for duty.

[1] Go to gmtotalconnect.com to find out which phones are compatible with the vehicle.
[2] Maximum trailer weight ratings are calculated assuming a properly equipped base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers, and cargo will reduce the maximum trailer weight your vehicle can tow.

Chevrolet Tahoe
5.3L 4WD

MAKE & MODEL	2018 Chevrolet Tahoe 4WD (9C1)
SALES CODE	CK15706
POWERTRAIN INFORMATION	
CUBIC INCHES	325
LITERS	5.3
HORSEPOWER SAENET	355 @ 5600 RPM
ALTERNATOR	170 AMP
TORQUE	383 @ 4100 RPM
BATTERY	720 CCA Primary (730 CCA Auxiliary)
TRANSMISSION	6-Speed Automatic
AXLE RATIO	3.08:1 Driver- Selectable Auto 4-Wheel Drive, Four-Wheel, or 2-Wheel Drive (standard Heavy-Duty Locking Rear Differential)
STEERING	Electric Power-Assisted Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	39 Feet
TIRE SIZE, LOAD & SPEED RATING	Goodyear RSA P265/60/R17, All-season Load Rating 108, Speed Rating 'V'
GROUND CLEARANCE, MINIMUM	8.5 inches
BRAKE SYSTEM	Heavy Duty 4-Wheel Anti-lock front & rear disc with Vacuum boost
FUEL CAPACITY	26 Gallons/98 Liters
GENERAL MEASUREMENTS	
WHEELBASE	116 inches
LENGTH	204 inches
CURB WEIGHT	5,442 lbs.
HEIGHT	72.4 inches
INTERIOR VOLUME	
FRONT	63.8 cu. ft.
REAR	56.9 cu. ft.
COMB	120.7 cu. ft
MAX CARGO AREA	112.1 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,628 lbs. with 40/40 front seats (no center seat)
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	22
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The Tahoe PPV remains the only full-size, body-on-frame, pursuit-rated cruiser in the market. It provides excellent officer comfort, visibility, cargo capacity, up-fit capability, and true utility. Riding at the identical height as 2WD models with matching brakes and tires, the Tahoe PPV 4WD can travel wherever the pursuit takes you.

Tahoe interior showcases office-like ergonomics, innovative technologies, and a host of safety features to keep officers safe and connected behind the wheel. Standard are a Rear Vision Camera with 8" Display and backup sensors. **New 8" MyLink infotainment radio** with Bluetooth[1] cell phone connectivity and steering wheel mounted controls are also standard.

Also new is the optional **Enhanced Driver Alert Package** that includes **Forward Collision Alert**, **Low Speed Forward Automatic Braking, Lane Keep Assist** and exclusive **Safety Alert Seat**.
Just like before, the Tahoe PPV offers full pursuit capability with tremendous power, speed, braking, and agility. The 5.3L EcoTec3 V8 under the hood features direct injection, variable valve timing, and Active Fuel Management. It produces 355 horsepower (an increase of 35 over the 2014 model) and 383 lb-ft of torque (an increase of 48 over the 2014 model), all while yielding better gas mileage than the engine it replaced (up to 23 highway mpg). Also standard are dual batteries to handle the electrical draw of emergency equipment, and a tow package capable of up to 4,000 lbs. of tow capacity[2].

Whether it's high-speed emergency vehicle operations, city patrol, HAZMAT, K-9 unit, medical first responder, or tactical operations, the 2018 Tahoe PPV reaffirms that the SUV is thriving and ready for duty.

[1] Go to gmtotalconnect.com to find out which phones are compatible with the vehicle.
[2] Maximum trailer weight ratings are calculated assuming a properly equipped base vehicle, except for any option(s) necessary to achieve the rating, plus driver. The weight of other optional equipment, passengers, and cargo will reduce the maximum trailer weight your vehicle can tow.

Dodge Charger
3.6L RWD

MAKE & MODEL	2018 Dodge Charger RWD
SALES CODE	27A, Z1B
POWERTRAIN INFORMATION	
CUBIC INCHES	220
LITERS	3.6
HORSEPOWER SAENET	292 @ 6400 RPM
ALTERNATOR	220 AMP
TORQUE	260 @ 4800 RPM
BATTERY	800 CCA
TRANSMISSION	5-Speed Electronic Automatic
AXLE RATIO	2.62
STEERING	Rack-and-Pinion with Electric Power Assist
TURNING CIRCLE (CURB TO CURB)	37.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,098 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMB	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,390 lbs.
EPA MILEAGE EST. (MPG)	
CITY	18
HIGHWAY	26
COMBINED	20

MANUFACTURER VEHICLE HIGHLIGHTS

The 2018 Dodge Charger Pursuit boasts an industry-exclusive cockpit design with an optional 12.1-inch touch-screen display. This touch-screen display includes Uconnect® infotainment system with standard Bluetooth®. New larger screen allows the laptop to be stored in the trunk, reducing interior clutter for safety and increased productivity. The police integrated display package responds to officers' demands for tactical advantages and safety. Vehicle Systems Interface Module (standard) enables easier upfits by providing upfitters with access to the electrical architecture of the vehicle.

Each 2018 Dodge Charger Pursuit will be equipped with the Officer Protection Package which is designed to increase an officer's situational awareness when parked and working inside the vehicle. Through the use of the Charger Pursuit's ParkSense rear park assist system, ParkView rear backup camera, Blind Spot and Cross Path detection sensors, the system alerts an officer if anyone is behind the vehicle.

The 2018 Dodge Charger Pursuit features a standard Ward's "Automotive 10 Best" Pentastar® V6 engine with Decel Fuel Shut-Off feature that provides a unique balance of pursuit-rated performance and V6 efficiency, including Flex-Fuel capability.

The 2018 Dodge Charger Pursuit 3.6L can now be ordered with an optional 220mm rear axle which increases the payload capacity 200lbs. Additional purpose-built upgrades include performance-tuned suspension, load-leveling shocks and beefed-up, heavy-duty brakes. Additional officer-focused upgrades include specially developed seats to accommodate belt-mounted gear and a sport steering wheel with auxiliary buttons for controlling police equipment.

Dodge Charger
5.7L RWD

MAKE & MODEL	2018 Dodge Charger RWD
SALES CODE	29A, 5ZV
POWERTRAIN INFORMATION	
CUBIC INCHES	345
LITERS	5.7
HORSEPOWER SAENET	370 @ 5250 RPM
ALTERNATOR	220 AMP
TORQUE	395 @ 4200 RPM
BATTERY	800 CCA
TRANSMISSION	5-Speed Electronic Automatic
AXLE RATIO	2.62, 220mm
STEERING	Rack-and-Pinion with Electric Power Assist
TURNING CIRCLE (CURB TO CURB)	37.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103, V Speed Rating, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,325 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMB	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,200 lbs.
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	25
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The 2018 Dodge Charger Pursuit features an industry-exclusive cockpit design with an optional 12.1-inch touch-screen, which enables officers to store their laptop in the trunk, reducing interior clutter for safety and increased productivity. Larger touch-screen display includes the Uconnect® infotainment system with standard Bluetooth®. Police integrated display package responds to officers' demands for tactical advantages and safety. Vehicle Systems Interface Module (standard) enables easier upfits by providing upfitters with access to the electrical architecture of the vehicle.

Each 2018 Dodge Charger Pursuit will be equipped with the Officer Protection Package which is designed to increase an officer's situational awareness when parked and working inside the vehicle. Through the use of the Charger Pursuit's ParkSense rear park assist system, ParkView rear backup camera, Blind Spot and Cross Path detection sensors, the system alerts an officer if anyone is behind the vehicle.

The minbule ride and controlled feel is achieved through its RWD design, which mitigates weight shift, enabling faster acceleration, more responsible handling and maneuverability. Power under the hood comes from the legendary 5.7L HEMI® V* engine. Its Variable Valve Timing (VVT) increases power output without sacrificing fuel economy through continuous adjusting of the camshaft tuning.

The 2018 Dodge Charger Pursuit RWD boasts a performance-tuned suspension, load-leveling NIVOMAT shocks, heavy-duty antilock vented-disc brakes, front and rear stabilizer bars, and two-mode police-specific Electronic Stability Control (ESC). Additional upgrades include sport steering wheel with auxiliary buttons for controlling police equipment.

Dodge Charger
5.7L AWD

MAKE & MODEL	2018 Dodge Charger AWD
SALES CODE	29A, 590
POWERTRAIN INFORMATION	
CUBIC INCHES	345
LITERS	5.7
HORSEPOWER SAENET	370 @ 5250 RPM
ALTERNATOR	220 AMP
TORQUE	395 @ 4200 RPM
BATTERY	800 CCA
TRANSMISSION	5-Speed Electronic Automatic
AXLE RATIO	3.08, 230mm
STEERING	Rack-and-Pinion with Electro-Hydraulic Power Assist
TURNING CIRCLE (CURB TO CURB)	38.7 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V, Goodyear Eagle RSA
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, 4 Channel Anti-Lock
FUEL CAPACITY	18.5 Gallons/70.03 Liters
GENERAL MEASUREMENTS	
WHEELBASE	120.2 inches
LENGTH	198.4 inches
CURB WEIGHT	4,520 lbs.
HEIGHT	58.4 inches
INTERIOR VOLUME	
FRONT	55.6 cu. ft.
REAR	49.2 cu. ft.
COMB	104.7 cu. ft.
TRUNK	16.5 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,000 lbs.
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	23
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

The 2018 Dodge Charger Pursuit is equipped with an industry-exclusive cockpit design. Its optional 12.1-inch touch-screen display enables officers to keep their laptops out of the center console, which reduces clutter and increases safety and productivity. The touch-screen display includes Uconnect® infotainment system with a standard Bluetooth®. The police integrated display package responds to officers' demand for tactical advantages and safety. Vehicle Systems Interface Module (standard) enables easier upfits by providing upfitters with access to the electrical architecture of the vehicle.

Each 2018 Dodge Charger Pursuit will be equipped with the Officer Protection Package which is designed to increase an officer's situational awareness when parked and working inside the vehicle. Through the use of the Charger Pursuit's ParkSense rear park assist system, ParkView rear backup camera, Blind Spot and Cross Path detection sensors, the system alerts an officer if anyone is behind the vehicle.

The 2018 Dodge Charger Pursuit's advanced all-wheel-drive system transitions seamlessly from RWD to AWD, resulting in more control for officers. The segment-exclusive active transfer case and front-axle disconnect system monitor and adapt to environmental/road conditions, vehicle mode and driver habits. The 2018 Dodge Charger Pursuit AWD boasts added traction, improved acceleration and optimum cornering balance.

The 5.7L HEMI® V8 engine features Variable Valve Timing (VVT), which increases power output without sacrificing fuel economy. Purpose-built features include a sport steering wheel with auxiliary buttons for controlling police equipment.

Ford Special Service Police Sedan
2.0L EcoBoost FWD

MAKE & MODEL	Ford Special Service Police
SALES CODE	P2L, 999
POWERTRAIN INFORMATION	
CUBIC INCHES	122
LITERS	2.0
HORSEPOWER SAENET	240 @ 5500 RPM
ALTERNATOR	200 AMP
TORQUE	270 @ 3000 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.07:1
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.4 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+S Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	6.0 inches
BRAKE SYSTEM	Power, Dual Front Piston/Single Rear Piston, ABS
FUEL CAPACITY	19 Gallons/71.9 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.9 inches
LENGTH	202.9 inches
CURB WEIGHT	4,212 lbs.
HEIGHT	61.3 inches
INTERIOR VOLUME	
FRONT	54.8 cu. ft.
REAR	48.1 cu. ft.
COMB	103.0 cu. ft.
TRUNK	16.6 cu. ft. (with standard full size spare)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,290 lbs.
EPA MILEAGE EST. (MPG)	
CITY	19
HIGHWAY	28
COMBINED	22

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:
- Standard - Simple Fleet Key (includes 4 Keys)
- Optional – Remote Keyless Entry Key-Fob (includes 4-key fobs)

SAFETY:
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ Ballistic Panels – certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat-backs

FUEL ECONOMY:
- Provides an EPA-estimated 28 MPG hwy[1]
- Active Grille Shutter system manages airflow to optimally balance engine cooling and Aerodynamics

PERFORMANCE:
- Passed 32-lap vehicle dynamics tests by MSP and LASD in 2015CY and 2016CY
- 2.0L EcoBoost engine provides 240 hp and 270 lb/ft torque

1. EPA estimated ratings of 19 city / 28 hwy / 22 combined mpg; actual mileage will vary

Ford Police Interceptor Sedan
3.5L FWD

MAKE & MODEL	Ford Police Interceptor Sedan FWD
SALES CODE	P2L, 998
POWERTRAIN INFORMATION	
CUBIC INCHES	214
LITERS	3.5
HORSEPOWER SAENET	288 @ 6500 RPM
ALTERNATOR	220 AMP
TORQUE	254 @ 4000 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.16:1
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.4 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+S Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	6.0 inches
BRAKE SYSTEM	Power, Dual Front Piston /Single Rear Piston, ABS
FUEL CAPACITY	19 Gallons/71.9 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.9 inches
LENGTH	202.9 inches
CURB WEIGHT	4,212 lbs
HEIGHT	61.3 inches
INTERIOR VOLUME	
FRONT	54.8 cu. ft.
REAR	48.1 cu. ft.
COMB	103.0 cu. ft.
TRUNK	16.6 cu. ft. (with standard full size spare)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,280 lbs.
EPA MILEAGE EST. (MPG)	
CITY	17
HIGHWAY	25
COMBINED	20

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:
- Standard – Simple Fleet Key (includes 4 Keys
- Optional – Remote Keyless Entry Key Fob (includes 4 key fobs)

SAFETY:
- Industry Exclusive 75mph Rear Crash Tested
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ Ballistic Panels - Certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:
- Two times durability testing, proven real-world durability results

Ford Police Interceptor Sedan
3.7L AWD

MAKE & MODEL	Ford Police Interceptor Sedan AWD
SALES CODE	P2M, 99K
POWERTRAIN INFORMATION	
CUBIC INCHES	226
LITERS	3.7
HORSEPOWER SAENET	305 @ 6500 RPM
ALTERNATOR	220 AMP
TORQUE	279 @ 4000 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.39:1 with All-Wheel Drive
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.4 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+S, Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	6.0 inches
BRAKE SYSTEM	Power, Dual Front Piston/Single Rear Piston, ABS
FUEL CAPACITY	19 Gallons/71.9 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.9 inches
LENGTH	202.9 inches
CURB WEIGHT	4,311 lbs.
HEIGHT	61.3 inches
INTERIOR VOLUME	
FRONT	54.8 cu. ft.
REAR	48.1 cu. ft.
COMB	103.0 cu. ft.
TRUNK	16.6 cu. ft. (with standard full size spare)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,340 lbs.
EPA MILEAGE EST. (MPG)	
CITY	16
HIGHWAY	22
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:
- Standard - Simple Fleet Key (includes 4 Keys)
- Optional – Remote Keyless Entry Key-Fob (includes 4-key fobs)

SAFETY:
- Industry Exclusive 75mph Rear Crash Tested
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ Ballistic Panels - Certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:
- Two times durability testing, proven real-world durability results

PERFORMANCE:
- Standard Full-Time intelligent AWD

Ford Police Interceptor Sedan
3.5L EcoBoost AWD

MAKE & MODEL	Ford Police Interceptor Sedan EcoBoost AWD
SALES CODE	P2M, 99T
POWERTRAIN INFORMATION	
CUBIC INCHES	214
LITERS	3.5
HORSEPOWER SAENET	365 @ 5500 RPM
ALTERNATOR	220 AMP
TORQUE	350 @ 1500-5250 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.16:1 with All Wheel Drive
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.4 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+ S Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	5.3 inches
BRAKE SYSTEM	Power, Dual Front Piston/Single Rear Piston, ABS
FUEL CAPACITY	19.0 Gallons/71.9 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.9 inches
LENGTH	202.9 inches
CURB WEIGHT	4,371 lbs
HEIGHT	61.3 inches
INTERIOR VOLUME	
FRONT	54.8 cu. ft.
REAR	48.1 cu. ft.
COMB	103.0 cu. ft.
TRUNK	16.6 cu. ft. (with standard full size spare)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,220 lbs.
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	22
COMBINED	18

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES:

- Standard - Simple Fleet Key (includes 4 Keys)
- Optional – Remote Keyless Entry Key-Fob (includes 4-key fobs)

SAFETY:

- Tested four years running by MSP and LASD with Traction Control and Stability Control safety systems full on, as driven by officers in the real world
- Industry Exclusive 75mph Rear Crash
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ ballistic panels - Certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:

- Two times durability testing, proven real-world durability results

PERFORMANCE:

- Standard Full-Time Intelligent AWD
- EcoBoost engine with 365 hp and 350 lb/ft torque

Ford Police Interceptor Utility
3.7L AWD

MAKE & MODEL	Ford Police Interceptor Utility AWD
SALES CODE	K8A, 99R
POWERTRAIN INFORMATION	
CUBIC INCHES	226
LITERS	3.7
HORSEPOWER SAENET	304 @ 6250 RPM
ALTERNATOR	220 AMP
TORQUE	279 @ 4000 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.65:1 with All-Wheel Drive
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.8 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+S Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	6.5 inches
BRAKE SYSTEM	Power, Dual Front Piston/Single Rear Piston, ABS
FUEL CAPACITY	18.6 Gallons/70.4 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.6 inches
LENGTH	197.1 inches
CURB WEIGHT	4,672 lbs.
HEIGHT	69.2 inches without roof rack
INTERIOR VOLUME	
FRONT	59.7 cu. ft.
REAR	58.7 cu. ft.
COMB	118.4 cu. ft.
MAX CARGO AREA	85.1 cu. ft. (max cargo behind front seats)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,630 lbs.
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	20
COMBINED	17

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:
- Standard - Simple Fleet Key (includes 4 Keys)
- Optional – Remote Keyless Entry Key-Fob (includes 4-key fobs

SAFETY:
- Industry Exclusive 75 mph Rear Crash
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ Ballistic Panels – certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:
- Two times durability testing, proven real-world durability results

PERFORMANCE:
- Standard Full-Time Intelligent AWD
- Payload Capacity 1,630 lbs

Ford Police Interceptor Utility
3.5L Ecoboost AWD

MAKE & MODEL	Ford Police Interceptor Ecoboost Utility AWD
SALES CODE	K8A, 99T
POWERTRAIN INFORMATION	
CUBIC INCHES	214
LITERS	3.5
HORSEPOWER SAENET	365 @ 5500 RPM
ALTERNATOR	220 AMP
TORQUE	350 @ 1500-5250 RPM
BATTERY	750 CCA
TRANSMISSION	6-Speed Electronic Automatic
AXLE RATIO	3.16:1 with All-Wheel Drive
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	38.8 ft.
TIRE SIZE, LOAD & SPEED RATING	P245/55/R18, 103V M+S Goodyear Eagle RS-A
GROUND CLEARANCE, MINIMUM	6.4 inches
BRAKE SYSTEM	Power, Dual Front Pistons/Single Rear Piston, ABS
FUEL CAPACITY	18.6 Gallons/70.4 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.6 inches
LENGTH	197.1 inches
CURB WEIGHT	4,775 lbs.
HEIGHT	69.2 inches without roof rack
INTERIOR VOLUME	
FRONT	59.7 cu. ft.
REAR	58.7 cu. ft.
COMB	118.4 cu. ft.
MAX CARGO AREA	85.1 cu. ft. (max cargo behind front seats)
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,580 lbs.
EPA MILEAGE EST. (MPG)	
CITY	15
HIGHWAY	20
COMBINED	17

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES & CHANGES:
- Standard - Simple Fleet Key (includes 4 Keys)
- Optional – Remote Keyless Entry Key-Fob (includes 4-key fobs)

SAFETY:
- Industry Exclusive 75mph Rear Crash
- Ultra High Strength Boron Steel Safety Cell Construction
- Optional Level III & IV NIJ Ballistic Panels - Certified for LAPD special threat rounds
- Standard Anti-Stab plates in front seat backs

DURABILITY:
- Two times durability testing, proven real world durability results

PERFORMANCE:
- Standard Full-Time Intelligent AWD
- Payload Capacity 1,580 lbs
- EcoBoost engine with 365 hp and 350 lb/ft torque

Ford F150 Police Responder 3.5L

MAKE & MODEL	Ford F150 Police Responder
SALES CODE	W1P
POWERTRAIN INFORMATION	
CUBIC INCHES	213
LITERS	3.5
HORSEPOWER SAENET	375 @ 5000 RPM
ALTERNATOR	240 AMP
TORQUE	470 @ 3500 RPM
BATTERY	800 CCA
TRANSMISSION	10-Speed SelectShift automatic
AXLE RATIO	3.55:1
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	47.1 ft.
TIRE SIZE, LOAD & SPEED RATING	P275/65R18, 110S
GROUND CLEARANCE, MINIMUM	9.3 inches
BRAKE SYSTEM	Power - Dual Piston Calipers Front, Single Piston Calipers Rear, 4 Circuit and ABS
FUEL CAPACITY	23.0 Gallons/87 Liters
GENERAL MEASUREMENTS	
WHEELBASE	145.0 inches
LENGTH	231.9 inches
CURB WEIGHT	5,060 lbs.
HEIGHT	77.2 inches without roof rack
INTERIOR VOLUME	
FRONT	79.9 cu. ft.
REAR	51.9 cu. ft.
COMB	131.8 cu. ft.
MAX CARGO AREA	52.8 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	2,030 lbs.
EPA MILEAGE EST. (MPG)	
CITY	TBD
HIGHWAY	TBD
COMBINED	TBD

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES:

The 2018 Ford F-150 Police Responder™ is the first-ever pursuit-rated pickup truck to market[1], designed with nearly seven decades of experience spent on the road with American law enforcement. But this vehicle isn't limited by the "road" part. Proven FX4 off-road capability includes a purpose-tuned suspension, electronic-locking rear axle and underbody skid plates. Unique upgrades include calipers, brake pad-friction material and front stabilizer bar for improved braking and handling. Best total interior passenger volume, front/rear shoulder room, front/rear hip room and rear leg room of any pursuit-rated vehicle.

SAFETY:

- Curve Control
- Rear View Camera with Dynamic Hitch Assist
- Perimeter Alarm
- Keyless Entry
- Standard Anti-Stab plates in front seat backs

DURABILITY:

- Off-Road tuned shock absorbers
- Underbody skid plates
- Upgraded stabilizer bar, front
- Best payload capacity (2,030 lbs) and best towing capacity (7,000 lbs) of any pursuit-rated vehicle[2]

PERFORMANCE:

- Powerful 3.5L EcoBoost® engine generates 375 horsepower and 470 lb.-ft. of torque, highest of any pursuit-rated vehicle
- 10-Speed Transmission
- Available transmission settings include selectable drive modes: Tow/Haul, Snow/Wet, EcoSelect and Sport
- 240 amp alternator
- Unique brake pad-friction material

1. Pursuit rating to be tested in official evaluations conducted by the Michigan State Police and Los Angeles County Sheriff's Department scheduled for Fall 2017.
2. Based on 2017 model-year ratings

Ford Police Responder Hybrid Sedan

MAKE & MODEL	Ford Police Responder Hybrid Sedan
SALES CODE	P0A
POWERTRAIN INFORMATION	
CUBIC INCHES	122
LITERS	2.0
HORSEPOWER SAENET	188 hp (combined)
ALTERNATOR	165 AMP
TORQUE	129 @ 4000 RPM
BATTERY	590 CCA
TRANSMISSION	eCVT (automatic)
AXLE RATIO	2.57:1
STEERING	Electric Power Assist Rack-and-Pinion
TURNING CIRCLE (CURB TO CURB)	37.6 ft.
TIRE SIZE, LOAD & SPEED RATING	P235/50R17, 96W
GROUND CLEARANCE, MINIMUM	6.3 inches
BRAKE SYSTEM	ABS & regenerative braking – dual piston front calipers with vented front rotors
FUEL CAPACITY	14.0 Gallons/53.0 Liters
GENERAL MEASUREMENTS	
WHEELBASE	112.2 inches
LENGTH	191.8 inches
CURB WEIGHT	3,820 lbs.
HEIGHT	58.5 inches
INTERIOR VOLUME	
FRONT	55.2 cu. ft.
REAR	47.6 cu. ft.
COMB	102.8 cu. ft.
MAX CARGO AREA	12.0 cu. ft.
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	N/A
EPA MILEAGE EST. (MPG)	
CITY	40
HIGHWAY	36
COMBINED	38

MANUFACTURER VEHICLE HIGHLIGHTS

NEW FEATURES:

A Greener Shade of Blue™

Destined to Be the First-Ever Pursuit-Rated Hybrid[1] police vehicle to market. Ideal for local patrol use, the Ford Police Responder™ Hybrid Sedan provides a capable option that delivers multiple potential benefits. These include potential fuel savings and reduced CO_2 emissions[3] , as well as potential fewer fill-ups – resulting in less vehicle downtime to keep your vehicles and officers on the road. Our scenario shows potential savings of nearly $3,900 per year, per vehicle. See www.fordpoliceresponder.com for details and to run your own scenarios.

SAFETY:

- Standard Police Engine Idle feature
- Standard Rear View Camera
- Standard Anti-Stab plates in front seat backs
- Standard Individual Tire Pressure Monitoring System
- Optional Level IIIa NIJ Ballistic Panels

DURABILITY:

- Two times durability testing

PERFORMANCE:

- Pursuit calibrated powertrain
- Police-tuned Regenerative Braking System
- Heavy duty suspension components, upgraded braking and cooling

1. Pursuit rating to be tested in official evaluations conducted by the Michigan State Police and Los Angeles County Sheriff's Department scheduled for Fall 2017.
2. Burning a gallon of E10 ethanol fuel produces about 17.68 pounds of CO_2 emitted from the fossil fuel content, according to data provided by the U.S. Energy Information Administration (http://ford.to/eiareport).

VEHICLE DYNAMICS TESTING

TESTING OBJECTIVE

To determine each vehicle's high-speed pursuit or emergency response handling characteristics and performance in comparison to the other vehicles in the test group. The course used is a 2-mile road-racing type configuration, containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the success or failure of the vehicle manufacturers to offer vehicles that provide the optimum balance between handling (suspension components), acceleration (usable horsepower), and braking characteristics.

TESTING METHODOLOGY

Each vehicle is driven a total of 32 timed laps, using four separate drivers, each driving an eight lap series. The final score for the vehicle is the combined average (from the four drivers) of the five fastest laps for each driver during the eight lap series.

Grattan Raceway, 7201 Lessiter Road, Belding, MI 48809

616-691-7221

GRATTAN RACEWAY
2018 MODEL YEAR VEHICLE DYNAMICS SCHEDULE
SEPTEMBER 18, 2017

	SCHWALM	AGEMA	SCHUTTER	MERCER
9:30 a.m.	Dodge Charger 3.6L 2.62 RWD	Ford PI Sedan 3.7L AWD	Ford PI Utility 3.5L Ecoboost AWD	Ford PI Sedan 3.5L FWD
9:50 a.m.	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Ford PI Utility 3.7L AWD	PASS
10:10 a.m.		Ford Special Service Police	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder
10:30 a.m.		Dodge Charger 5.7L 3.08 AWD	Dodge Charger 5.7L 2.62 RWD	Ford PI Sedan 3.5L Ecoboost AWD
10:50 a.m.	Ford PI Sedan 3.5L FWD	Dodge Charger 3.6L 2.62 RWD	Ford PI Sedan 3.7L AWD	Ford PI Utility 3.5L Ecoboost AWD
11:10 a.m.	Ford PI Utility 3.7L AWD		Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.7L 4WD
11:30 a.m.	Ford F-150 Police Responder		Ford Special Service Police	Ford Police Responder Hybrid Sedan
11:50 a.m.	Dodge Charger 5.7L 2.62 RWD	Ford PI Sedan 3.5L Ecoboost AWD		Dodge Charger 5.7L 3.08 AWD
12:50 p.m.	Ford PI Utility 3.5L Ecoboost AWD	Ford PI Sedan 3.5L FWD	Dodge Charger 3.6L 2.62 RWD	Ford PI Sedan 3.7L AWD
1:10 p.m.		Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Ford PI Utility 3.7L AWD
1:30 p.m.	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder		Ford Special Service Police
1:50 p.m.	Ford PI Sedan 3.5L Ecoboost AWD		Dodge Charger 5.7L 3.08 AWD	Dodge Charger 5.7L 2.62 RWD
2:10 p.m.	Ford PI Sedan 3.7L AWD	Ford PI Utility 3.5L Ecoboost AWD	Ford PI Sedan 3.5L FWD	Dodge Charger 3.6L 2.62 RWD
2:30 p.m.	Chevrolet Tahoe 5.3L 4WD	Ford PI Utility 3.7L AWD		Chevrolet Tahoe 5.3L RWD
2:50 p.m.	Ford Special Service Police	Ford Police Responder Hybrid Sedan	Ford F-150 Police Responder	
3:10 p.m.	Dodge Charger 5.7L 3.08 AWD	Dodge Charger 5.7L 2.62 RWD	Ford PI Sedan 3.5L Ecoboost AWD	

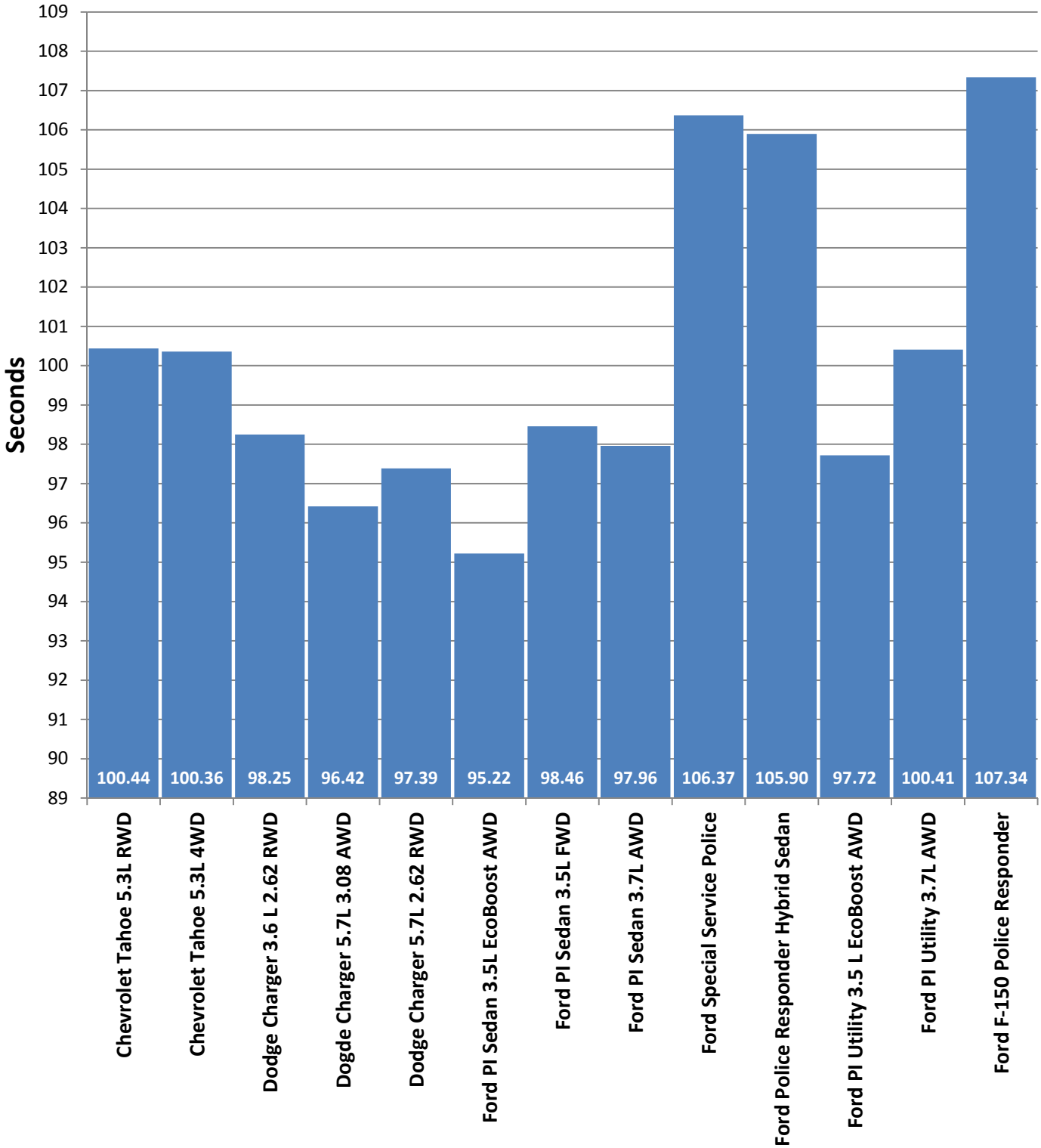
VEHICLE DYNAMICS TESTING ON SEPTEMBER 18, 2017

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Chevrolet Tahoe 5.3L RWD	SCHWALM	01:41.01	01:40.54	01:40.51	01:40.36	01:40.67	01:40.62
	SCHUTTER	01:40.15	01:40.05	01:40.20	01:40.37	01:40.80	01:40.31
	AGEMA	01:40.33	01:41.31	01:41.26	01:40.98	01:41.01	01:40.98
	MERCER	01:39.75	01:40.08	01:39.53	01:40.02	01:39.82	01:39.84
OVERALL AVERAGE							**1:40.44**
Chevrolet Tahoe 5.3L 4WD	AGEMA	01:40.74	01:40.98	01:40.65	01:40.72	01:40.66	01:40.75
	MERCER	01:39.63	01:39.69	01:39.77	01:39.40	01:39.64	01:39.63
	SCHUTTER	01:39.94	01:40.21	01:39.98	01:40.20	01:40.32	01:40.13
	SCHWALM	01:41.30	01:40.96	01:40.85	01:40.74	01:40.74	01:40.92
OVERALL AVERAGE							**1:40.36**
Dodge Charger 3.6L 2.62 RWD	SCHWALM	01:39.14	01:38.64	01:38.38	01:38.37	01:38.22	01:38.55
	AGEMA	01:38.45	01:38.23	01:38.54	01:38.38	01:38.60	01:38.44
	SCHUTTER	01:37.93	01:37.55	01:37.91	01:37.71	01:37.91	01:37.80
	MERCER	01:37.59	01:37.97	01:38.63	01:38.44	01:38.39	01:38.20
OVERALL AVERAGE							**1:38.25**
Dodge Charger 5.7L 3.08 AWD	AGEMA	01:35.88	01:36.20	01:35.59	01:36.14	01:36.34	01:36.03
	MERCER	01:36.06	01:35.89	01:35.52	01:35.65	01:35.89	01:35.80
	SCHUTTER	01:36.67	01:37.21	01:36.82	01:36.76	01:37.00	01:36.89
	SCHWALM	01:36.86	01:37.14	01:37.04	01:37.13	01:36.68	01:36.97
OVERALL AVERAGE							**1:36.42**
Dodge Charger 5.7L 2.62 RWD	SCHUTTER	01:36.72	01:36.78	01:36.79	01:36.17	01:36.52	01:36.60
	SCHWALM	01:37.92	01:38.17	01:37.84	01:37.92	01:37.61	01:37.89
	MERCER	01:36.94	01:37.10	01:36.94	01:37.05	01:37.20	01:37.05
	AGEMA	01:37.28	01:38.13	01:38.30	01:38.19	01:38.30	01:38.04
OVERALL AVERAGE							**1:37.39**
Ford PI Sedan 3.5L EcoBoost AWD	MERCER	01:34.74	01:34.64	01:35.30	01:34.87	01:35.30	01:34.97
	AGEMA	01:35.32	01:35.30	01:35.23	01:35.07	01:35.19	01:35.22
	SCHWALM	01:35.77	01:35.63	01:35.61	01:35.62	01:35.75	01:35.68
	SCHUTTER	01:34.67	01:34.62	01:35.16	01:35.26	01:35.30	01:35.00
OVERALL AVERAGE							**1:35.22**
Ford PI Sedan 3.5L FWD	MERCER	01:37.92	01:37.93	01:37.93	01:37.86	01:37.96	01:37.92
	SCHWALM	01:39.15	01:38.74	01:39.03	01:38.87	01:38.74	01:38.91
	AGEMA	01:38.62	01:38.68	01:38.30	01:38.34	01:38.81	01:38.55
	SCHUTTER	01:38.43	01:38.34	01:38.52	01:38.39	01:38.55	01:38.45
OVERALL AVERAGE							**1:38.46**

VEHICLE DYNAMICS TESTING ON SEPTEMBER 18,2017

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Ford PI Sedan 3.7L AWD	AGEMA	01:38.70	01:38.96	01:38.60	01:38.33	01:37.80	01:38.48
	SCHUTTER	01:37.36	01:37.42	01:37.66	01:37.55	01:37.66	01:37.53
	MERCER	01:37.12	01:37.52	01:37.74	01:37.29	01:37.54	01:37.44
	SCHWALM	01:38.63	01:38.51	01:38.12	01:38.62	01:38.09	01:38.39
OVERALL AVERAGE							**1:37.96**
Ford Special Service Police	AGEMA	01:42.69	01:43.29	01:43.86	01:44.26	01:43.58	01:43.54
	SCHUTTER	01:41.25	01:41.98	01:42.71	01:43.00	01:42.77	01:42.34
	MERCER	01:47.07	01:48.05	01:49.50	01:49.40	01:50.24	01:48.85
	SCHWALM	01:50.18	01:50.57	01:51.25	01:50.93	01:50.87	01:50.76
OVERALL AVERAGE							**1:46.37**
Ford Police Responder Hybrid Sedan	SCHUTTER	01:46.21	01:45.24	01:45.17	01:46.06	01:45.73	01:45.68
	MERCER	01:44.86	01:45.17	01:45.16	01:45.12	01:44.90	01:45.04
	SCHWALM	01:46.00	01:46.53	01:46.58	01:46.72	01:46.46	01:46.46
	AGEMA	01:46.07	01:46.32	01:46.88	01:46.38	01:46.39	01:46.41
OVERALL AVERAGE							**1:45.90**
Ford PI Utility 3.5L EcoBoost AWD	SCHUTTER	01:37.66	01:37.47	01:37.37	01:37.00	01:36.81	01:37.26
	MERCER	01:37.41	01:36.99	01:37.21	01:37.31	01:37.38	01:37.26
	SCHWALM	01:38.39	01:38.28	01:38.10	01:38.12	01:38.18	01:38.21
	AGEMA	01:38.11	01:38.17	01:38.25	01:38.08	01:38.17	01:38.16
OVERALL AVERAGE							**1:37.72**
Ford PI Utility 3.7L AWD	SCHUTTER	01:40.84	01:41.01	01:40.35	01:39.98	01:39.87	01:40.41
	SCHWALM	01:40.93	01:40.84	01:40.68	01:40.61	01:40.73	01:40.76
	MERCER	01:39.97	01:39.79	01:39.37	01:39.50	01:39.73	01:39.67
	AGEMA	01:41.01	01:40.76	01:40.73	01:40.87	01:40.60	01:40.79
OVERALL AVERAGE							**1:40.41**
Ford F-150 Police Responder	MERCER	01:46.80	01:46.27	01:47.23	01:46.17	01:47.17	01:46.73
	SCHWALM	01:48.31	01:47.50	01:47.38	01:46.45	01:46.69	01:47.27
	AGEMA	01:48.00	01:47.33	01:48.31	01:48.04	01:47.40	01:47.82
	SCHUTTER	01:48.19	01:47.75	01:48.34	01:47.09	01:46.47	01:47.57
OVERALL AVERAGE							**1:47.34**

2018 Model Year
Vehicle Dynamics




Grattan
RACEWAY


POLICE

ACCELERATION AND TOP SPEED TESTING

ACCELERATION TESTING OBJECTIVE

To determine the ability of each test vehicle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph, and determine the distance to reach 100 mph and 120 mph.

ACCELERATION TESTING METHODOLOGY

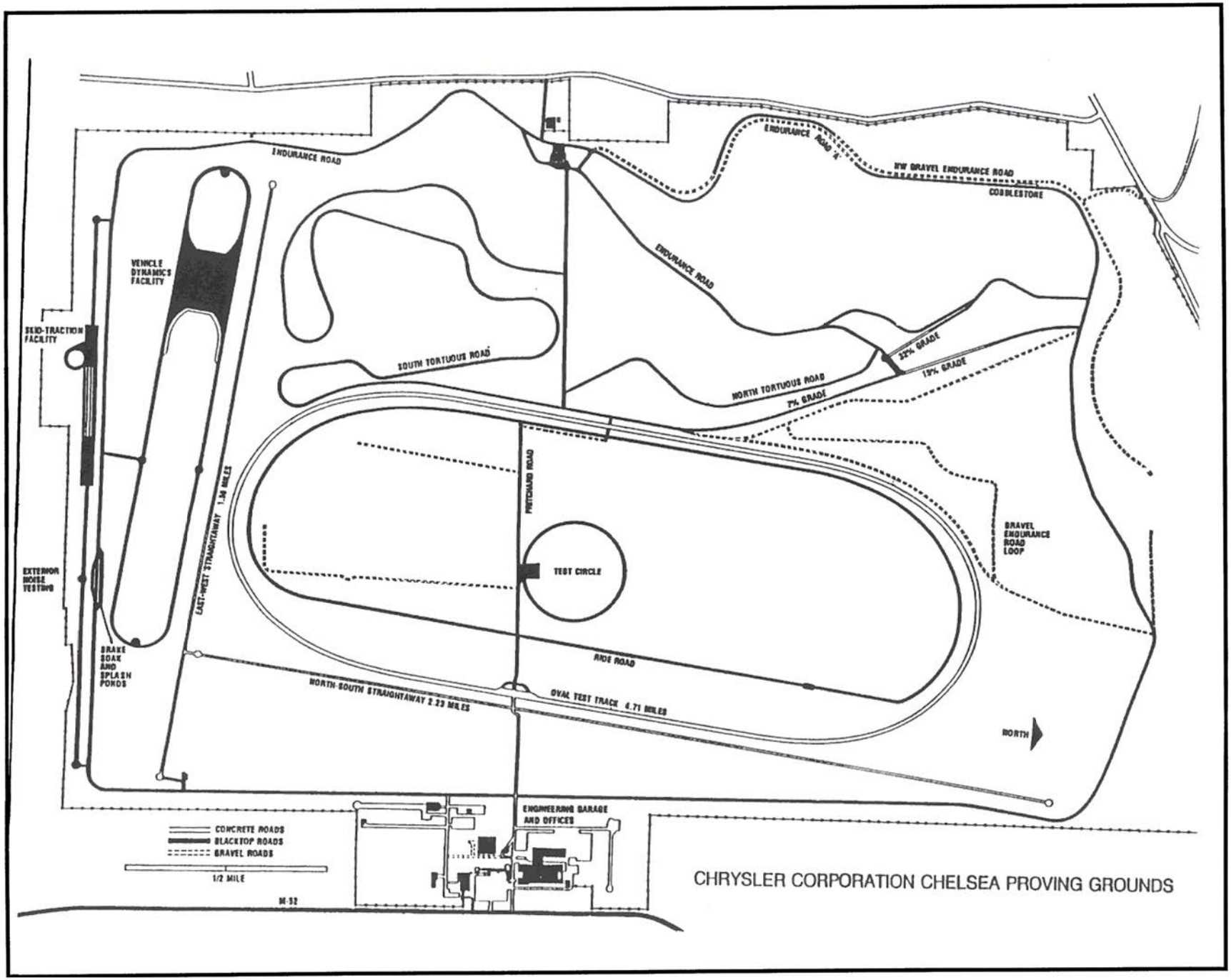
Using a Race Logic Vbox 3i GPS based data collection unit, each vehicle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times are used to derive scores for acceleration.

TOP SPEED TESTING OBJECTIVE

To verify the electronically limited top speed reported by the manufacturer attainable by each test vehicle within a distance of 14 miles from a standing start.

TOP SPEED TESTING METHODOLOGY

Following the fourth acceleration run, each test vehicle continues to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14 mile distance is considered the vehicle's top speed.


ENDURANCE ROAD
ENDURANCE ROAD
NW GRAVEL ENDURANCE ROAD
COBBLESTONE
ENDURANCE ROAD
VEHICLE DYNAMICS FACILITY
SKID-TRACTION FACILITY
SOUTH TORTUOUS ROAD
NORTH TORTUOUS ROAD
22% GRADE
19% GRADE
7% GRADE
PRITCHARD ROAD
EAST-WEST STRAIGHTAWAY 1.36 MILES
TEST CIRCLE
GRAVEL ENDURANCE ROAD LOOP
EXTERIOR NOISE TESTING
BRAKE SOAK AND SPLASH PONDS
RIDE ROAD
NORTH-SOUTH STRAIGHTAWAY 2.23 MILES
OVAL TEST TRACK 4.71 MILES
NORTH
ENGINEERING GARAGE AND OFFICES
CONCRETE ROADS
BLACKTOP ROADS
GRAVEL ROADS
1/2 MILE
M-52
CHRYSLER CORPORATION CHELSEA PROVING GROUNDS

TEST LOCATION: FCA Proving Grounds **DATE:** September 16. 2017

Chevrolet Tahoe 5.3L RWD

BEGINNING TIME: 11:48 a.m. **TEMPERATURE:** 75.0° F
WIND VELOCITY: 4.7 mph **WIND DIRECTION:** 114°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	7.55	7.95	7.68	7.72	**7.73 seconds**
0 – 80	12.72	13.03	12.44	12.78	**12.74 seconds**
0 – 100	19.38	19.74	18.49	19.44	**19.26 seconds**

DISTANCE TO REACH 100 MPH: 0.33 mile
DISTANCE TO REACH 120 MPH: 0.75 mile

TOP SPEED ATTAINED: 134 mph

DISTANCE TO REACH TOP SPEED: 8,549.37 ft.
TIME TO REACH TOP SPEED: 57.10 seconds

Chevrolet Tahoe 5.3L 4WD

BEGINNING TIME: 4:21 p.m. **TEMPERATURE:** 79.6° F
WIND VELOCITY: 1.0 mph **WIND DIRECTION:** 132°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	8.04	7.95	7.85	7.44	**7.82 seconds**
0 – 80	13.30	13.19	12.97	12.60	**13.02 seconds**
0 – 100	20.03	20.01	19.55	19.49	**19.77 seconds**

DISTANCE TO REACH 100 MPH: 0.35 mile
DISTANCE TO REACH 120 MPH: 0.79 mile

TOP SPEED ATTAINED: 121 mph

DISTANCE TO REACH TOP SPEED: 4,356.95 ft.
TIME TO REACH TOP SPEED: 34.85 seconds

Dodge Charger 3.6L 2.62 RWD

BEGINNING TIME: 4:38 p.m. **TEMPERATURE:** 80.8° F
WIND VELOCITY: 2.1 mph **WIND DIRECTION:** 39°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	8.09	8.02	7.93	7.91	**7.99 seconds**
0 – 80	12.89	12.83	12.61	12.71	**12.76 seconds**
0 – 100	20.21	20.59	19.68	20.28	**20.19 seconds**

DISTANCE TO REACH 100 MPH: 0.36 mile
DISTANCE TO REACH 120 MPH: 0.75 mile

TOP SPEED ATTAINED: 141 mph

DISTANCE TO REACH TOP SPEED: 9,437.16 ft.
TIME TO REACH TOP SPEED: 61.13 seconds

TEST LOCATION: FCA Proving Grounds **DATE:** September 16, 2017

Dodge Charger 5.7L 3.08 AWD

BEGINNING TIME: 9:05 a.m. **TEMPERATURE:** 58.4° F
WIND VELOCITY: 2.3 mph **WIND DIRECTION:** 87°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	6.01	5.84	5.84	5.75	**5.86 seconds**
0 – 80	9.76	9.53	9.48	9.41	**9.55 seconds**
0 – 100	14.55	14.40	14.29	14.23	**14.37 seconds**

DISTANCE TO REACH 100 MPH: 0.25 mile
DISTANCE TO REACH 120 MPH: 0.48 mile

TOP SPEED ATTAINED: 150 mph

DISTANCE TO REACH TOP SPEED: 8,173.56 ft.
TIME TO REACH TOP SPEED: 49.19 seconds

Dodge Charger 5.7L 2.62 RWD

BEGINNING TIME: 10:53 p.m. **TEMPERATURE:** 72.2° F
WIND VELOCITY: 1.2 mph **WIND DIRECTION:** 87°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	6.72	6.20	6.13	6.17	**6.31 seconds**
0 – 80	10.15	9.47	9.35	9.41	**9.60 seconds**
0 – 100	15.97	15.24	14.90	14.93	**15.26 seconds**

DISTANCE TO REACH 100 MPH: 0.26 mile
DISTANCE TO REACH 120 MPH: 0.46 mile

TOP SPEED ATTAINED: 150 mph

DISTANCE TO REACH TOP SPEED: 8,313.56 ft.
TIME TO REACH TOP SPEED: 50.42 seconds

Ford Police Interceptor Sedan 3.5L EcoBoost AWD

BEGINNING TIME: 9:45 a.m. **TEMPERATURE:** 63.6° F
WIND VELOCITY: 3.4 mph **WIND DIRECTION:** 87°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	5.94	5.61	5.59	5.56	**5.68 seconds**
0 – 80	9.22	8.85	8.82	8.76	**8.91 seconds**
0 – 100	13.81	13.48	13.34	13.37	**13.50 seconds**

DISTANCE TO REACH 100 MPH: 0.23 mile
DISTANCE TO REACH 120 MPH: 0.47 mile

TOP SPEED ATTAINED: 149 mph

DISTANCE TO REACH TOP SPEED: 7,212.93 ft.
TIME TO REACH TOP SPEED: 44.49 seconds

TEST LOCATION: FCA Proving Grounds **DATE:** September 16, 2017

Ford Police Interceptor Sedan 3.5L FWD

BEGINNING TIME: 3:25 p.m. **TEMPERATURE:** 78.6° F
WIND VELOCITY: 2.3 mph **WIND DIRECTION:** 239°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	7.57	7.52	7.40	7.46	**7.49 seconds**
0 – 80	12.22	12.26	11.97	12.12	**12.14 seconds**
0 – 100	18.63	18.92	18.31	18.81	**18.67 seconds**

DISTANCE TO REACH 100 MPH: 0.33 mile
DISTANCE TO REACH 120 MPH: 0.71 mile

TOP SPEED ATTAINED: 132 mph

DISTANCE TO REACH TOP SPEED: 7,650.37 ft.
TIME TO REACH TOP SPEED: 51.98 seconds

Ford Police Interceptor 3.7L AWD

BEGINNING TIME: 3:38 p.m. **TEMPERATURE:** 80.4° F
WIND VELOCITY: 1.3 mph **WIND DIRECTION:** 273°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	7.60	7.41	7.36	7.40	**7.44 seconds**
0 – 80	12.10	11.76	11.60	11.80	**11.82 seconds**
0 – 100	18.65	18.15	17.77	18.33	**18.23 seconds**

DISTANCE TO REACH 100 MPH: 0.32 mile
DISTANCE TO REACH 120 MPH: 0.75 mile

TOP SPEED ATTAINED: 133 mph

DISTANCE TO REACH TOP SPEED: 9,558.39 ft.
TIME TO REACH TOP SPEED: 61.62 seconds

Ford Special Service Police

BEGINNING TIME: 11:17 a.m. **TEMPERATURE:** 74.3° F
WIND VELOCITY: 0.1 mph **WIND DIRECTION:** 246°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	8.60	8.25	8.18	8.19	**8.31 seconds**
0 – 80	13.49	13.13	12.95	13.17	**13.19 seconds**
0 – 100	20.72	20.69	20.19	20.73	**20.58 seconds**

DISTANCE TO REACH 100 MPH: 0.54 mile
DISTANCE TO REACH 120 MPH: 0.97 mile

TOP SPEED ATTAINED: 120 mph

DISTANCE TO REACH TOP SPEED: 4,963.24 ft.
TIME TO REACH TOP SPEED: 39.01 seconds

Ford Police Responder Hybrid Sedan

BEGINNING TIME: 4:53 p.m. **TEMPERATURE:** 80° F
WIND VELOCITY: 1.7 mph **WIND DIRECTION:** 89°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	8.98	9.01	9.01	9.21	**9.05 seconds**
0 – 80	14.79	14.58	14.61	15.07	**14.76 seconds**
0 – 100	26.53	23.46	23.13	24.30	**24.36 seconds**

DISTANCE TO REACH 100 MPH: 0.44 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 119 mph

DISTANCE TO REACH TOP SPEED: 6,344.08 ft.
TIME TO REACH TOP SPEED: 48.73 seconds

Ford Police Interceptor Utility 3.5L EcoBoost AWD

BEGINNING TIME: 10:05 a.m. **TEMPERATURE:** 66.7° F
WIND VELOCITY: 1.1 mph **WIND DIRECTION:** 78°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	6.33	6.27	6.30	6.29	**6.30 seconds**
0 – 80	10.15	10.07	10.05	10.02	**10.07 seconds**
0 – 100	15.72	15.62	15.47	15.55	**15.59 seconds**

DISTANCE TO REACH 100 MPH: 0.27 mile
DISTANCE TO REACH 120 MPH: 0.61 mile

TOP SPEED ATTAINED: 132 mph

DISTANCE TO REACH TOP SPEED: 5,883.51 ft.
TIME TO REACH TOP SPEED: 40.66 seconds

Ford Police Interceptor Utility 3.5L AWD

BEGINNING TIME: 3:53 p.m. **TEMPERATURE:** 80° F
WIND VELOCITY: 2.1 mph **WIND DIRECTION:** 103°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	7.88	7.82	7.78	7.76	**7.81 seconds**
0 – 80	12.57	12.65	12.31	12.47	**12.50 seconds**
0 – 100	19.80	20.46	19.35	19.94	**19.89 seconds**

DISTANCE TO REACH 100 MPH: 0.35 mile
DISTANCE TO REACH 120 MPH: 0.1.01mile

TOP SPEED ATTAINED: 133 mph

DISTANCE TO REACH TOP SPEED: 12,411.05 ft.
TIME TO REACH TOP SPEED: 78.65 seconds

Ford F150 Police Responder

BEGINNING TIME: 2:43 p.m. **TEMPERATURE:** 78.9° F
WIND VELOCITY: 1.9 mph **WIND DIRECTION:** 97°

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	6.31	6.33	6.24	6.29	**6.29 seconds**
0 – 80	10.07	10.13	9.99	10.06	**10.06 seconds**
0 – 100	16.09	17.04	16.63	16.98	**16.69 seconds**

DISTANCE TO REACH 100 MPH: 0.31 mile
DISTANCE TO REACH 120 MPH: N/A mile

TOP SPEED ATTAINED: 100 mph

DISTANCE TO REACH TOP SPEED: 1,636.12 ft.
TIME TO REACH TOP SPEED: 16.09 seconds

SUMMARY OF ACCELERATION AND TOP SPEED

	Chevrolet Tahoe 5.3L RWD	Chevrolet Tahoe 5.3L 4WD	Dodge Charger 3.6L 2.62 RWD	Dodge Charger 5.7L 3.08 AWD	Dodge Charger 5.7L 2.62 RWD
ACCELERATION					
0 – 20 mph (seconds)	2.04	2.02	1.97	1.49	1.71
0 – 30 mph (seconds)	3.09	3.08	3.37	2.36	2.70
0 – 40 mph (seconds)	4.42	4.42	4.73	3.28	3.66
0 – 50 mph (seconds)	6.02	6.07	6.13	4.56	4.83
0 – 60 mph (seconds)	7.73	7.82	7.99	5.86	6.31
0 – 70 mph (seconds)	10.07	10.22	10.29	7.43	7.83
0 – 80 mph (seconds)	12.74	13.02	12.76	9.55	9.60
0 – 90 mph (seconds)	15.77	16.11	15.47	11.84	12.31
0 – 100 mph (seconds)	19.29	19.77	20.19	14.37	15.26
TOP SPEED (mph)	134	121	141	150	150
DISTANCE TO REACH					
100 mph (miles)	.33	.35	.36	.25	.26
120 mph (miles)	.75	.79	.75	.48	.46
Top Speed (ft.)	8,549.37	4,356.95	9,437.16	8,173.56	8,313.56
QUARTER MILE					
Time (seconds)	16.09	16.17	16.17	14.47	14.72
Speed (mph)	91.07	90.16	92.08	99.97	98.20

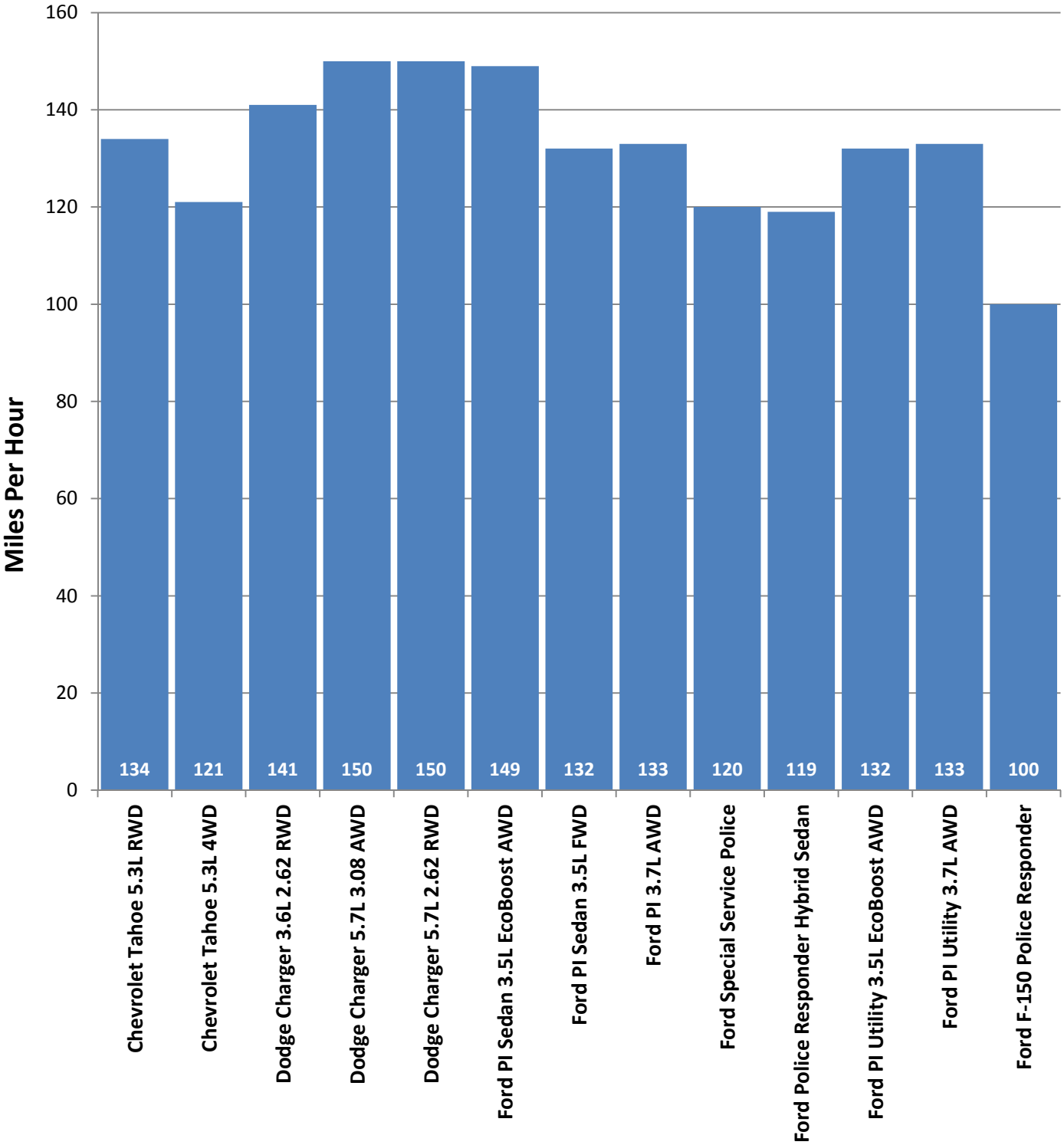
SUMMARY OF ACCELERATION AND TOP SPEED

	Ford PI Sedan 3.5L EcoBoost AWD	Ford PI Sedan 3.5L FWD	Ford PI Sedan 3.7L AWD	Ford Special Service Police	Ford Police Responder Hybrid Sedan
ACCELERATION					
0 – 20 mph (seconds)	1.50	1.96	1.77	2.11	2.37
0 – 30 mph (seconds)	2.25	2.95	2.72	3.11	3.55
0 – 40 mph (seconds)	3.14	4.21	4.03	4.59	5.02
0 – 50 mph (seconds)	4.18	5.67	5.40	6.19	6.86
0 – 60 mph (seconds)	5.68	7.49	7.44	8.31	9.05
0 – 70 mph (seconds)	7.24	9.79	9.53	10.53	11.62
0 – 80 mph (seconds)	8.91	12.14	11.82	13.19	14.76
0 – 90 mph (seconds)	11.13	14.86	14.70	16.63	18.79
0 – 100 mph (seconds)	13.50	18.67	18.23	20.58	24.36
TOP SPEED (mph)	149	132	133	120	119
DISTANCE TO REACH					
100 mph (miles)	.23	.33	.32	.54	.44
120 mph (miles)	.47	.71	.75	.97	N/A
Top Speed (ft.)	7,212.93	7,650.37	9,558.39	4,963.24	6,344.08
QUARTER MILE					
Time (seconds)	14.14	15.80	15.62	16.36	17.02
Speed (mph)	102.38	93.14	92.70	89.26	85.94

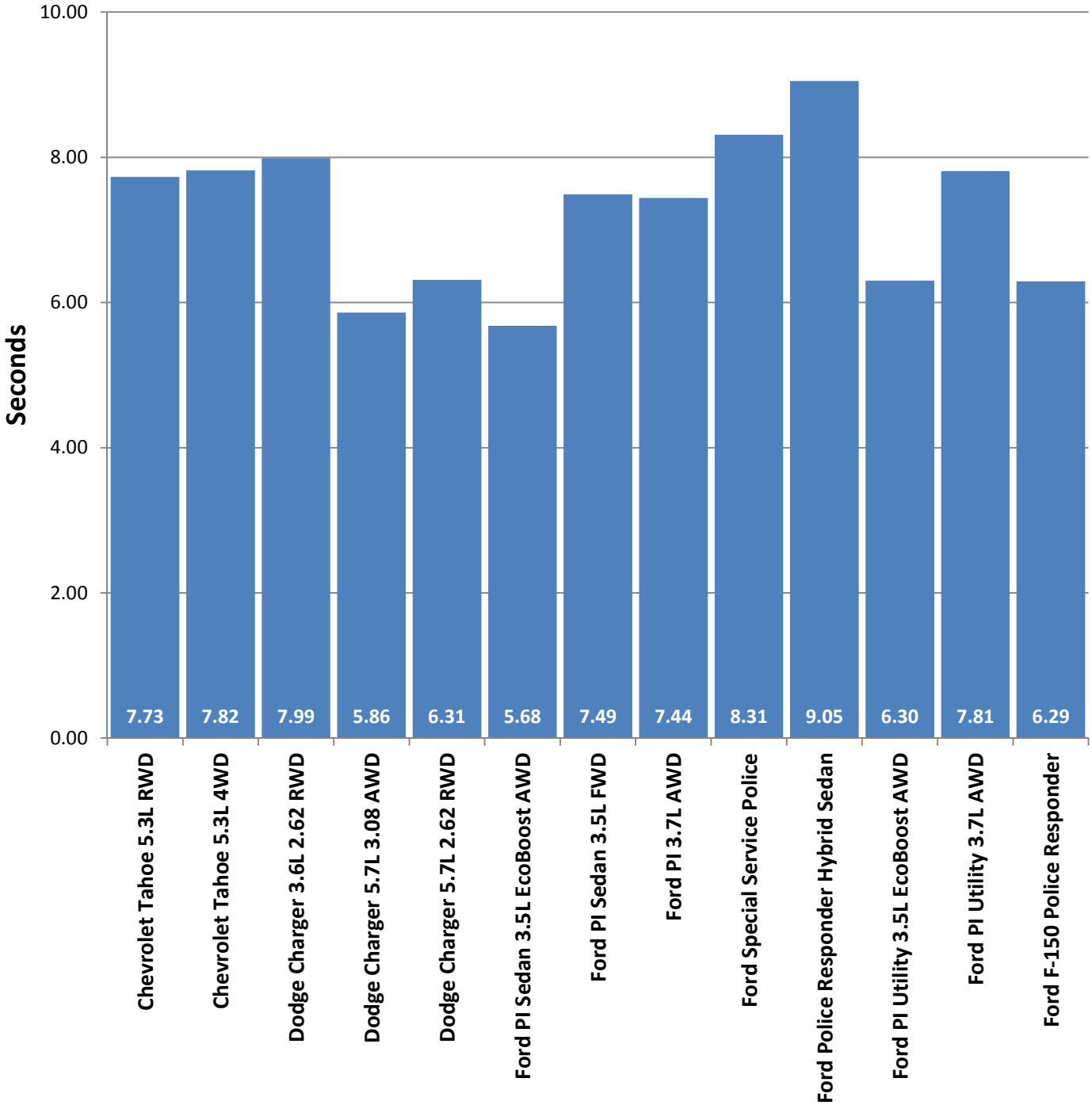
SUMMARY OF ACCELERATION AND TOP SPEED

	Ford PI Utility 3.5L EcoBoost AWD	Ford PI Utility 3.7L AWD	Ford F-150 Police Responder
ACCELERATION			
0 – 20 mph (seconds)	1.60	1.80	1.70
0 – 30 mph (seconds)	2.**43**	2.79	2.59
0 – 40 mph (seconds)	3.44	4.16	3.57
0 – 50 mph (seconds)	4.61	5.64	4.80
0 – 60 mph (seconds)	6.30	7.81	6.29
0 – 70 mph (seconds)	8.10	9.96	7.97
0 – 80 mph (seconds)	10.07	12.50	10.06
0 – 90 mph (seconds)	12.67	15.86	12.61
0 – 100 mph (seconds)	15.59	19.89	16.69
TOP SPEED (mph)	132	133	100
DISTANCE TO REACH			
100 mph (miles)	.27	.35	.31
120 mph (miles)	.61	1.01	N/A
Top Speed (ft.)	5,883.51	12,411.05	1,636.12
QUARTER MILE			
Time (seconds)	14.75	15.92	14.80
Speed (mph)	97.36	90.20	97.40

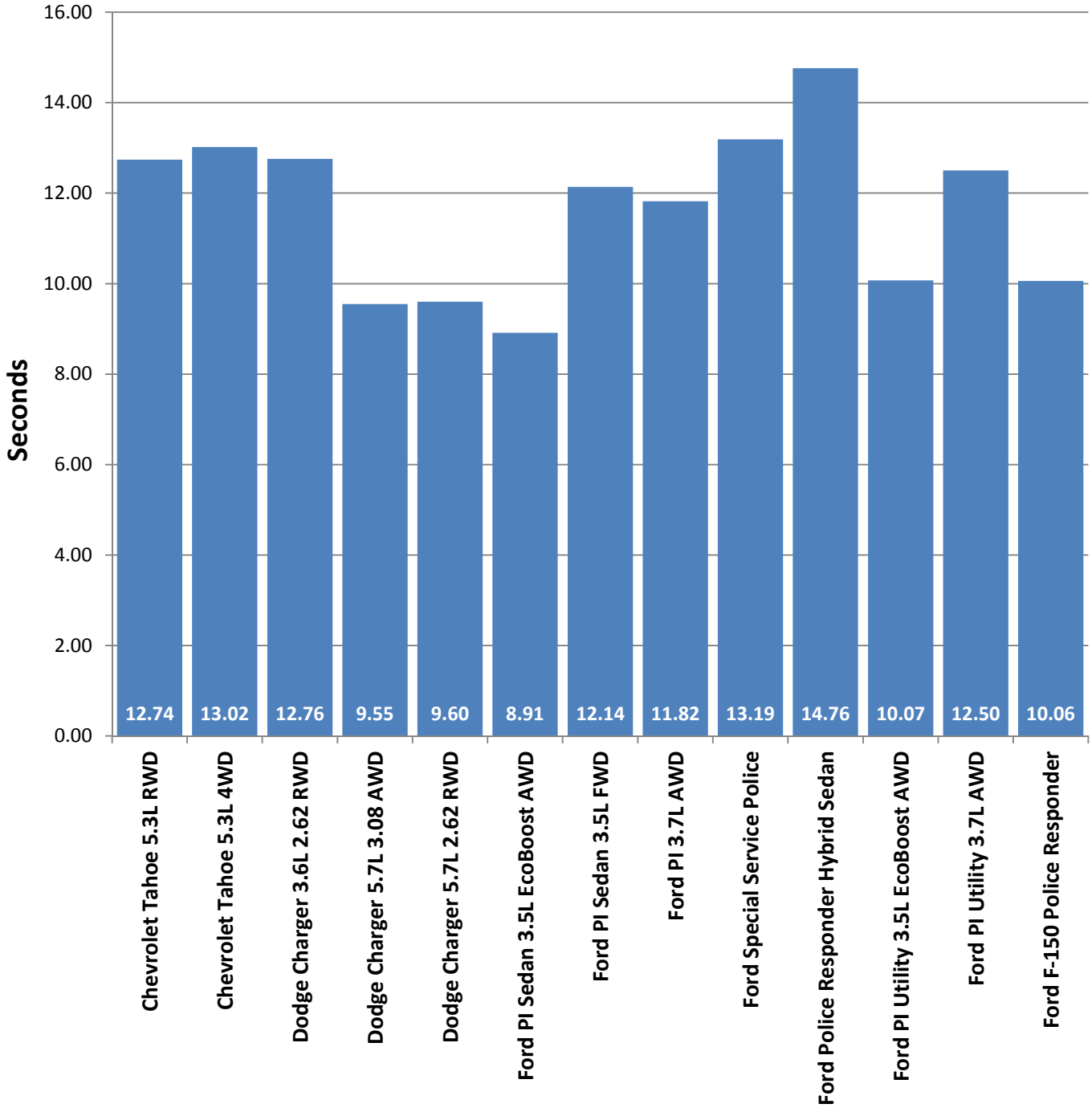
2018 Model Year
Top Speed Comparison
Top Speed Attained



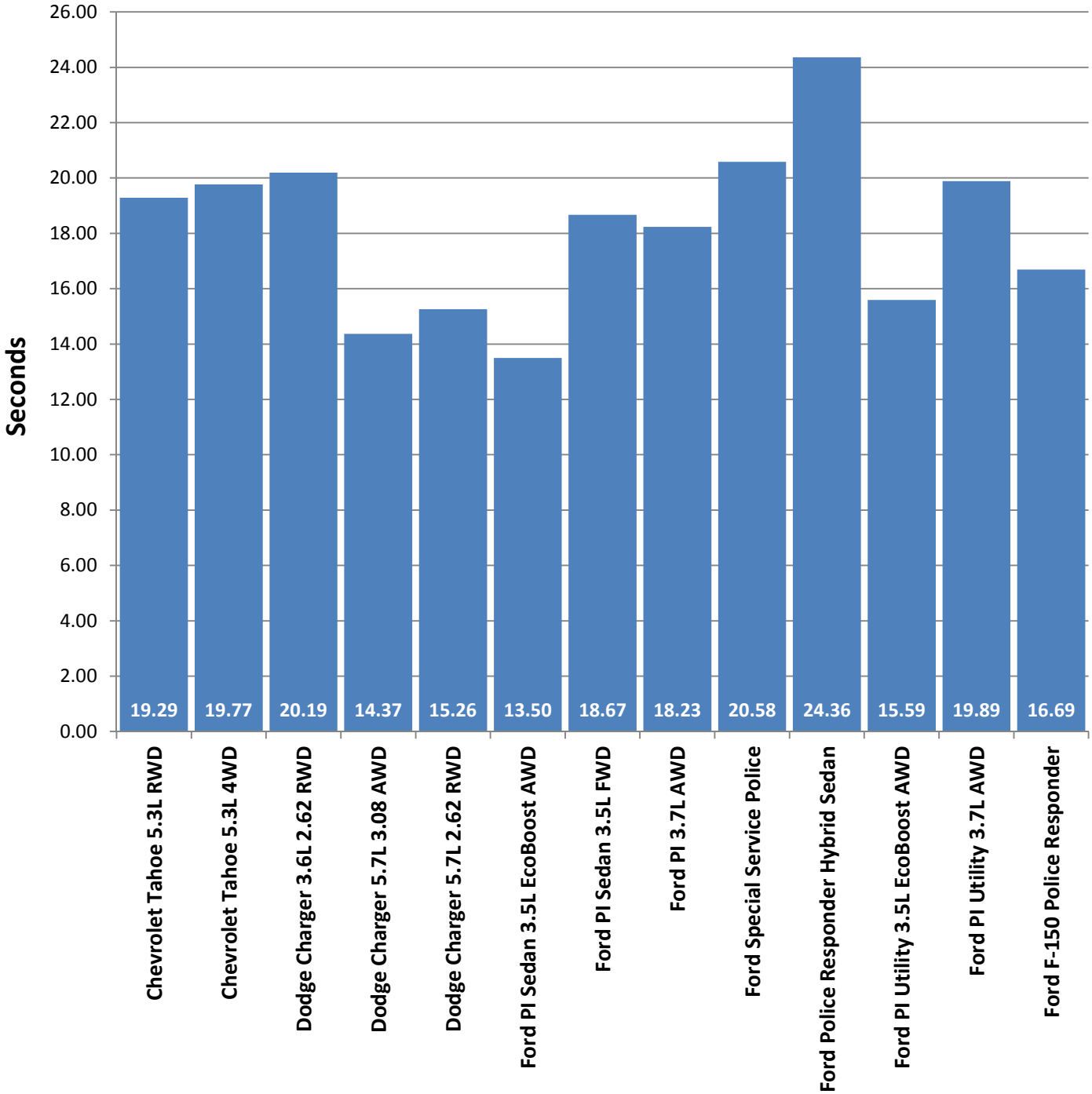
2018 Model Year
Acceleration Comparison
Acceleration Times
0-60 mph



2018 Model Year
Acceleration Comparison
Acceleration Times
0-80 mph



2018 Model Year
Acceleration Comparison
Acceleration Times
0-100 mph



BRAKE TESTING

BRAKE TESTING OBJECTIVE

To determine the deceleration rate attained by each test vehicle on twenty 60 – 0 mph full ABS stops. Each vehicle is scored on the average deceleration rate it achieves.

BRAKE TESTING METHODOLOGY

This year's brake testing was performed on a different surface than prior years. This year's surface had a measured coefficient of friction of .87 as compared to the historical surface's .93 coefficient of friction. This year's surface was also only long enough to perform one brake application from either end of the surface. The test began with "cold" brakes. The first run was performed in a westbound direction, the second run in an eastbound direction across the same surface. Once 10 stops were performed, the vehicle was driven 1.6 miles at 45 mph to allow the brakes to cool before the second sequence. After the cooling distance, the 10 stops are repeated. The exact initial velocity at the beginning of each of the 60 – 0 mph decelerations, and the exact distance required to make each stop, is recorded by means of a Race Logic Vbox 3i GPS based data collection unit. To ensure consistency, the same driver performs all the stops on every vehicle. The data resulting from the twenty stops is used to calculate the average deceleration rate which is the vehicle's score for the test.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity*(IV) squared}}{\text{2 times Stopping Distance (SD)}} = \frac{(IV)^2}{2\,(SD)}$$

EXAMPLE:

Initial Velocity = 89.175 ft/s (60.8 mph x 1.4667*)
Stopping Distance = 171.4 ft.

$$DR = \frac{(IV)^2}{2(SD)} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

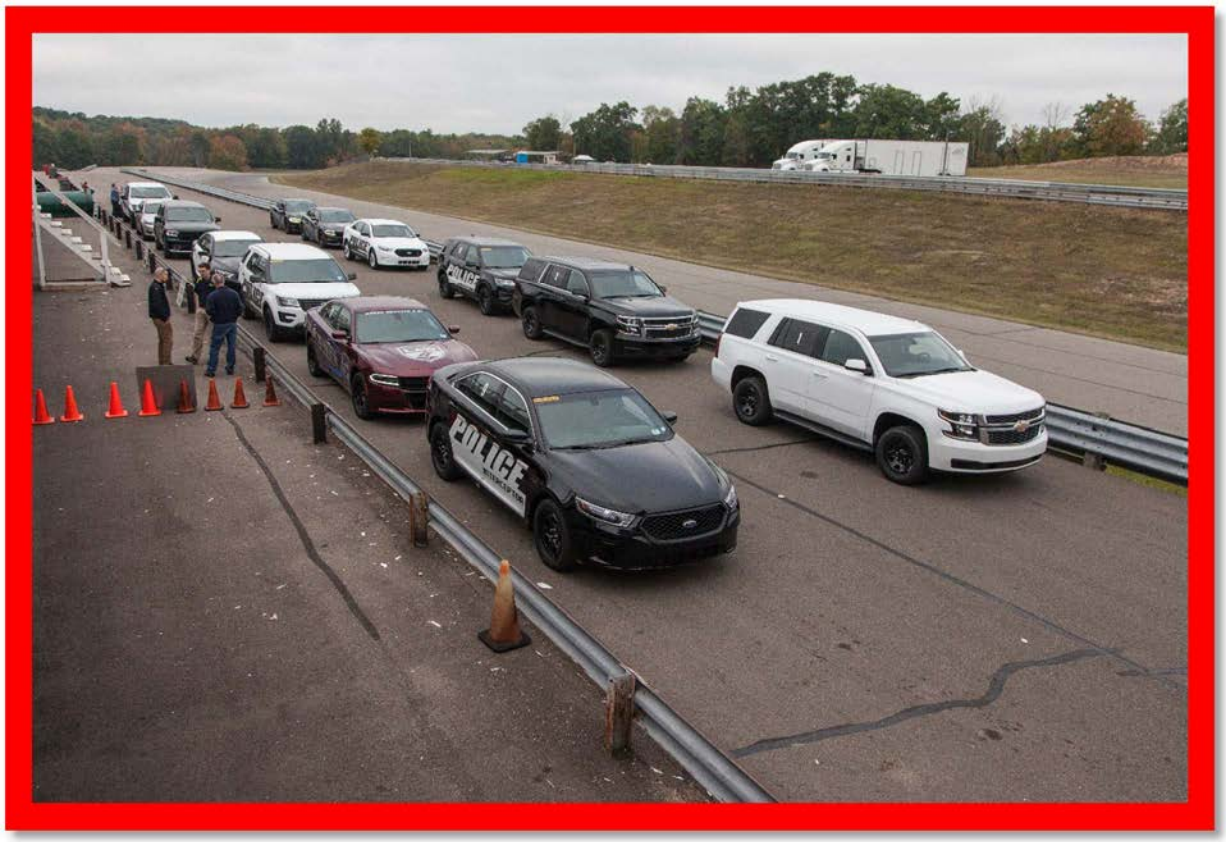
Once a vehicle's average deceleration rate has been determined, it is possible to calculate the stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the vehicle in question.

EXAMPLE:

60 mph = 88.002 ft/s x 88.002 = 7744.352 / 2 = 3872.176 / 23.198 ft/s^2 = 166.9 ft.

*Initial velocity must be expressed in terms of feet per second, with 1 mile per hour being equal to 1.4667 feet per second.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POLICE

BRAKE TESTING

Chevrolet Tahoe 5.3L RWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 2:18 p.m.	**TEMPERATURE:** 80° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.49	158.79	24.79
2	60.57	154.04	25.62
3	60.58	149.18	26.46
4	60.46	149.49	26.30
5	**Not recorded due to data collection error		
6	60.46	148.64	26.45
7	60.10	145.37	26.73
8	60.00	146.25	26.48
9	59.86	151.73	25.40
10	60.42	147.43	26.63
AVERAGE DECELERATION RATE:			**26.10 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.09	144.31	26.91
2	60.59	149.01	26.50
3	60.41	144.76	27.11
4	60.45	146.50	26.83
5	60.06	146.01	26.57
6	60.04	145.24	26.70
7	60.48	148.63	26.47
8	60.18	143.40	27.16
9	60.53	148.38	26.56
10	59.76	138.66	27.70
AVERAGE DECELERATION RATE:			**26.85 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**26.49 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**146.2 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Chevrolet Tahoe 5.3L 4WD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 17, 2016
BEGINNING TIME: 10:37 a.m.	**TEMPERATURE:** 67° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.32	149.76	26.13
2	60.72	151.23	26.19
3	60.49	157.96	24.92
4	60.03	150.14	25.81
5	60.62	150.80	26.21
6	60.39	151.35	25.92
7	60.46	151.01	26.03
8	60.42	150.52	26.09
9	60.38	151.64	25.86
10	60.42	148.53	26.44
AVERAGE DECELERATION RATE:			**25.96 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.31	148.34	26.37
2	60.15	145.72	26.70
3	60.20	150.58	25.88
4	60.49	147.89	26.61
5	60.19	147.66	26.39
6	60.28	150.64	25.94
7	59.85	142.53	27.03
8	60.17	147.65	26.37
9	60.42	149.11	26.33
10	60.38	147.91	26.51
AVERAGE DECELERATION RATE:			**26.41 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**26.19 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**147.9 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 3.6L 2.62 RWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 11:30 a.m.	**TEMPERATURE:** 72° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.93	132.61	29.13
2	60.52	142.35	27.67
3	60.06	134.63	28.82
4	60.21	136.15	28.64
5	60.27	135.16	28.91
6	60.16	137.53	28.30
7	**Not recorded due to data collection error		
8	60.16	131.25	29.66
9	60.09	132.19	29.38
10	60.01	131.85	29.38
AVERAGE DECELERATION RATE:			**28.88 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.26	131.67	29.66
2	59.81	134.30	28.65
3	**Not recorded due to data collection error		
4	60.82	137.22	28.99
5	59.50	130.26	29.23
6	60.10	131.14	29.63
7	60.16	132.00	29.49
8	60.11	132.83	29.26
9	60.11	129.04	30.12
10	60.16	131.14	29.68
AVERAGE DECELERATION RATE:			**29.41 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.14 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**132.9 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 5.7L 3.08 AWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 1:03 p.m.	**TEMPERATURE:** 79° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.80	139.16	27.64
2	60.05	138.70	27.96
3	60.42	137.15	28.63
4	60.20	135.98	28.66
5	60.06	137.28	28.26
6	60.21	136.42	28.58
7	60.29	137.87	28.36
8	60.09	136.89	28.37
9	59.77	130.80	29.37
10	59.58	132.42	28.83
AVERAGE DECELERATION RATE:			**28.47 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	**Not recorded due to data collection error		
2	**Not recorded due to data collection error		
3	59.98	133.70	28.94
4	59.95	140.10	27.59
5	60.04	137.65	28.17
6	59.75	132.74	28.93
7	59.96	135.20	28.60
8	59.90	133.98	28.80
9	59.73	132.20	29.02
10	60.09	136.71	28.41
AVERAGE DECELERATION RATE:			**28.56 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.51 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**135.8 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Dodge Charger 5.7L 2.62 RWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 12:24 p.m.	**TEMPERATURE:** 77° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.68	135.61	28.25
2	60.05	135.21	28.68
3	59.52	132.44	28.77
4	60.43	137.00	28.67
5	60.01	135.11	28.66
6	59.69	131.83	29.07
7	60.46	136.17	28.87
8	59.82	131.60	29.25
9	60.19	134.06	29.07
10	60.03	134.16	28.89
AVERAGE DECELERATION RATE:			**28.82 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.56	140.29	28.12
2	60.00	133.34	29.04
3	61.20	147.83	27.25
4	62.73	154.53	27.39
5	60.11	132.47	29.34
6	59.99	133.12	29.08
7	59.44	129.73	29.29
8	60.12	132.41	29.36
9	59.70	128.36	29.86
10	59.57	131.00	29.14
AVERAGE DECELERATION RATE:			**28.79 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.81 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**134.4 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Sedan 3.5L EcoBoost AWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 2:42 p.m.	**TEMPERATURE:** 80° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.27	149.03	26.22
2	60.19	148.94	26.16
3	59.91	143.53	26.90
4	60.43	144.91	27.10
5	60.06	148.06	26.21
6	60.17	143.49	27.14
7	60.42	142.58	27.54
8	60.09	139.89	27.76
9	60.65	142.80	27.71
10	59.84	141.47	27.23
AVERAGE DECELERATION RATE:			**27.00 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.00	141.00	27.46
2	59.85	139.61	27.60
3	59.47	136.50	27.87
4	59.97	140.69	27.50
5	60.02	141.86	27.31
6	60.13	143.06	27.18
7	60.55	142.72	27.63
8	60.15	140.94	27.61
9	60.25	137.59	28.38
10	59.81	140.11	27.46
AVERAGE DECELERATION RATE:			**27.60 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.30 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**141.8 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

*****All Vehicles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Ford Police Interceptor Sedan 3.5L FWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 9:47 a.m.	**TEMPERATURE:** 64° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.35	140.10	27.96
2	58.07	115.84	31.31
3	59.99	131.44	29.45
4	59.79	134.54	28.58
5	60.29	133.83	29.22
6	60.11	131.86	29.47
7	60.02	132.23	29.30
8	60.16	135.39	28.75
9	60.38	129.80	30.21
10	60.37	135.48	28.93
AVERAGE DECELERATION RATE:			**29.32 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.07	134.95	28.76
2	59.52	131.31	29.02
3	60.23	137.05	28.50
4	60.32	140.67	27.82
5	59.84	133.66	28.82
6	60.16	134.43	28.95
7	59.64	128.62	29.74
8	60.16	132.89	29.29
9	60.36	135.58	28.90
10	60.31	134.68	29.04
AVERAGE DECELERATION RATE:			**28.88 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.10 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**133.2 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Sedan 3.7L AWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 10:11 a.m.	**TEMPERATURE:** 67° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.88	129.92	29.68
2	60.19	134.74	28.92
3	60.22	132.01	29.54
4	59.76	132.44	29.00
5	60.46	134.99	29.12
6	60.31	134.51	29.08
7	60.03	136.41	28.41
8	60.29	134.76	29.01
9	60.18	136.23	28.59
10	59.93	129.14	29.91
AVERAGE DECELERATION RATE:			**29.13 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.49	131.76	28.89
2	59.85	133.00	28.97
3	60.35	135.60	28.89
4	59.98	135.61	28.53
5	60.28	138.72	28.17
6	60.00	133.46	29.01
7	60.03	132.45	29.26
8	60.47	137.52	28.60
9	60.43	134.24	29.26
10	59.44	131.45	28.91
AVERAGE DECELERATION RATE:			**28.85 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.99 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**133.6 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Special Service Police

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 1:30 p.m.	**TEMPERATURE:** 79 ° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.49	136.76	28.78
2	60.40	136.37	28.78
3	60.40	138.23	28.39
4	60.54	137.12	28.75
5	60.47	136.22	28.87
6	60.81	140.85	28.24
7	60.50	138.98	28.32
8	60.52	138.27	28.49
9	60.71	138.51	28.62
10	59.97	134.58	28.74
AVERAGE DECELERATION RATE:			**28.60 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.20	138.68	28.10
2	60.23	143.18	27.25
3	59.99	132.88	29.13
4	60.23	132.90	29.36
5	60.29	135.99	28.75
6	60.51	133.70	29.46
7	60.10	130.86	29.69
8	60.21	134.86	28.91
9	60.08	134.00	28.97
10	**Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**28.85 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.72 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**134.8 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Responder Hybrid Sedan

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 11:55 a.m.	**TEMPERATURE:** 76° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.27	132.87	29.41
2	60.09	138.02	28.14
3	60.40	138.05	28.43
4	60.20	137.16	28.42
5	60.10	140.23	27.71
6	60.14	134.90	28.84
7	60.21	139.48	27.96
8	60.16	139.49	27.00
9	60.07	138.17	28.09
10	60.06	137.34	28.25
AVERAGE DECELERATION RATE:			**28.32 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.21	136.52	28.56
2	60.19	135.64	28.73
3	60.11	136.55	28.46
4	60.22	136.26	28.62
5	60.52	138.21	28.50
6	60.08	134.49	28.87
7	60.11	134.89	28.81
8	59.78	135.72	28.32
9	60.07	137.98	28.13
10	60.07	135.04	28.74
AVERAGE DECELERATION RATE:			**28.57 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.44 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**136.2 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Utility 3.5L EcoBoost AWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 3:04 p.m.	**TEMPERATURE:** 80° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.60	137.26	28.78
2	60.13	136.17	28.56
3	60.44	145.50	27.01
4	59.93	137.19	28.16
5	59.78	135.22	28.43
6	60.15	134.43	28.95
7	60.25	139.08	28.07
8	60.36	138.57	28.28
9	59.96	134.61	28.73
10	60.07	136.80	28.37
AVERAGE DECELERATION RATE:			**28.34 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.22	136.22	28.63
2	59.56	133.21	28.64
3	59.99	136.71	28.32
4	59.95	134.69	28.70
5	59.87	133.96	28.78
6	60.04	134.16	28.90
7	60.07	137.44	28.24
8	60.01	134.87	28.72
9	60.43	139.14	28.23
10	60.41	138.33	28.37
AVERAGE DECELERATION RATE:			**28.55 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.44 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**136.2 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford Police Interceptor Utility 3.7L AWD

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 11:06 a.m.	**TEMPERATURE:** 72° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.98	133.65	28.95
2	60.12	133.38	29.15
3	60.11	130.27	29.83
4	59.22	125.46	30.07
5	60.37	130.18	30.11
6	59.88	131.55	29.31
7	60.30	135.51	28.86
8	60.00	128.70	30.09
9	59.78	126.80	30.31
10	60.02	131.18	29.54
AVERAGE DECELERATION RATE:			**29.62 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.21	133.96	29.11
2	60.27	129.76	30.11
3	60.10	132.87	29.24
4	60.18	132.61	29.37
5	60.28	130.51	29.95
6	60.12	130.55	29.78
7	60.47	135.28	29.07
8	59.83	128.99	29.91
9	59.94	129.55	29.83
10	59.64	127.48	30.01
AVERAGE DECELERATION RATE:			**29.64 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.63 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**130.7 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Ford F-150 Police Responder

TEST LOCATION: FCA Proving Grounds	**DATE:** September 16, 2017
BEGINNING TIME: 9:22 a.m.	**TEMPERATURE:** 64° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.70	153.62	25.80
2	59.68	141.90	27.00
3	60.23	144.85	26.94
4	59.39	142.75	26.58
5	60.19	144.00	27.06
6	60.73	145.86	27.20
7	59.95	140.09	27.60
8	60.09	144.54	26.87
9	60.10	143.73	27.03
10	60.36	142.96	27.41
AVERAGE DECELERATION RATE:			**26.95 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.55	139.41	27.36
2	60.24	141.71	27.54
3	59.70	140.39	27.31
4	59.97	141.46	27.35
5	60.29	144.20	27.11
6	59.97	140.04	27.62
7	60.16	144.04	27.02
8	60.16	143.59	27.11
9	59.94	144.04	26.83
10	61.38	149.48	27.11
AVERAGE DECELERATION RATE:			**27.24 ft/s²**

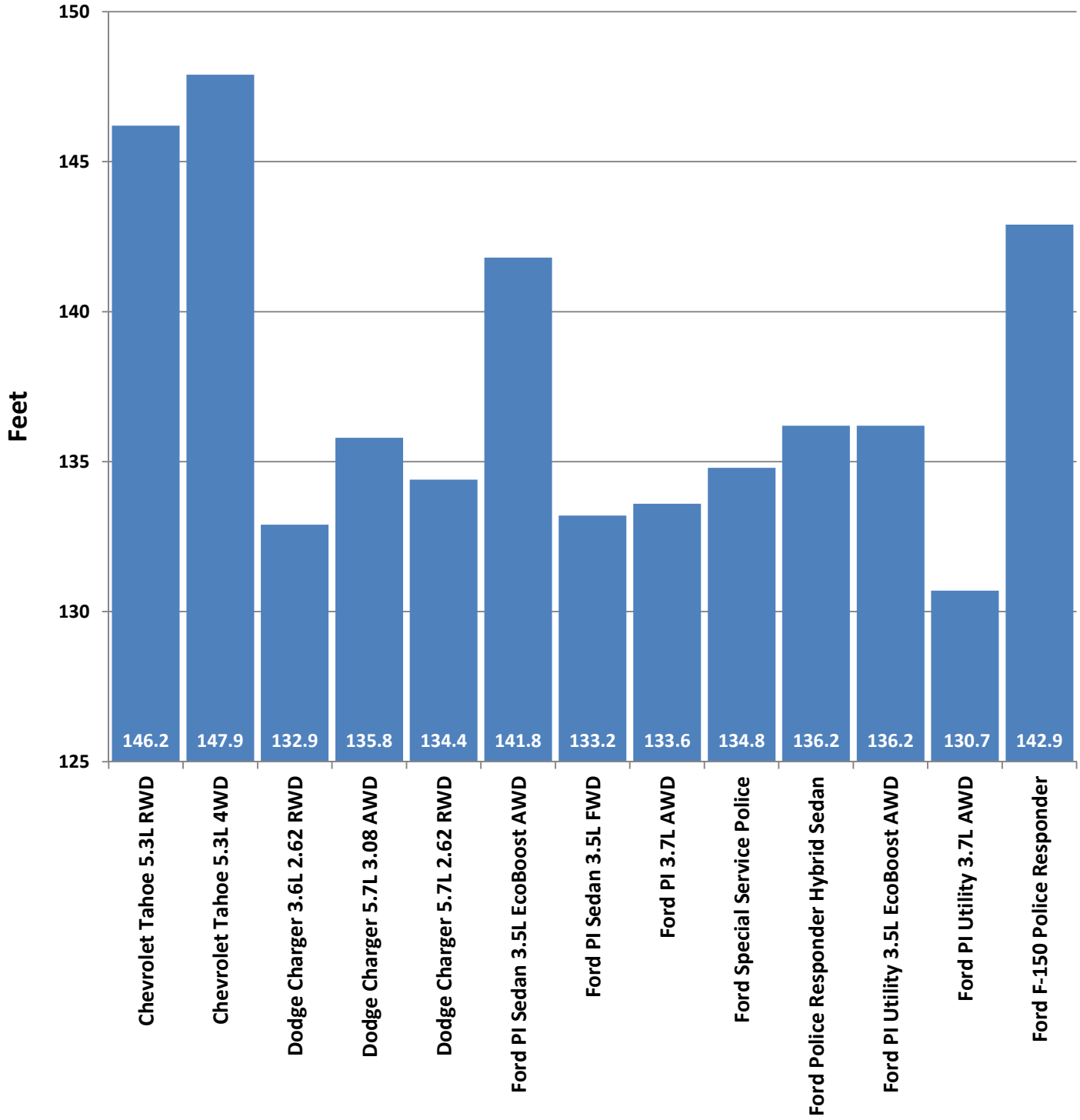
Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.09 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**142.9 feet**

Evidence of Severe Fading?	No
Vehicle Stopped in Straight Line?	Yes
Vehicle Stopped Within Correct Lane?	Yes

All Vehicles Tested are Equipped with Anti-Lock Brakes*

2018 Model Year
Brake Testing
Projected Stopping Distance



ERGONOMICS AND COMMUNICATIONS

TESTING OBJECTIVE

Rate each test vehicle's ability to:

1. Provide a suitable environment for the patrol officer in the performance of his/her assigned tasks.

2. Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TESTING METHODOLOGY

Utilizing the Ergonomics and Communications Form (as seen on page 78 of this book) each category is graded on a scale of 1-10, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores given are averaged to minimize personal prejudice for or against any given vehicle.

For the ergonomics portion of the form, a minimum of four officers (in this case eight) individually and independently compare and score each test vehicle in several areas. These include comfort, convenience, instrumentation, and visibility.

The installation and communications portion of the evaluation is conducted by personnel from the Michigan Public Safety Communications System. The scores are given based on the relative difficulty of the necessary installations.

COMMUNICATIONS

	Chevrolet Tahoe	Dodge Charger	Ford Police Interceptor Sedan	Ford Police Responder Hybrid	Ford Police Interceptor Utility	Ford F150 Police Responder
COMMUNICATIONS						
Dashboard Accessibility	9.33	9.39	8.78	7.61	9.00	9.56
Trunk Accessibility	8.86	9.07	7.64	6.93	9.00	7.57
Engine Compartment	8.33	7.67	5.89	5.67	7.89	9.00
TOTAL SCORES	**8.84**	**8.71**	**7.44**	**6.74**	**8.63**	**8.71**

ERGONOMICS

	Chevrolet Tahoe	Dodge Charger	Ford Police Interceptor Sedan	Ford Police Responder Hybrid	Ford Police Interceptor Utility	Ford F150 Police Responder
FRONT SEAT						
Padding	9.13	8.25	7.75	7.50	7.75	8.50
Depth of Bucket Seat	9.13	7.75	6.63	6.63	6.63	7.50
Adjustability – Front to Rear	9.25	9.13	8.57	6.75	8.75	7.50
Upholstery	8.38	8.13	7.50	7.50	7.75	7.63
Bucket Seat Design	9.13	8.25	6.25	6.38	6.75	7.38
Headroom	9.88	8.63	8.75	9.14	9.13	9.88
Seatbelts	8.25	9.00	8.88	8.63	9.00	8.75
Ease of Entry and Exit	8.75	8.00	7.57	6.75	8.13	8.88
Overall Comfort Rating	9.38	8.38	7.63	7.00	8.13	8.50
REAR SEAT						
Leg room – Front seat back	9.25	6.38	6.13	5.50	6.50	9.63
Ease of Entry and Exit	9.00	6.25	5.88	5.75	6.38	8.38
INSTRUMENTATION						
Clarity	9.38	9.13	8.50	8.25	8.63	8.88
Placement	9.13	9.13	8.88	8.13	8.63	8.75
VEHICLE CONTROLS						
Pedals, Size, and Position	9.50	9.50	8.25	8.25	8.25	9.25
Power Window Switch	9.00	9.38	9.00	7.75	9.25	9.00
Stability/Traction Control Switch	8.43	8.88	2.50	2.50	2.50	8.63
Automatic Door Lock Switch	8.63	9.25	8.75	9.13	9.00	7.63
Outside Mirror Controls	8.63	9.13	9.13	8.75	8.88	8.38
Steering Wheel, Size, Tilt Release, and Surface	8.75	9.25	7.88	7.75	7.88	8.00
Heat/AC Vent Placement and Adjustability	9.13	8.75	8.38	7.75	8.53	8.88
Trunk Release Switch	N/A	8.88	7.29	8.25	N/A	N/A
VISIBILITY						
Front (Windshield)	8.75	9.00	7.88	7.88	8.50	8.75
Rear (Back Window)	8.13	8.25	6.75	7.25	7.13	8.75
Left Rear Quarter	7.25	8.00	7.63	7.56	8.43	8.43
Right Rear Quarter	7.38	7.63	7.75	7.50	7.63	8.71
Outside Mirrors	8.00	8.13	7.38	7.00	8.00	9.00
TOTAL AVERAGE SCORE	**8.78**	**8.48**	**7.60**	**7.36**	**7.85**	**8.54**

FUEL ECONOMY

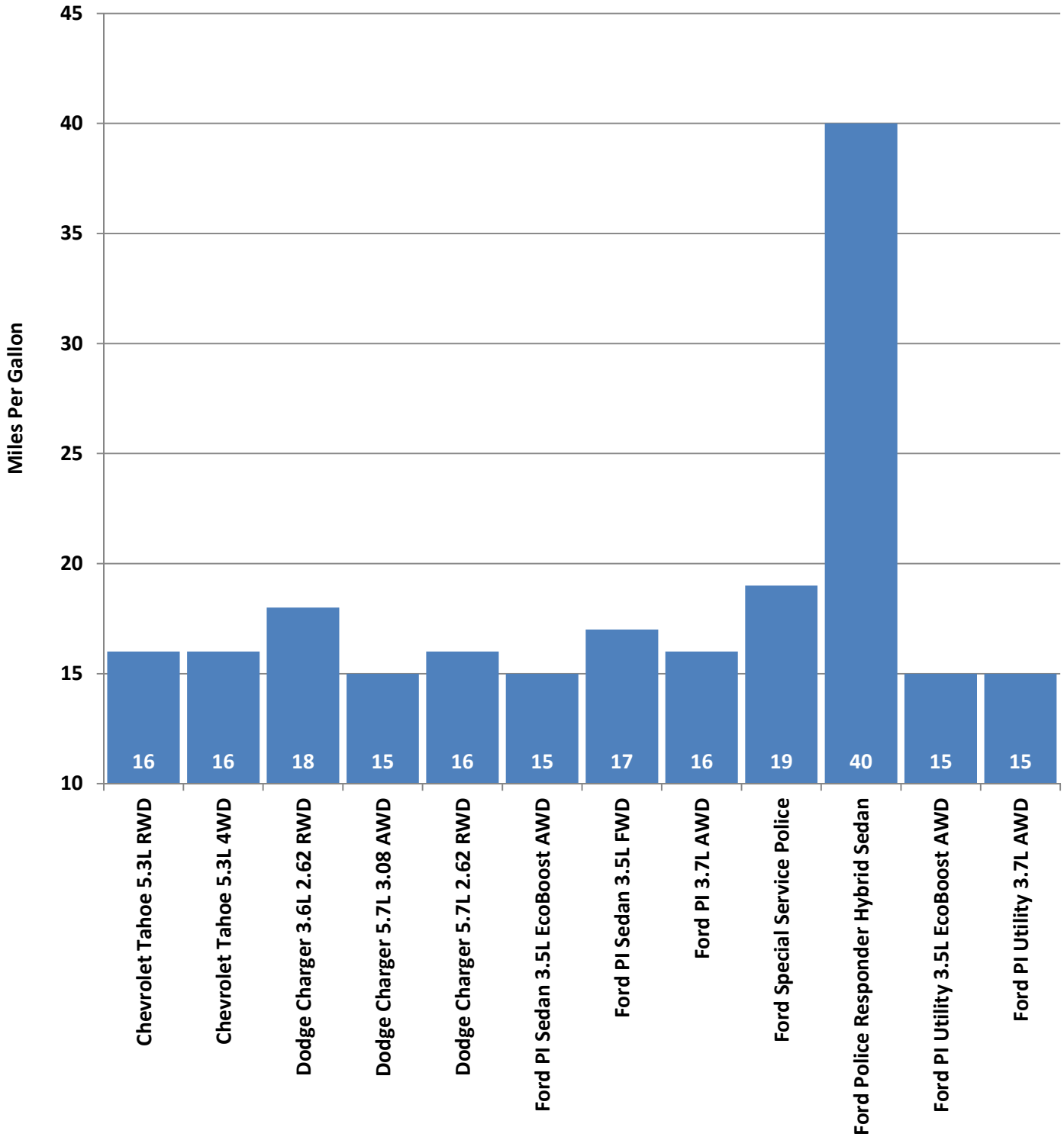
The respective auto manufacturers provided estimates for fuel economy as shown below.

This information has been certified by the Environmental Protection Agency.

Vehicles Make/Model/Engine	E.P.A. Miles Per Gallon		
	City Label	Highway Label	Combined Label
Chevrolet Tahoe 5.3L RWD	16	23	19
Chevrolet Tahoe 5.3L 4WD	16	22	18
Dodge Charger 3.6L 2.62 RWD	18	26	20
Dodge Charger 5.7L 3.08 AWD	15	23	18
Dodge Charger 5.7L 2.62 RWD	16	25	18
Ford Police Interceptor Sedan 3.5L Ecoboost AWD	15	22	18
Ford Police Interceptor Sedan 3.5L FWD	17	25	20
Ford Police Interceptor Sedan 3.7L AWD	16	22	18
Ford Special Service Police	19	28	22
Ford Police Responder Hybrid Sedan	40	36	38
Ford Police Interceptor Utility 3.5L EcoBoost AWD	15	20	17
Ford Police Interceptor Utility 3.7L AWD	15	20	17
Ford F-150 Police Responder	TBA	TBA	TBA

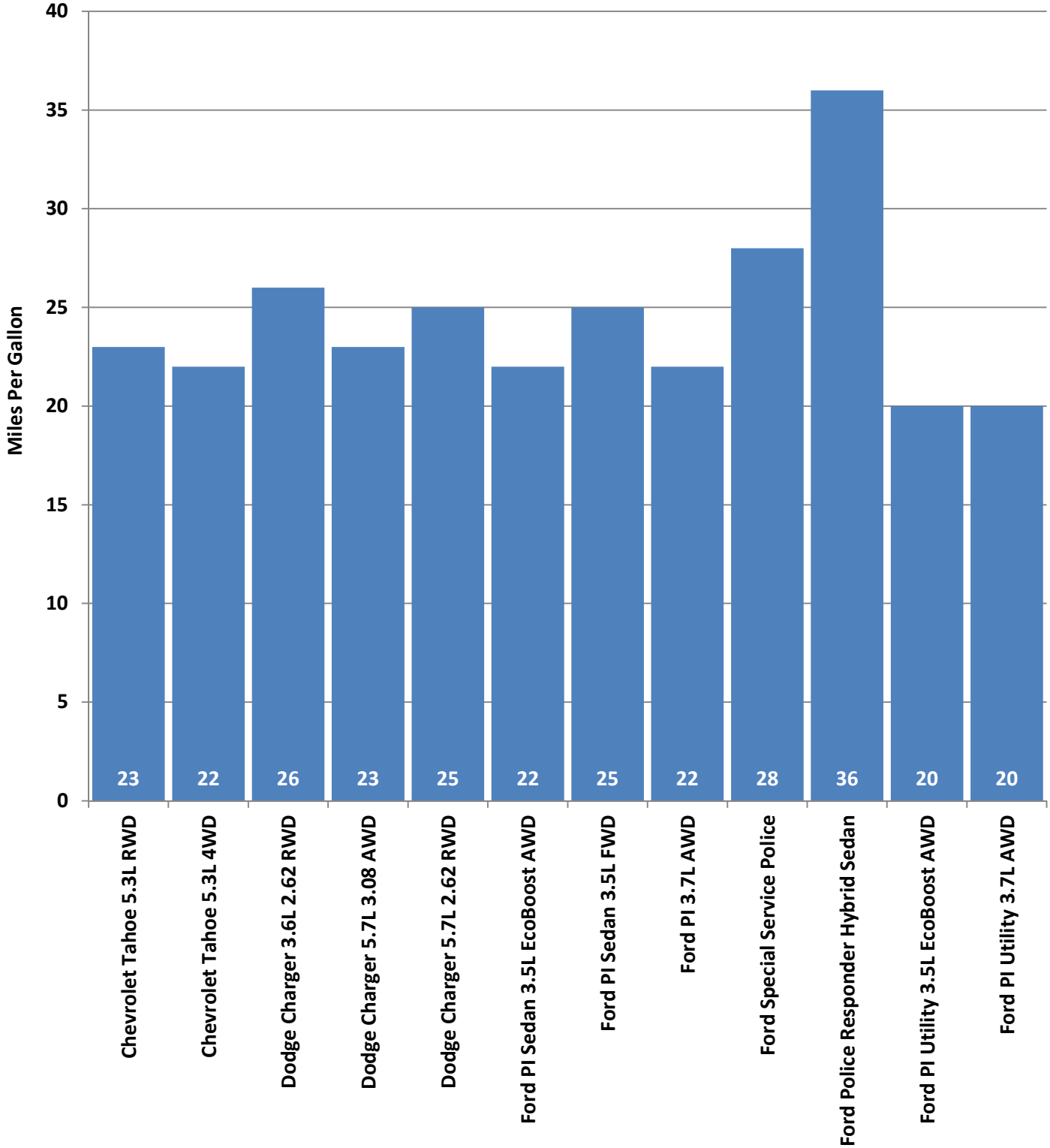
2018 FUEL ECONOMY COMPARISON

"CITY" EPA ESTIMATES



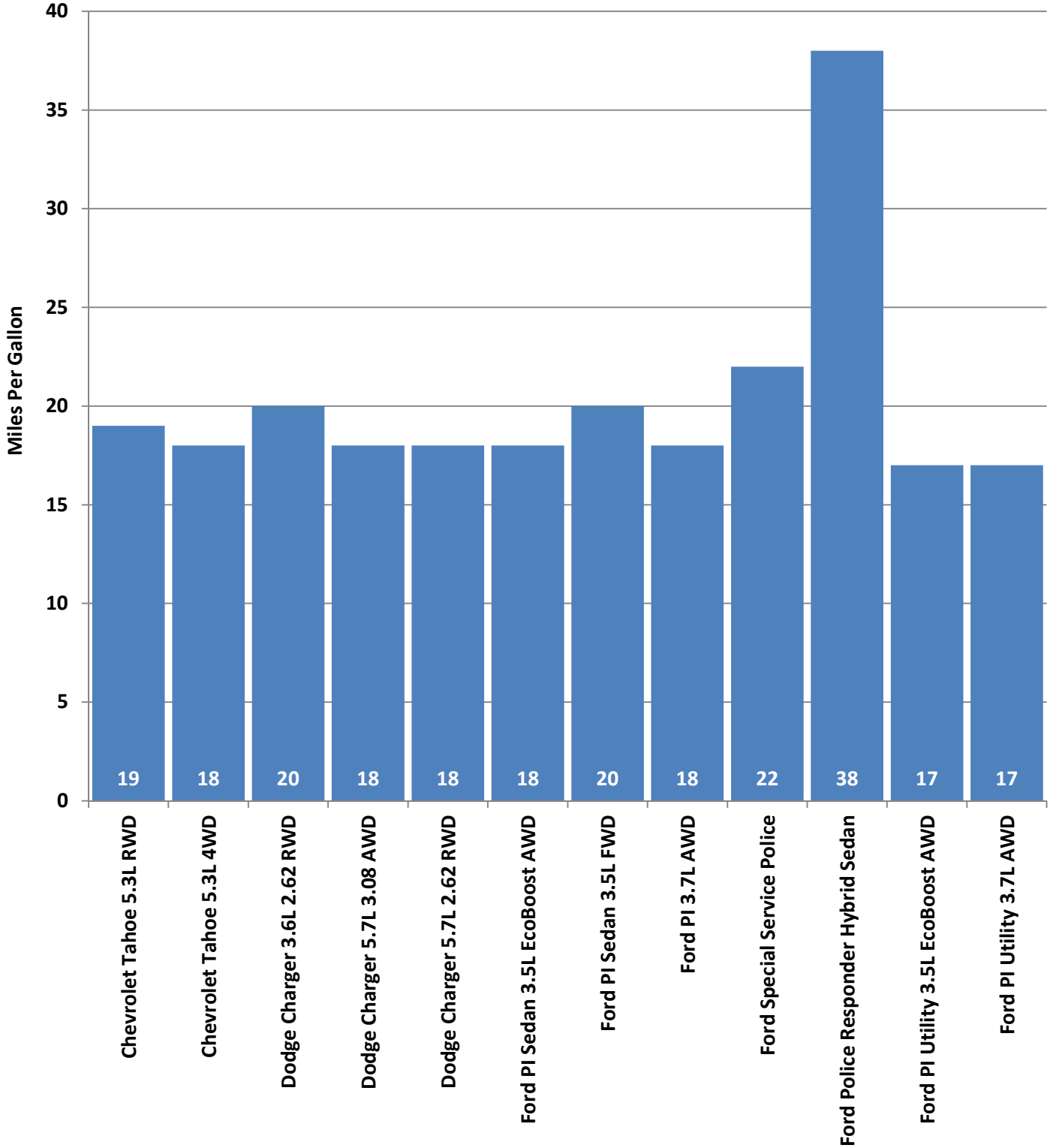
2018 FUEL ECONOMY COMPARISON

"HIGHWAY" EPA ESTIMATES



2018 FUEL ECONOMY COMPARISON

"COMBINED" EPA ESTIMATES




CHARGER 5.7L HEMI
LAW

MOTORCYCLES

Like many law enforcement agencies, the Michigan State Police used motorcycles until late 1941 and then switched to automobiles. The Michigan State Police rekindled interest in motorcycles for day to day patrol operations in 1993. In 2004, Michigan State Police headquarters asked if we had additional information as a resource for our purchasing decisions regarding motorcycles. During that time, we were given direction to expand vehicle testing to include motorcycle testing. It should be noted, the only motorcycles we test are those provided by the manufacturers which are purpose built as police motorcycles. We would like to thank BMW Motorrad USA, Harley-Davidson Motorcycles, Yamaha Motorcycles and Zero Motorcycles for participating and providing their assistance in preparation for this year's successful testing program.

We are constantly evaluating our various tests with the manufacturers and the law enforcement industry to provide you with the most objective test data available. While there are many similarities to automobiles, there are also quite a few differences.

This year we conducted motorcycle brake testing on our track at the Precision Driving Unit in Lansing. Our facility provides a very flat and consistent surface for this type of testing. Thus, better information is provided to the reader as to the braking capabilities of each motorcycle.

The motorcycle dynamics portion was again conducted at Grattan Raceway. Grattan Raceway provides a two mile road course that has several different curves and elevation changes that tests the motorcycles high speed handling characteristics and durability during pursuit and emergency response riding. See the motorcycle dynamics test objectives for further information.

When looking at the data, it is very important for the reader to apply your mission requirements to the motorcycle you are considering so you may make an appropriate decision. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job more effectively and safely. If anything in this report requires further explanation or clarification, please call or write the Michigan State Police Precision Driving Unit.

BMW R1200 RT-P

MAKE & MODEL	BMW R 1200 RT-P
SALES CODE	17RP
POWERTRAIN INFORMATION	
CUBIC INCHES	71.4
LITERS	1.170
HORSEPOWER SAENET	125 bhp @ 7,750 RPM
ALTERNATOR	540W
TORQUE	92 @ 6,500 RPM
BATTERY	2 x 16 Ah (AGM no-maintenance batteries)
TRANSMISSION	Constant Mesh 6-Speed with Helical Cut Gears
SUSPENSION TYPE (FRONT)	BMW Telelever, 37 mm stanchions, central spring strut
SUSPENSION TYPE (REAR)	BMW Paralever; travel related damping single strut
TURNING CIRCLE (CURB TO CURB)	16 ft.
TIRE SIZE, LOAD & SPEED RATING	120-70 ZR 17 (Front) / 180-55 ZR 17 (Rear)
GROUND CLEARANCE, MINIMUM	5.2 inches
BRAKE SYSTEM	BMW partial-integral ABS with traction control
FUEL CAPACITY	6.6 Gallons/25 Liters
GENERAL MEASUREMENTS	
WHEELBASE	58.5 inches
LENGTH	87.5 inches
TEST WEIGHT	650 lbs.
HEIGHT	55.7 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,091 lbs.
EPA MILEAGE EST. (MPG)	
CITY	60 MPG (@ 44 mph)
HIGHWAY	44 MPG (@ 75 mph)
COMBINED	Not Provided by Manufacturer

MANUFACTURER HIGHLIGHTS

The R 1200 RT-P is the new generation police motor derived from the K52 platform, inheriting all of the platform improvements of the civil model including standard ABS brakes with traction control, rain or road riding modes and heated handlebar grips.

The new generation contains a multi-plate self-adjusting wet clutch that can be changed in an hour, completely new emergency lighting system (including take-down lights and alley lights), handlebar switch system, power management system for all authority accessories, plus a host of special conveniences including electronic radio box latch release, saddlebag lights, alternating headlight system, selectable emergency light start sequence, narrower/lower seat with heat-reflective material (18° cooler in sun), adjustable dashboard angle, integrated PTT/PTPA switches, etc.

All R 1200 RT-P models include tire pressure monitoring, heated seat, electronic cruise control and weather protection in the standard package. The test motorcycle options include Ride Modes Pro, enabling the selection of riding modes Rain, Road or Dynamic, Dynamic ESA electronic suspension control, Gear Shift Assist Pro**,** which allows you to shift up or down once the motorcycle is in motion without use of the clutch and additional fog lights, which also wig-wag with the headlight when there is sufficient ambient light (controlled by dashboard light sensor).

The R 1200 RT-P includes 6,000 mile oil change service intervals and comes with a 3-year/60,000 mile limited warranty at no extra charge.

Harley-Davidson FLHP

MAKE & MODEL	Harley-Davidson FLHP (Road King)
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	107 CID
LITERS	1746 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 AMP (producing approximately 28 Amps at idle)
TORQUE	111.4 @ 3250 RPM
BATTERY	12VDC, 28 Amp/Hour, 270 CCA
TRANSMISSION	6 Speed Manual / Assist and Slip Wet 9 Plate Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49 mm Telescopic Forks with Showa® Dual Bending Valve Technology improving dampening performance
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17’
TIRE SIZE, LOAD & SPEED RATING	Dunlop D408F 130/80B17 (65H) (Front) Dunlop D407T 180/65B16 (81H) (Rear)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc/Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors – Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	845 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR – 1,360 lbs. / Payload – 515 lbs.
EPA MILEAGE EST. (MPG)	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	45 MPG

MANUFACTURER HIGHLIGHTS

- 107 CID Milwaukee 8™ Engine: pushrod-operated, overhead valves with hydraulic, self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), Compression ratio: 10.0:1, Electronic Sequential Port Fuel Injection System (ESPFI)< Single Cam design, Air and Oil cooled.
- Fan-Assisted Oil Cooler
- Hydraulically Actuated Clutch with Assist and Slip 9 Plate Wet Clutch
- Showa® Dual Bending Valve Technology Front Suspension with 117mm of Travel, Larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Dual Halogen Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- 2 Year Unlimited Mileage OE Warranty

Harley-Davidson FLHP Stage II

MAKE & MODEL	Harley-Davidson FLHP (Road King) Stage 2
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	107 CID
LITERS	1746 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 AMP (producing approximately 28 Amps at idle)
TORQUE	111.4 @ 3250 RPM
BATTERY	12VDC, 28 Amp/Hour, 270 CCA
TRANSMISSION	6 Speed Manual / Assist and Slip Wet 9 Plate Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49 mm Telescopic Forks with Showa® Dual Bending Valve Technology improving dampening performance
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17’
TIRE SIZE, LOAD & SPEED RATING	Dunlop D408F 130/80B17 (65H) (Front) Dunlop D407T 180/65B16 (81H) (Rear)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc/Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors – Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	845 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR – 1,360 lbs. / Payload – 515 lbs.
EPA MILEAGE EST. (MPG)	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	45 MPG

MANUFACTURER HIGHLIGHTS

H-D Milwaukee Eight™ Stage 2 Performance Engine Upgrade Kit Part # 92500058

- Power Cam
- Adjustable Push Rod Kit
- Gaskets

H-D High Flow Air Cleaner Part # 29400245
SE Pro Street Tuner Part # 41000008C
H-D Milwaukee Eight™ Stage 2 Download-50 State EPA Compliant (Speed Limited ~115 mph)

When installed by an authorized H-D Dealer at the time of new vehicle delivery, these kits do not impact the vehicle’s limited warranty

- 107 CID Milwaukee 8™ Engine: pushrod-operated, overhead valves with hydraulic, self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), Compression ratio: 10.0:1, Electronic Sequential Port Fuel Injection System (ESPFI)< Single Cam design, Air and Oil cooled.
- Fan-Assisted Oil Cooler
- Hydraulically Actuated Clutch with Assist and Slip 9 Plate Wet Clutch
- Showa® Dual Bending Valve Technology Front Suspension with 117mm of Travel, Larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Dual Halogen Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- 2 Year Unlimited Mileage OE Warranty

Harley-Davidson FLHTP Stage I

MAKE & MODEL	Harley-Davidson FLHTP (Electra Glide) Stage I
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	107 CID
LITERS	1746 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 Amp (producing approximately 28 amps at idle)
TORQUE	111.4 @ 3250 RPM
BATTERY	12VDC, 28 Amp/Hour, 270 CCA
TRANSMISSION	6 Speed Manual / Assist and Slip Wet 9 Plate Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49 mm Telescopic Forks with Showa® Dual Bending Valve Technology improving dampening performance
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17’
TIRE SIZE, LOAD & SPEED RATING	Dunlop D408F 130/80B17 (65H) (Front) Dunlop D407T 180/65B16 (81H) (Rear)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc/Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors – Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	845 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR – 1,360 lbs. / Payload – 515 lbs.
EPA MILEAGE EST. (MPG)	
CITY	Not Provided By Manufacturer
HIGHWAY	Not Provided By Manufacturer
COMBINED	45 MPG

MANUFACTURER HIGHLIGHTS

- 107 CID Milwaukee 8™ Engine: pushrod-operated, overhead valves with hydraulic, self-adjusting lifters, four valves per cylinder and featuring EITMS (Engine Idle Temperature Management System), Compression ratio: 10.0:1, Electronic Sequential Port Fuel Injection System (ESPFI), Single Cam design
- Fan-Assisted Oil Cooler
- Hydraulically Actuated Clutch with Assist and Slip 9 Plate Wet Clutch
- Showa® Dual Bending Valve Technology Front Suspension with 117mm of Travel, Larger pistons improve dampening performance over the range of suspension travel.
- Hand Adjustable Read Emulsion Shocks
- Daymaker™ LED Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED
- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Tread Bead Retention Tires
- Long Stem True Vision Mirrors
- 2 Year Unlimited Mileage OE Warranty

Harley-Davidson FLHTP Stage IV

MAKE & MODEL	Harley-Davidson FLHTP (Electra Glide) Stage 4
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	114 CID
LITERS	1868 CC
HORSEPOWER SAENET	Not Provided by Manufacturer
ALTERNATOR	48 AMP (producing approximately 28 Amps at idle)
TORQUE	124+ @ 3250 RPM
BATTERY	12VDC, 28 Amp/Hour, 270 CCA
TRANSMISSION	6 Speed Manual / Wet 9 Plate Assist and Slip Clutch
SUSPENSION TYPE (FRONT)	Hydraulic 49 mm Telescopic Forks with Showa® Dual Bending Valve Technology improving dampening performance
SUSPENSION TYPE (REAR)	Swing Arm with Hand Adjustable Emulsion Rear Shocks
TURNING CIRCLE (CURB TO CURB)	<17’
TIRE SIZE, LOAD & SPEED RATING	Dunlop D408F 130/80B17 (65H) (Front) Dunlop D407T 180/65B16 (81H) (Rear)
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Hydraulic Disc/Reflex™ Electronically Linked with ABS (Dual Front Floating Rotors – Single Fixed Rear)
FUEL CAPACITY	6.0 Gallons/22.71 Liters
GENERAL MEASUREMENTS	
WHEELBASE	64 inches
LENGTH	96.5 inches
TEST WEIGHT	845 lbs.
HEIGHT	56.3 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	GVWR – 1,360 lbs. / Payload – 515 lbs.
EPA MILEAGE EST. (MPG)	
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	Not Provided by Manufacturer

MANUFACTURER HIGHLIGHTS

- H-D Milwaukee 8™ Stage 3 Performance Engine Upgrade Kit (Part # 9250056)
  - ✓ Increases displacement from the OE 107 CID to 114 CID
  - ✓ SE Bolt on 4.075” Cylinders
  - ✓ 11:1 High Compression Aluminum Coated Pistons
  - ✓ High Performance Piston Rings
  - ✓ SE-498 Cam
  - ✓ SE Performance Valve Springs
  - ✓ SE High Performance Tappets
  - ✓ Engine Gaskets
- H-D High Flow Air Cleaner (Part # 29400245)
- SE Pro Street Tuner (Part # 41000008B)
- H-D Milwaukee Eight™ Stage 3 Download-50 State EPA Compliant (Speed Limited-110 mph)

When installed by an authorized H-D Dealer at the time of new vehicle delivery, these kits do not impact the vehicles limited warranty

The OE Engine is the new 107 CID Milwaukee Eight™: pushrod-operated overhead valves with hydraulic self-adjusting lifters, four valves per cylinder and featuring Engine Idle Temperature Management System (EITMS), compression ratio: 10.0:1, Electronic Sequential Port Fuel Injection System (ESPFI), Single Cam design, Air and Oil cooled.

- Fan Assisted Oil Cooler
- Hydraulically Actuated Assist and Slip 9 Plate Wet Clutch
- Showa® Dual Bending Valve Technology Front Suspension with 117mm of travel, larger pistons improve dampening performance over the range of suspension travel
- Hand Adjustable Rear Emulsion Shocks
- Daymaker™ LED Headlight
- Stealth Lighting Capable (rider controlled-disables all lights except brake and instrumentation)
- Cruise Control
- Emergency Equipment Power for 30 minutes with Ignition OFF or LOCKED

- Digital Speed Readout with Speed Capture
- Gear Indicator
- Polycarbonate Windshield designed to breakaway with minimal impact force
- One-Touch Saddlebag Lid Latches
- Pivoting Footboards
- Reflex™ electronically linked brake system with ABS (delinked below approximately 25 mph)
- Dunlop Multi-Treat Bead Retention Tires
- Long Stem True Vision Mirrors
- 2 Year Unlimited Mileage OE Warranty

Yamaha FJR1300

MAKE & MODEL	Yamaha FJR 1300P-AB
SALES CODE	RP31Y
	POWERTRAIN INFORMATION
CUBIC INCHES	79.2 CID
LITERS	1.298 CC
HORSEPOWER SAENET	144.2 bph @ 8,000 RPM
ALTERNATOR	590 AMP
TORQUE	138Nm @ 7,000 RPM
BATTERY	12V, 12 Amp/Hour
TRANSMISSION	6 Speed Manual / Wet, Multiple Disc Clutch
SUSPENSION TYPE (FRONT)	48mm fork fully adjustable
SUSPENSION TYPE (REAR)	Single Shock – adjustable spring preload and rebound damping
TURNING CIRCLE (CURB TO CURB)	122.0 inches
TIRE SIZE, LOAD & SPEED RATING	Front: Dual 12.6 inches discs; Unified Brake System and ABS Rear: 11.1 inches disc; Unified Brake System and ABS
GROUND CLEARANCE, MINIMUM	5.1 inches
BRAKE SYSTEM	Front: Dual 12.6 inches discs; Unified Brake System and ABS Rear: 11.1 inches disc; Unified Brake System and ABS
FUEL CAPACITY	6.6 Gallons/25 Liters
	GENERAL MEASUREMENTS
WHEELBASE	60.8 inches
LENGTH	87.8 inches
TEST WEIGHT	865 lbs.
HEIGHT	Low-55.7 inches High – 61 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	1,111 lbs.
	EPA MILEAGE EST. (MPG)
CITY	Not Provided by Manufacturer
HIGHWAY	Not Provided by Manufacturer
COMBINED	36

MANUFACTURER HIGHLIGHTS

The FJR1300 has made its mark as a truly iconic model for Yamaha Motor Company since its introduction to the U.S. market in 2003, with tens of thousands of this incredibly reliable “supersport touring” model having been sold since that time.

Known for its sportbike-like engine performance, impeccable handling, and superb braking capabilities, the FJR1300 has proven itself to be extremely reliable, with many retail customers racking up well over 100,000 miles on their personal bikes.

The FJR1300 has also undergone 4 significant generational updates and multiple refinements since its introduction, the last of which coming in the 2016 model year, with the addition of a six-speed transmission and advanced electronic additions. These upgrades have only added to the reliability, versatility, comfort, and sophistication of this motorcycle, without inhibiting the impressive performance or rider adjustability of this uniquely capable sport-touring motorcycle.

Zero DSRP

MAKE & MODEL	Zero DSRP
SALES CODE	Not Provided by Manufacturer
POWERTRAIN INFORMATION	
CUBIC INCHES	N/A
LITERS	N/A
HORSEPOWER SAENET	67 HP (50kW) @ 4,000 RPM
ALTERNATOR	N/A
TORQUE	106 ft/lb (144 Nm)
BATTERY	ZForce Li-Ion 15.9 kWh
TRANSMISSION	Clutchless Direct Drive
SUSPENSION TYPE (FRONT)	Showa® 41 mm inverted cartridge forks, with adjustable spring preload, compression and rebound damping
SUSPENSION TYPE (REAR)	Showa® 40 mm piston, piggy-back reservoir shock with adjustable spring preload, compression and rebound damping
TURNING CIRCLE (CURB TO CURB)	Not Provided by Manufacturer
TIRE SIZE, LOAD & SPEED RATING	Pirelli MT-60 100/90-19 (Front) Pirelli MT-60 130/80-17 (Rear)
GROUND CLEARANCE, MINIMUM	9.25 inches
BRAKE SYSTEM	J-Juan Disc, Bosch Gen 9 ABS
FUEL CAPACITY	N/A
GENERAL MEASUREMENTS	
WHEELBASE	56.2 inches
LENGTH	82.5 inches
TEST WEIGHT	487 lbs.
HEIGHT	50.5 inches
MAXIMUM PAYLOAD CAPACITY (INCLUDING PASSENGERS)	288 lbs.
EPA MILEAGE EST.	
CITY	435 (equiv.)
HIGHWAY	210 (equiv.)
COMBINED	Not Provided by Manufacturer

MANUFACTURER HIGHLIGHTS

The new 100% electric Zero DSRP police motorcycle incorporates Zero's high-performance motor and 660 amp controller to deliver more torque and more power. The DSRP is a dual sport with the ability to patrol both on and off-road, and with no emissions, even indoors. With no gears, clutch or noise, officers can focus on patrolling and gain tactical advantages. Having a "fuel" cost of a penny per mile and maintenance-free powertrain, the Zero DSRP provides a low total cost of ownership with unique advantages over internal combustion driven machines:

- No shifting; instant torque from 0 rpm
- Lightweight and highly maneuverable
- Maintenance-free powertrain
- Life of motorcycle power pack
- Exhaust free; produces minimal heat
- Regenerative braking and coasting
- Blackout switch for stealth operations
- Charge from standard 110V outlet

MOTORCYCLE DYNAMICS TESTING

MOTORCYCLE DYNAMICS TESTING OBJECTIVE

To determine each motorcycle's high speed handling characteristics and performance in comparison to other motorcycles. The course used is a two mile road racing type configuration containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the motorcycle manufacturers in offering balanced packages of acceleration capabilities, suspension components, and braking characteristics.

MOTORCYCLE DYNAMICS TESTING METHODOLOGY

Each motorcycle is ridden over the course a total of 32 timed laps using four separate riders, each riding an eight lap series. The final score for the motorcycle is the combined average (from the four riders) of the five fastest laps for each rider during the eight lap series.

MOTORCYCLE DYNAMICS SCHEDULE

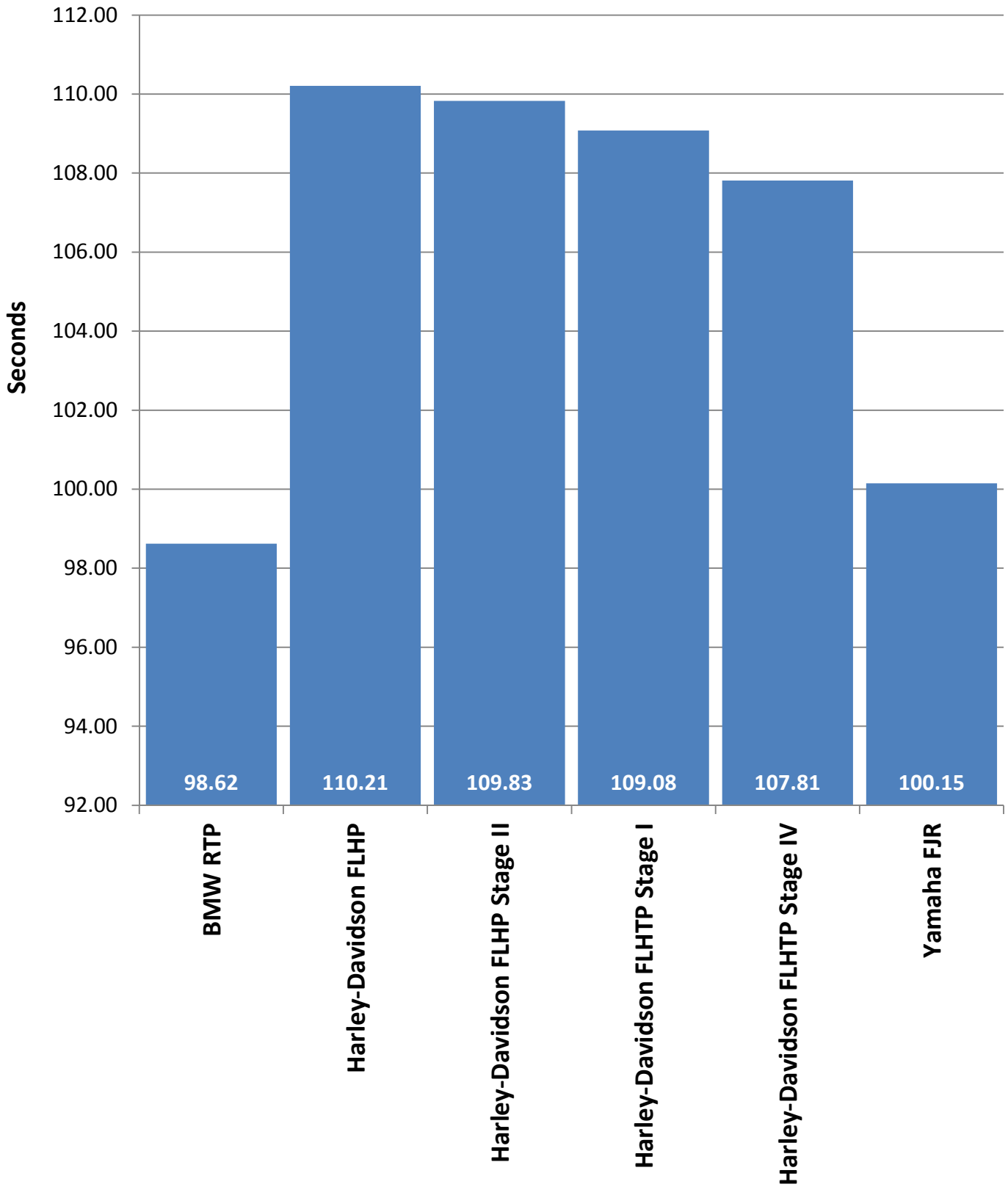
GRATTAN RACEWAY 2018 MODEL YEAR MOTORCYCLE DYNAMICS SCHEDULE SEPTEMBER 14, 2017				
	DARLINGTON	**ROGERS**	**TIBAUDO**	**CUPP**
9:30 a.m.	Harley-Davidson FLHP Stage II	Harley-Davidson FLHTP Stage IV		
10:00 a.m.			Harley-Davidson FLHP	Harley-Davidson FLHTP Stage I
10:30 a.m.	BMW RTP	Yamaha FJR		
11:00 a.m.	Harley-Davidson FLHTP Stage IV	Harley-Davidson FLHP Stage II		
11:30 a.m.			Harley Davidson FLHTP Stage I	Harley-Davidson FLHP
12:30 p.m.	Yamaha FJR	BMW RTP		
1:00 p.m.			Harley-Davidson FLHTP Stage IV	Harley-Davidson FLHP Stage II
1:30 p.m.	Harley-Davidson FLHP	Harley-Davidson FLHTP Stage I		
2:00 p.m.			BMW RTP	Yamaha FJR
2:30 p.m.			Harley-Davidson FLHP Stage II	Harley-Davidson FLHTP Stage IV
3:00 p.m.	Harley-Davidson FLHTP Stage I	Harley-Davidson FLHP		
3:30 p.m.			Yamaha FJR	BMW RTP

MOTORCYCLE DYNAMICS TESTING ON SEPTEMBER 14, 2017

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
BMW RTP	DARLINGTON	01:39.11	01:38.32	01:37.97	01:38.39	01:38.49	01:38.46
	ROGERS	01:39.63	01:38.75	01:38.02	01:37.20	01:36.90	01:38.10
	TIBAUDO	01:39.85	01:39.73	01:39.72	01:38.79	01:38.15	01:39.25
	CUPP	01:39.14	01:38.71	01:38.92	01:38.15	01:38.38	01:38.66
Overall Average							**01:38.62**
Harley-Davidson FLHP	TIBAUDO	01:51.36	01:52.05	01:51.39	01:51.06	01:52.04	01:51.58
	CUPP	01:49.98	01:49.92	01:49.66	01:49.85	01:50.07	01:49.90
	DARLINGTON	01:49.95	01:49.75	01:49.74	01:49.28	01:49.25	01:49.59
	ROGERS	01:49.42	01:50.01	01:49.87	01:49.52	01:49.93	01:49.75
Overall Average							**01:50.21**
Harley-Davidson FLHP Stage II	DARLINGTON	01:50.14	01:49.98	01:50.19	01:49.72	01:49.64	01:49.39
	ROGERS	01:49.52	01:49.30	01:49.17	01:49.55	01:49.39	01:49.39
	CUPP	01:49.46	01:49.72	01:49.81	01:49.33	01:48.97	01:49.46
	TIBAUDO	01:50.41	01:50.55	01:51.07	01:50.54	01:50.18	01:50.55
Overall Average							**01:49.83**
Harley-Davidson FLHTP Stage I	CUPP	01:48.77	01:49.80	01:48.79	01:48.41	01:48.50	01:48.85
	TIBAUDO	01:50.25	01:49.89	01:49.67	01:50.11	01:49.64	01:49.91
	ROGERS	01:48.58	01:48.19	01:48.31	01:48.36	01:48.40	01:48.37
	DARLINGTON	01:49.04	01:49.22	01:49.44	01:49.26	01:49.01	01:49.19
Overall Average							**01:49.08**
Harley-Davidson FLHTP Stage IV	ROGERS	01:48.48	01:47.49	01:48.41	01:47.74	01:48.23	01:48.27
	DARLINGTON	01:47.80	01:47.50	01:47.53	01:47.64	01:47.66	01:47.63
	TIBAUDO	01:48.64	01:48.54	01:48.00	01:47.72	01:47.74	01:48.13
	CUPP	01:47.40	01:47.05	01:47.25	01:47.38	01:47.08	01:47.23
Overall Average							**01:47.81**
Yamaha FJR	ROGERS	01:41.00	01:40.38	01:40.96	01:40.13	01:39.53	01:40.40
	DARLINGTON	01:40.23	01:39.96	01:39.60	01:39.76	01:38.76	01:39.66
	CUPP	01:41.97	01:40.84	01:40.10	01:41.51	01:40.61	01:41.01
	TIBAUDO	01:40.12	01:39.95	01:39.46	01:39.39	01:38.83	01:39.55
Overall Average							**01:40.15**

**The Zero DSRP was not tested for dynamics as its primary mission is not highway road patrol. Following Acceleration and Top Speed testing, remaining battery range was measured. See page 101 for results.

2018 Model Year
Motorcycle Dynamics



MOTORCYCLE ACCELERATION
&
TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

To determine the ability of each test motorcycle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph.

ACCELERATION TEST METHODOLOGY

Using a Race Logic Vbox 3i GPS data collection unit, each motorcycle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times are used to derive scores for acceleration. To ensure accuracy, the same rider performs the test for all motorcycles.

TOP SPEED TEST OBJECTIVE

To determine the actual top speed attainable by each test motorcycle within a distance of 14 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test motorcycle will continue to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14-mile distance will be recorded as the vehicle's top speed.

TEST LOCATION: FCA Proving Grounds **DATE:** September 14, 2017

BMW R1200 RT-P

BEGINNING TIME: 4:05 p.m. **TEMPERATURE:** 78.6° F
WIND VELOCITY: 3.5 mph **WIND DIRECTION:** West

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	4.48	4.13	4.62	4.21	**4.36**
0 – 80	6.87	6.41	6.98	6.48	**6.69**
0 – 100	10.83	9.84	10.71	9.97	**10.34**

DISTANCE TO REACH 100 MPH: .17 mile
DISTANCE TO REACH 120 MPH: .38 mile

TOP SPEED ATTAINED: 135 mph

DISTANCE TO REACH TOP SPEED: 6,879.27 ft.
TIME TO REACH TOP SPEED: 42.23 seconds

Harley-Davidson FLHP

BEGINNING TIME: 2:20 p.m. **TEMPERATURE:** 76.5° F
WIND VELOCITY: 8.1 mph **WIND DIRECTION:** Southwest

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	5.17	5.30	5.41	5.14	**5.26**
0 – 80	9.49	9.44	9.30	9.10	**9.33**
0 – 100	20.13	17.99	20.25	18.11	**19.12**

DISTANCE TO REACH 100 MPH: .35 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 109 mph

DISTANCE TO REACH TOP SPEED: 3,212.81 ft.
TIME TO REACH TOP SPEED: 26.72 seconds

Harley-Davidson FLHP Stage II

BEGINNING TIME: 9:21 a.m. **TEMPERATURE:** 58.8° F
WIND VELOCITY: 4.0 mph **WIND DIRECTION:** Calm

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	4.74	4.84	4.76	4.73	**4.77**
0 – 80	8.25	8.22	8.19	8.15	**8.20**
0 – 100	14.76	14.50	15.11	14.71	**14.77**

DISTANCE TO REACH 100 MPH: 0.30 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 108 mph

DISTANCE TO REACH TOP SPEED: 2,579.10 ft.
TIME TO REACH TOP SPEED: 22.19 seconds

TEST LOCATION: FCA Proving Grounds **DATE:** September 14, 2017

Harley-Davidson FLHTP Stage I

BEGINNING TIME: 1:46 p.m. **TEMPERATURE:** 75.2° F
WIND VELOCITY: 4.6 mph **WIND DIRECTION:** West Southwest

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	5.30	5.05	5.21	5.07	**5.16**
0 – 80	9.40	8.92	9.45	8.94	**9.18**
0 – 100	20.37	16.40	20.59	17.82	**18.80**

DISTANCE TO REACH 100 MPH: 0.31 mile
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 109 mph

DISTANCE TO REACH TOP SPEED: 3,239.03 ft.
TIME TO REACH TOP SPEED: 26.59 seconds

Harley-Davidson FLHTP Stage IV

BEGINNING TIME: 11:36 a.m. **TEMPERATURE:** 70.5° F
WIND VELOCITY: 5.8 mph **WIND DIRECTION:** West Southwest

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	4.59	4.46	4.38	4.32	**4.44**
0 – 80	7.59	7.25	7.41	7.07	**7.33**
0 – 100	12.99	11.94	13.03	11.66	**12.41**

DISTANCE TO REACH 100 MPH: 0.21
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 110 mph

DISTANCE TO REACH TOP SPEED: 1,915.89 ft.
TIME TO REACH TOP SPEED: 16.85 seconds

Yamaha FJR1300

BEGINNING TIME: 12:59 p.m. **TEMPERATURE:** 73.0° F
WIND VELOCITY: 5.8 mph **WIND DIRECTION:** South Southwest

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	4.31	4.09	4.09	3.92	**4.10**
0 – 80	6.71	6.33	6.31	6.06	**6.35**
0 – 100	10.52	9.69	9.80	9.23	**9.81**

DISTANCE TO REACH 100 MPH: .16
DISTANCE TO REACH 120 MPH: .34

TOP SPEED ATTAINED: 143 mph

DISTANCE TO REACH TOP SPEED: 40,726.63 ft.
TIME TO REACH TOP SPEED: 209.92 seconds

TEST LOCATION: FCA Proving Grounds **DATE:** September 14, 2017

Zero DSRP

BEGINNING TIME: 2:20 p.m. **TEMPERATURE:** 75.0° F
WIND VELOCITY: 6.9 mph **WIND DIRECTION:** Southwest

SPEEDS	RUN 1	RUN 2	RUN 3	RUN 4	AVERAGE
0 – 60	4.73	4.69	4.89	4.89	**4.80**
0 – 80	7.63	7.49	7.86	7.86	**7.71**
0 – 100	15.14	13.38	16.59	15.24	**15.09**

DISTANCE TO REACH 100 MPH: .25
DISTANCE TO REACH 120 MPH: N/A

TOP SPEED ATTAINED: 102 mph

DISTANCE TO REACH TOP SPEED: 1,634.39 ft.
TIME TO REACH TOP SPEED: 15.62 seconds

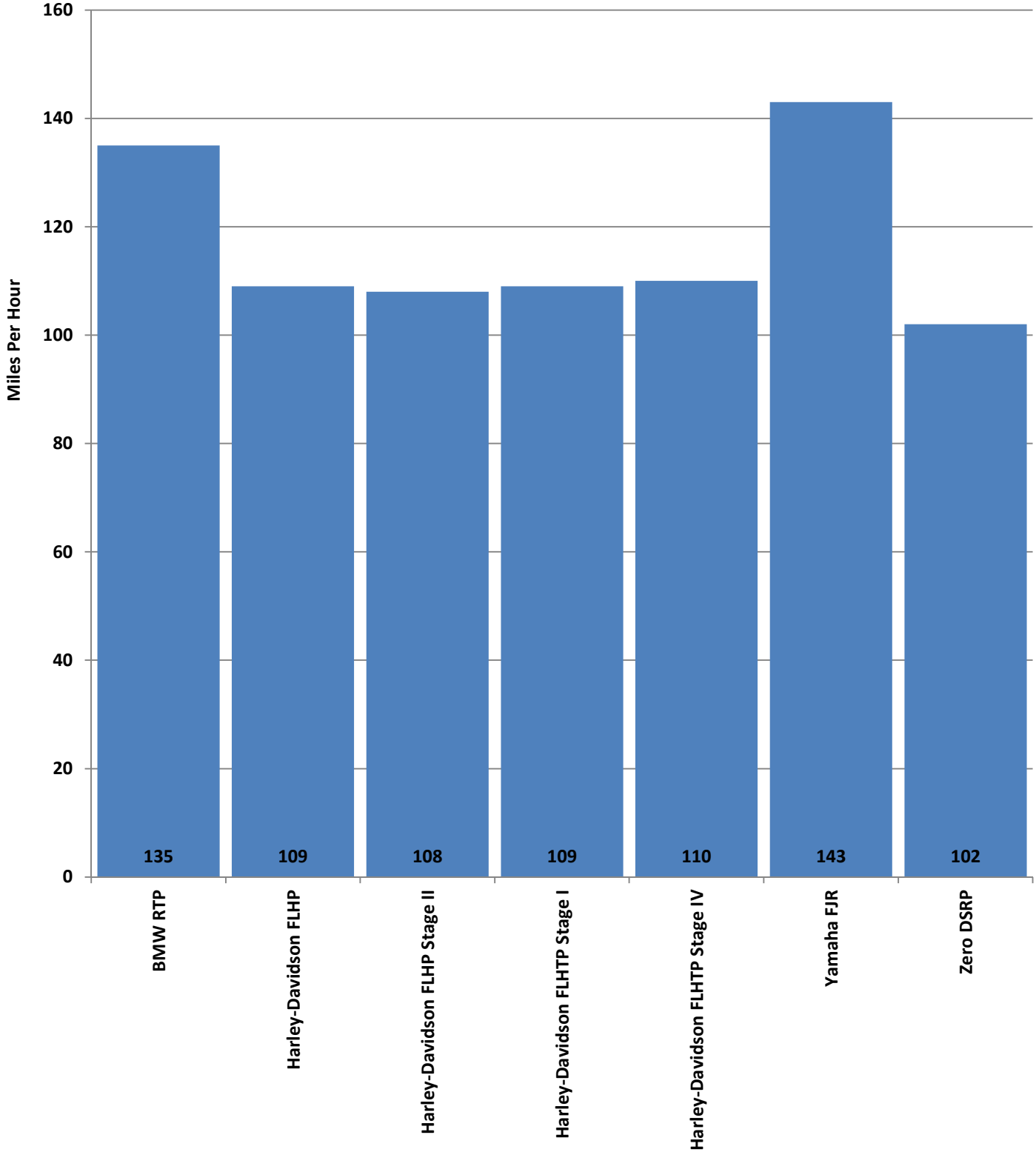
This year marks the first time an electric vehicle's range was included as part of the evaluation process in order to provide pertinent information to the reader. After the acceleration testing at Chelsea Proving Grounds, the Zero DSRP completed two laps (9.42 miles) each at a constant speed of 70 mph, 55 mph and 35 mph. The state of charge or battery level was recorded at the start and end of each lap. Due to the Zero's linear discharge rate at any given speed, an expected range for each speed could then be calculated. The weight of the test rider and protective gear was approximately 240 lbs. Expected range was calculated by dividing the distance traveled (9.42 miles) by the percent change in state of charge (SOC).

SPEED	SOC Start	SOC After Lap 1	SOC After Lap 2	Change	Expected Range (mi)
70 mph	76	69	59	17	55.41
55 mph	59	52	46	13	72.46
35 mph	46	42	37	9	104.67

SUMMARY OF MOTORCYCLE ACCELERATION & TOP SPEED

	BMW RTP	Harley-Davidson FLHP	Harley-Davidson FLHP Stage II	Harley-Davidson FLHTP Stage I	Harley-Davidson FLHTP Stage IV	Yamaha FJR	Zero DSRP
ACCELERATION							
0 – 20 mph (seconds)	1.50	1.23	1.22	1.22	1.22	1.24	1.44
0 – 30 mph (seconds)	2.15	1.86	1.82	1.89	1.87	1.91	2.21
0 – 40 mph (seconds)	2.75	2.69	2.58	2.73	2.54	2.55	3.02
0 – 50 mph (seconds)	3.55	3.87	3.62	3.88	3.46	3.13	3.84
0 – 60 mph (seconds)	4.36	5.26	4.77	5.16	4.44	4.10	4.80
0 – 70 mph (seconds)	5.46	7.01	6.39	6.99	5.79	5.04	6.04
0 – 80 mph (seconds)	6.69	9.33	8.20	9.18	7.33	6.35	7.71
0 – 90 mph (seconds)	8.36	12.68	11.04	12.80	9.52	7.85	10.26
0 – 100 mph (seconds)	10.34	19.12	14.77	18.80	12.41	9.81	15.09
TOP SPEED (mph)	135	109	108	109	110	143	102
DISTANCE TO REACH							
100 mph (feet)	872.65	1,867.25	1,569.05	1,661.37	1,106.89	841.48	1,301.16
120 mph (feet)	2021.66	N/A	N/A	N/A	N/A	1816.22	N/A
Top Speed (feet)	6,879.27	3,212.81	2,579.10	3,239.03	1,915.89	40,726.63	1,634.39

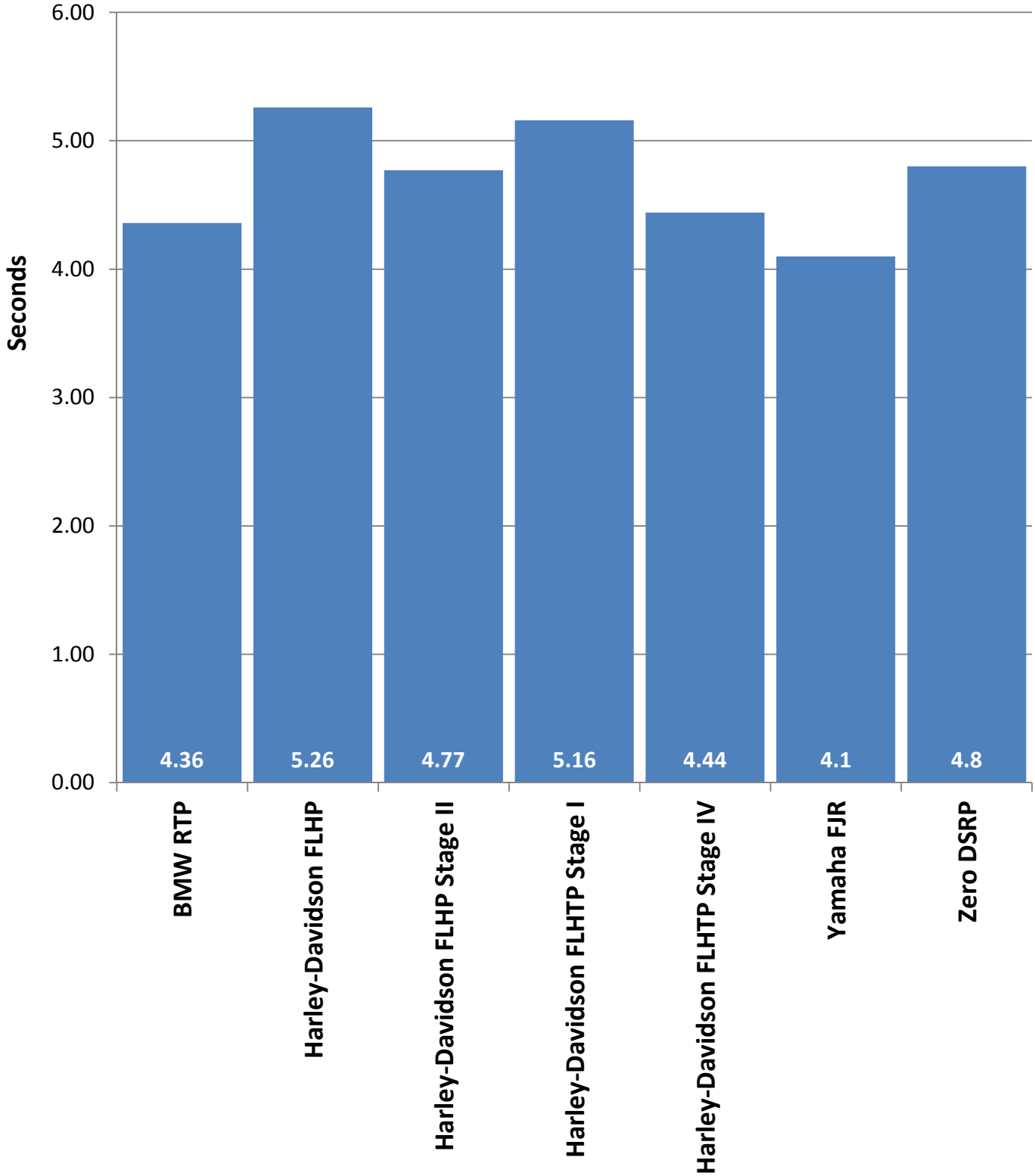
2018 Motorcycle Top Speed Comparison
Top Speed Attained



2018 Motorcycle Acceleration Comparison

Acceleration Times

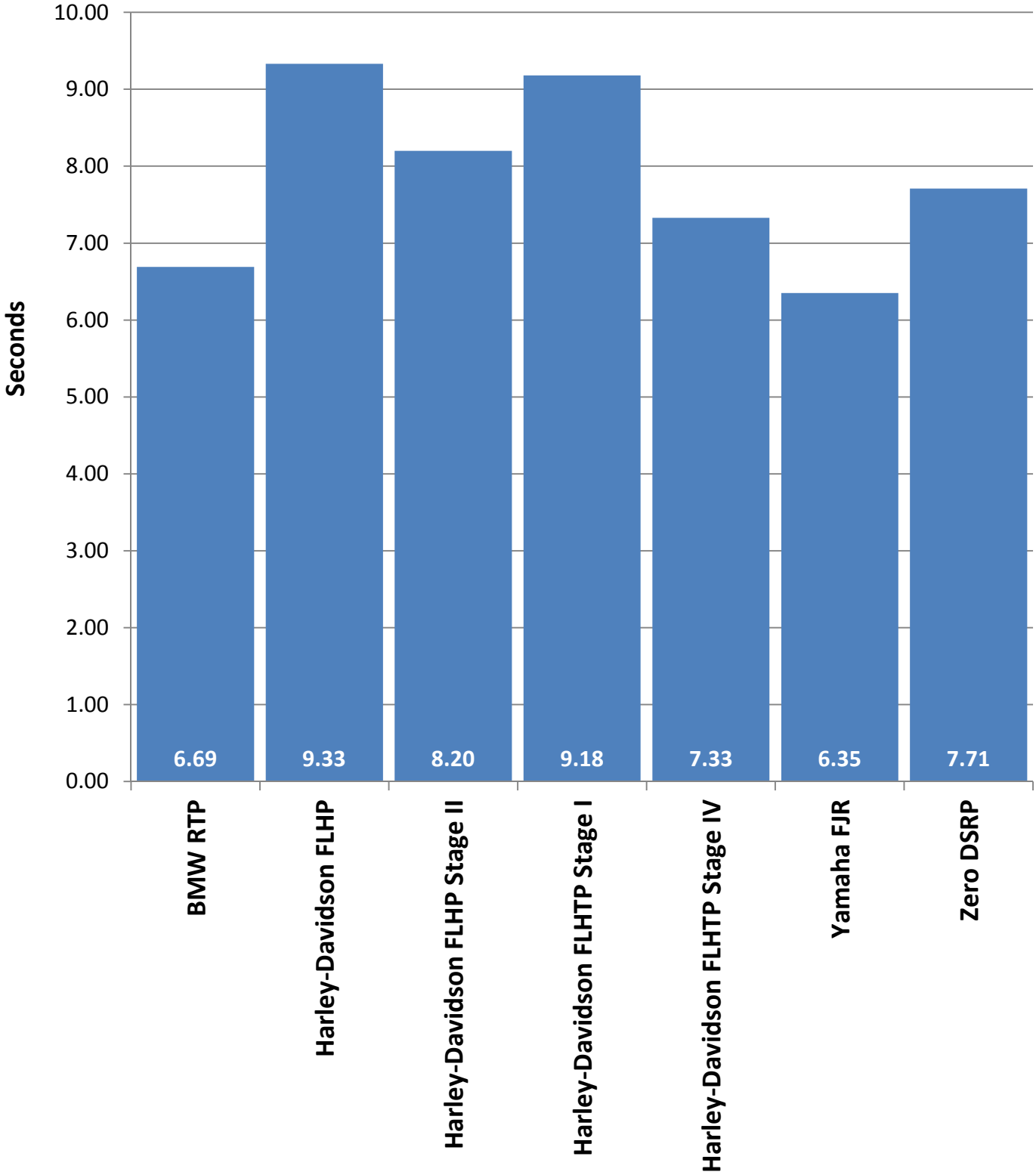
0-60 mph



2018 Motorcycle Acceleration Comparison

Acceleration Times

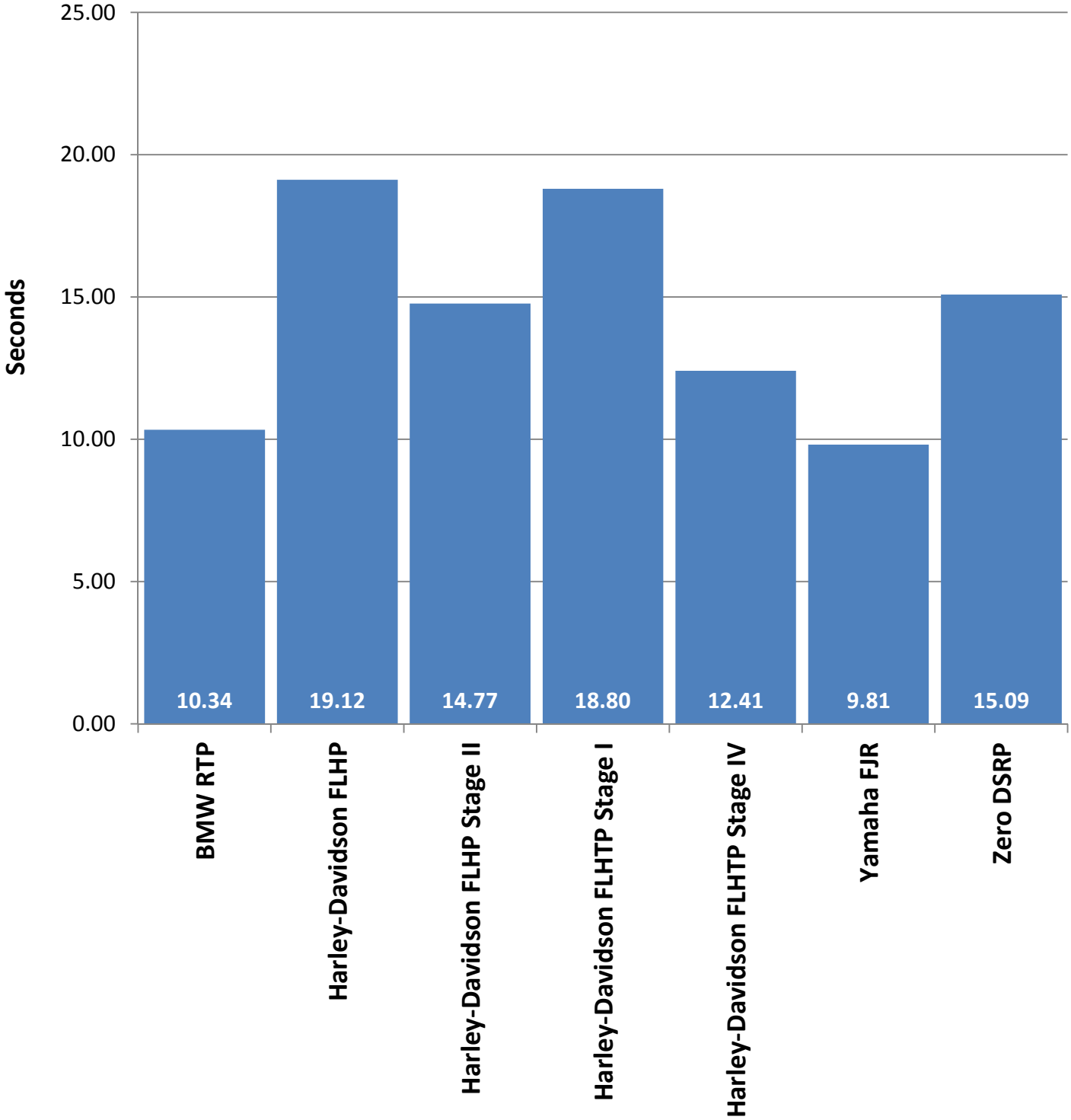
0-80 mph



2018 Motorcycle Acceleration Comparison

Acceleration Times

0-100 mph



MOTORCYCLE BRAKE TESTING

BRAKE TEST OBJECTIVE

To determine the deceleration rate attained by each test motorcycle on twenty 60 – 0 mph full ABS maximum deceleration panic stops. Each motorcycle will be scored on the average deceleration rate it attains.

BRAKE TEST METHODOLOGY

Each motorcycle makes ten measured 60 – 0 mph full ABS maximum deceleration panic stops, at specific predetermined points. After a one-mile lap to cool the brakes, the entire sequence is repeated. The exact initial velocity at the beginning of each of the 60 – 0 mph decelerations, and the exact distance required to make each stop, is recorded by means of a Race Logic Vbox 3i GPS based data collection unit. The data resulting from the twenty total stops is used to calculate the average deceleration rate which is the motorcycle's score for this test. To ensure consistency, the same rider performs all the stops on every motorcycle.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity*(IV) squared}}{\text{2 times Stopping Distance (SD)}} = \frac{(IV)^2}{2\,(SD)}$$

EXAMPLE:

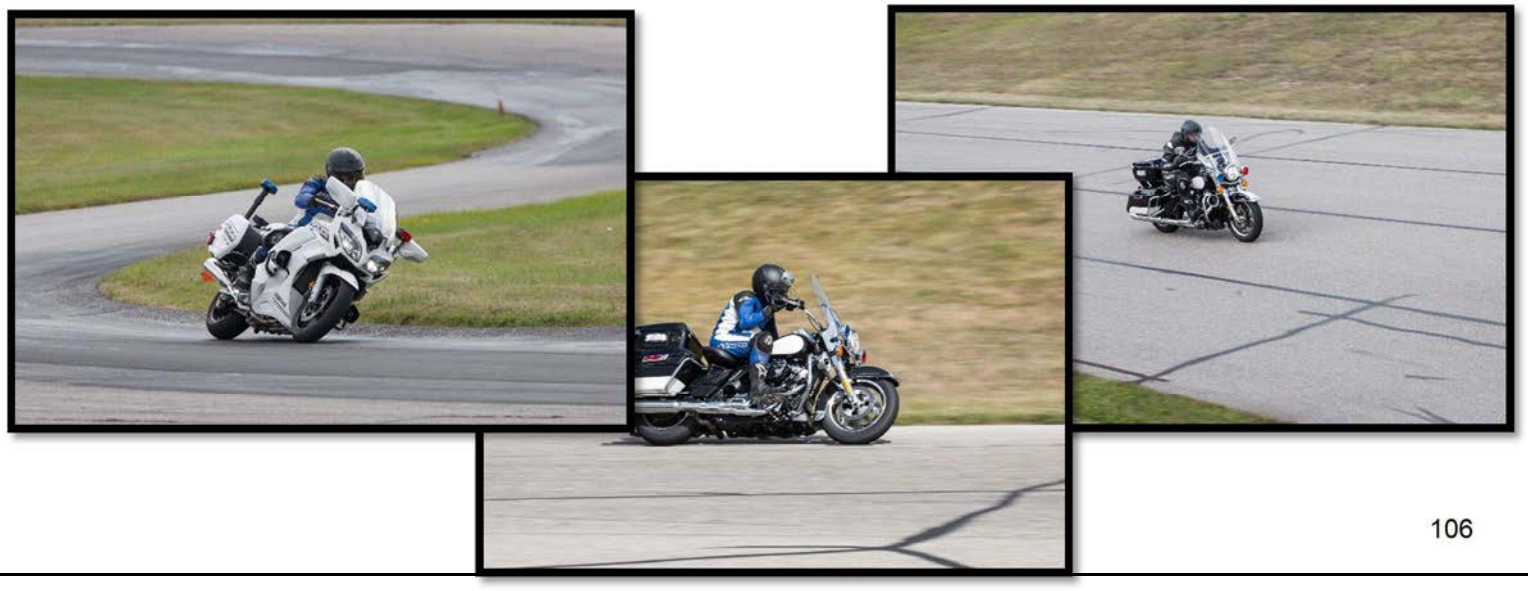
Initial Velocity = 89.175 ft/s (60.8 mph x 1.4667*)
Stopping Distance = 171.4 ft.

$$DR = \frac{(IV)^2}{2(SD)} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

Once a motorcycle's average deceleration rate has been determined, it is possible to calculate the stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the motorcycle in question.

EXAMPLE: 60 mph = 88.002 ft/s x 88.002 = 7744.352 / 2 = 3872.176 / 23.198 ft/s^2 = 166.9 ft.



BRAKE TESTING

BMW R 1200 RT-P

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 9:34 a.m.

AIR TEMPERATURE: 66.0° F	**TRACK SURFACE TEMPERATURE:** 68.2° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	56.88	115.79	30.05
2	57.52	117.89	30.18
3	61.68	134.85	30.34
4	60.18	128.04	30.42
5	59.92	130.50	29.59
6	59.86	130.54	29.52
7	59.17	127.98	29.42
8	59.55	136.58	27.93
9	58.69	123.47	30.01
10	59.19	132.28	28.48
AVERAGE DECELERATION RATE:			**29.59 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.43	122.40	31.03
2	58.74	124.28	29.86
3	58.91	125.77	29.68
4	58.82	125.66	29.61
5	59.39	125.42	30.25
6	59.67	124.57	30.74
7	60.27	132.98	29.38
8	59.59	128.03	28.72
9	59.69	129.10	29.68
10	**Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**29.88 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**29.73 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**130.24 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Harley-Davidson FLHP

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 11:19 a.m.

AIR TEMPERATURE: 62.1° F	**TRACK SURFACE TEMPERATURE:** 84° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.15	131.65	29.56
2	58.85	122.16	30.49
3	59.94	130.74	29.56
4	59.33	130.05	29.11
5	60.16	139.74	27.85
6	60.51	133.12	29.58
7	60.34	138.72	28.23
8	59.15	131.15	28.69
9	60.67	142.35	27.81
10	60.31	136.05	28.75
AVERAGE DECELERATION RATE:			**28.97 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.79	136.83	28.10
2	60.42	143.89	27.29
3	60.58	132.57	29.77
4	61.24	143.37	28.14
5	59.68	131.94	29.03
6	60.86	146.79	27.14
7	59.97	137.24	28.19
8	60.64	142.67	27.72
9	59.78	132.96	28.91
10	61.28	144.31	27.99
AVERAGE DECELERATION RATE:			**28.23 ft/s²**

Phase II

OVERALL AVERAGE DECELERATION RATE:	**28.60 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**135.39 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

*****All Motorcycles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Harley-Davidson FLHP Stage II

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 9:46 a.m.

AIR TEMPERATURE: 61.0° F	**TRACK SURFACE TEMPERATURE:** 70.6° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.79	133.83	28.73
2	58.80	126.90	29.30
3	59.70	129.41	29.62
4	59.26	124.51	30.33
5	61.07	136.26	29.44
6	59.43	127.13	29.88
7	58.94	131.45	28.43
8	57.82	126.17	28.50
9	59.74	136.76	28.07
10	58.77	129.21	28.75
AVERAGE DECELERATION RATE:			**29.11 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	58.60	124.86	29.58
2	59.41	134.78	28.16
3	58.90	128.20	29.11
4	59.85	141.42	27.24
5	59.21	130.60	28.87
6	59.71	136.25	28.14
7	59.07	134.16	27.98
8	60.06	142.90	27.15
9	58.84	133.68	27.86
10	59.80	139.34	27.61
AVERAGE DECELERATION RATE:			**28.17 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.64 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**135.20 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

*****All Motorcycles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Harley-Davidson FLHTP Stage I

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 10:53 a.m.

AIR TEMPERATURE: 72.0° F	**TRACK SURFACE TEMPERATURE:** 81.2° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.35	133.22	29.40
2	59.76	129.59	29.64
3	59.43	133.32	28.49
4	59.81	131.17	29.33
5	60.88	139.96	28.48
6	60.10	131.90	29.46
7	61.33	138.58	29.19
8	61.04	135.31	30.66
9	59.70	135.98	28.19
10	60.50	136.75	28.79
AVERAGE DECELERATION RATE:			**29.16 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.53	133.47	29.53
2	60.59	143.77	27.47
3	59.50	129.64	29.37
4	60.86	144.74	27.52
5	60.27	137.37	28.44
6	60.64	140.49	28.15
7	60.51	139.17	28.30
8	60.28	139.01	28.11
9	60.34	137.17	28.55
10	60.49	147.13	26.75
AVERAGE DECELERATION RATE:			**28.22 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**28.69 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**134.97 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

*****All Motorcycles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Harley-Davidson FLHTP Stage IV

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 9:16 a.m.

AIR TEMPERATURE: 60.1° F	**TRACK SURFACE TEMPERATURE:** 67° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	58.96	132.58	28.20
2	58.05	126.43	28.67
3	59.44	137.21	27.70
4	58.64	131..67	28.09
5	59.37	137.77	27.52
6	58.99	134.59	26.88
7	59.19	133.04	28.32
8	59.75	138.06	27.81
9	59.13	135.86	27.68
10	59.12	130.60	28.78
AVERAGE DECELERATION RATE:			**27.97 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.24	130.42	28.94
2	59.75	140.79	27.27
3	58.74	132.58	27.99
4	59.81	141.15	27.26
5	59.50	134.97	28.21
6	60.87	148.72	26.81
7	59.34	134.10	28.24
8	59.90	143.17	26.95
9	59.79	140.80	27.31
10	60.13	143.39	27.12
AVERAGE DECELERATION RATE:			**27.61 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.79 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**139.34 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

*****All Motorcycles Tested are Equipped with Anti-Lock Brakes*****

BRAKE TESTING

Yamaha FJR1300

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 10:37 a.m.

AIR TEMPERATURE: 71.6° F	**TRACK SURFACE TEMPERATURE:** 79° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.15	147.10	26.45
2	59.03	133.96	27.98
3	59.77	139.50	25.87
4	59.52	134.58	28.32
5	59.94	141.34	27.34
6	60.14	142.18	27.31
7	60.61	150.97	26.17
8	59.95	139.08	27.80
9	**Not recorded due to data collection error		
10	**Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**27.16 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.29	153.62	25.45
2	59.03	138.61	27.04
3	59.72	143.80	26.68
4	59.88	140.43	27.46
5	60.47	147.69	26.63
6	60.38	145.73	26.91
7	59.44	144.18	26.36
8	60.21	137.12	28.44
9	**Not recorded due to data collection error		
10	**Not recorded due to data collection error		
AVERAGE DECELERATION RATE:			**26.87 ft/s²**

Phase III

OVERALL AVERAGE DECELERATION RATE:	**27.01 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**143.36 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

BRAKE TESTING

Zero DSRP

TEST LOCATION: MSP Precision Drive Track	**DATE:** September 15, 2017	**BEGINNING TIME:** 11:06 a.m.

AIR TEMPERATURE: 72.2° F	**TRACK SURFACE TEMPERATURE:** 83.4° F

Phase I

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	60.25	143.86	27.14
2	60.16	148.82	26.15
3	60.99	148.64	26.92
4	60.10	139.56	27.84
5	60.11	142.17	27.33
6	61.00	147.00	27.23
7	59.34	127.34	29.74
8	58.10	132.02	27.50
9	59.38	132.50	28.62
10	60.21	137.16	28.43
AVERAGE DECELERATION RATE:			**27.79 ft/s²**

(One cool down lap at 45 mph)

Phase II

(Ten 60 – 0 mph full ABS maximum deceleration stops)

Stop #	Initial Velocity *(mph)*	Stopping Distance *(feet)*	Deceleration Rate *(ft/s²)*
1	59.39	140.74	26.96
2	60.64	145.58	27.17
3	59.83	130.23	29.56
4	59.55	134.43	28.37
5	60.41	141.64	27.71
6	60.83	148.32	26.83
7	60.09	138.52	28.04
8	60.51	144.10	27.33
9	59.81	135.07	28.48
10	60.13	137.40	28.30
AVERAGE DECELERATION RATE:			**27.88 ft/s²**

Phase III

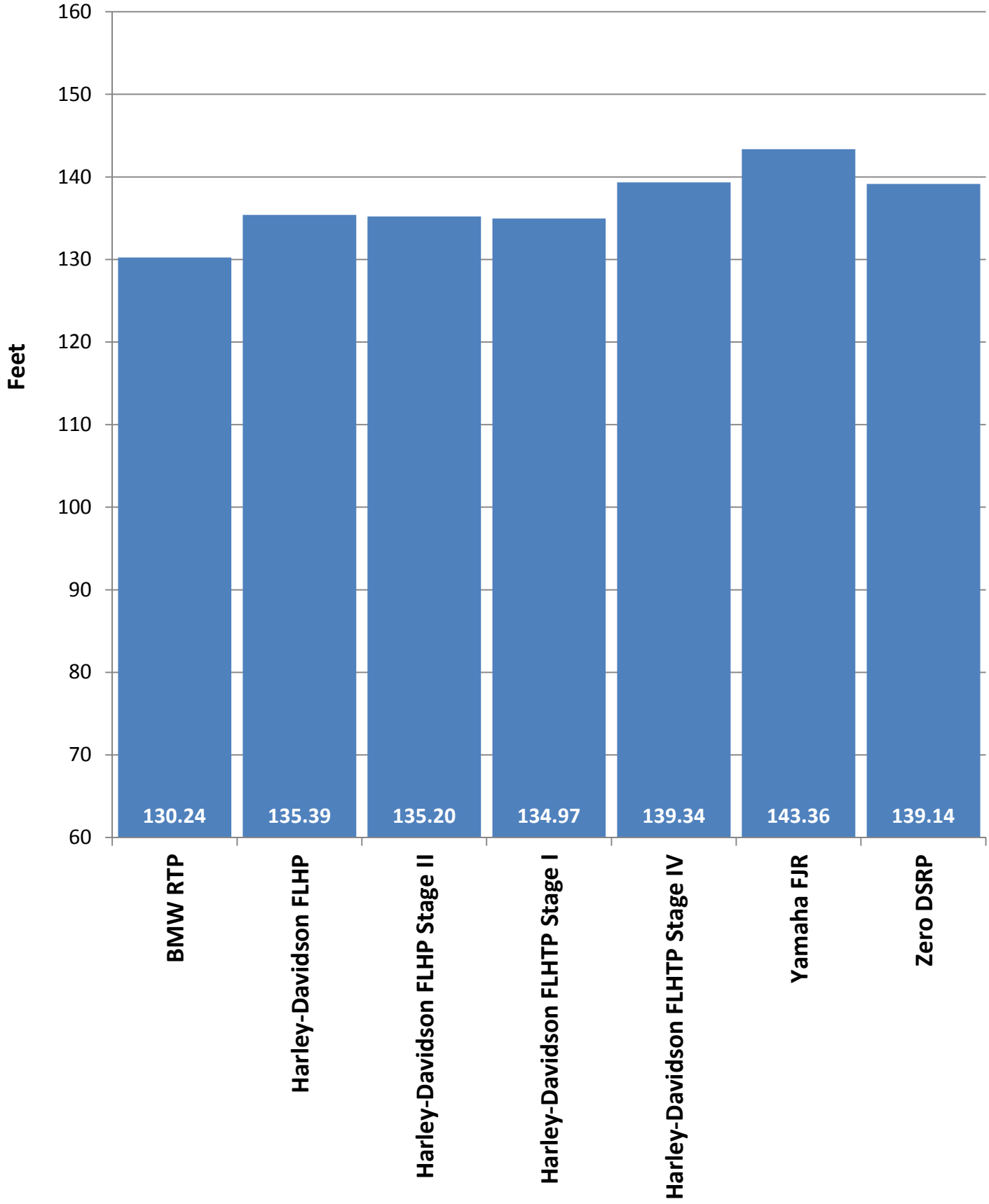
OVERALL AVERAGE DECELERATION RATE:	**27.83 ft/s²**
PROJECTED STOPPING DISTANCE FROM 60.0 mph:	**139.14 feet**

Evidence of Severe Fading?	No
Motorcycle Stopped in Straight Line?	Yes
Motorcycle Stopped Within Correct Lane?	Yes

All Motorcycles Tested are Equipped with Anti-Lock Brakes*

2018 Motorcycle Brake Testing

Projected Stopping Distance



For Your Information

About the National Institute of Justice

NIJ — the research, development, and evaluation agency of the U.S. Department of Justice - is dedicated to improving knowledge and understanding of crime and justice issues through science. NIJ provides objective and independent knowledge and tools to inform the decision-making of the criminal justice community to reduce crime and advance justice, particularly at the state and local levels.

NIJ's pursuit of this mission is guided by the following principles:

- Research can make a difference in individual lives, in the safety of communities and in creating a more effective and fair justice system.
- Government-funded research must adhere to processes of fair and open competition guided by rigorous peer review.
- NIJ's research agenda must respond to the real world needs of victims, communities, and criminal justice professionals.
- NIJ must encourage and support innovative and rigorous research methods that can provide answers to basic research questions as well as practical, applied solutions to crime.
- Partnerships with other agencies and organizations, public and private, are essential to NIJ's success.

The National Institute of Justice is committed to being a transformative force in the criminal justice field by meeting five strategic challenges:

1. **Fostering science-based criminal justice practice** - supporting rigorous scientific research to ensure the safety of families, neighborhoods, and communities.
2. **Translating knowledge to practice** - disseminating rigorous scientific research to criminal justice professionals to advance what works best in preventing and reducing crime.
3. **Advancing technology** - building a more effective, fair and efficient criminal justice system through technology.
4. **Working across** disciplines - connecting the physical, forensic and social sciences to reduce crime and promote justice.
5. **Bolstering the research** infrastructure - supporting young scholars, encouraging researchers from a broad array of disciplines to apply their work to criminal justice, and increasing the availability of research findings and data.
6. **Adopting a global** perspective - understanding crime in its social context within the U.S. and globally.

About the Standards and Testing Program

The NIJ Standards and Testing Program develops and publishes equipment standards that specifically address the needs of law enforcement, corrections, and other criminal justice agencies. The goal is to ensure to the degree possible that equipment is safe, reliable, and performs according to established minimum requirements.

NIJ standards are voluntary standards. Manufacturers are neither required nor mandated to follow them. They are also performance standards. They do not specify a particular solution, but rather define what a potential solution must accomplish.

Even though NIJ standards are not regulatory in nature, they are nevertheless influential because they articulate best practice. They obtain their influence from an agency's consideration of the legal or monetary penalties that may ensue as a consequence of a bad outcome resulting from not adopting a standard.

Having a standard provides the end user with performance information on key equipment characteristics, provides a level of confidence in a product's fitness for use and allows comparison of products based on standardized testing methods and minimum performance requirements.

NIJ standards are an articulation of the criminal justice practitioner's operational needs and associated performance levels with regard to particular tools and technology. They reflect the practical experiences of the community in the field articulated in such a way as to enable testing in a valid and consistently replicable manner.

NIJ also supports testing programs based on the standards.

For more information, please visit the NIJ website at http://www.nij.gov/topics/technology/standards-testing/Pages/welcome.aspx, or JUSTNET, the website of the Justice Technology Information Center, at https://www.justnet.org/compliant/Learn-about-testing.html. JTIC manages the Compliance Testing Program for NIJ