



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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## FLEETS SELF-TESTING GUIDANCE DOCUMENT



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Revision 1





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## Definitions

The following definitions apply to the Fleet Testing Guidelines:

“Agency” means the Illinois Environmental Protection Agency.

“Fleet Inspection Agreement” means an agreement between a fleet permittee and Applus+ Technologies, containing customary contractual provisions, such as termination (for default, for convenience, etc.) and effects of breach (including late and/or nonpayment).

"Fleet Inspection Permit" means a permit issued to fleet self-testers in accordance with 35 Illinois Administrative Code, Ch. II, Sec.276.701 Subpart G.

"Fleet inventory" means those vehicles which have been registered with the Agency for the purpose of fleet self-testing and which have been assigned a test month.

"Fleet vehicle" means any non-exempt vehicle registered with the Agency for the purpose of fleet self-testing.

"Official Inspection Station" means a vehicle emissions inspection facility operated by the Agency or the Agency's Contractor for the purpose of conducting emission inspections on non-fleet vehicles.

"Private Official Inspection Station" means a vehicle emission inspection facility operated by a registered owner or lessee of 15 or more non-exempt fleet vehicles.

"Vehicle Inspection Report" means a report issued to the motorist indicating the results of an emission inspection or waiver determination.

“Fleet Inspection Training” means a training course given by the Agency consisting of at least 20 hours of classroom instruction (which will include 10 hours of video/computer-based training) that must be successfully completed by all fleet personnel. In addition, the Fleet Inspection Training will consist of a minimum of 10 hours of field (hands-on) instruction.





## FLEET TESTING PROGRAM GUIDELINES

Owners and operators of fleets with 15 or more vehicles that are subject to emissions testing requirements can apply to the Illinois Environmental Protection Agency (Agency) for a permit to establish and operate a private official inspection station for the limited purpose of self-testing their fleet of vehicles. Self-testing must be conducted in conformance with applicable federal and state vehicle emissions testing rules and meet all quality assurance and quality control requirements.

### Fleet Inspection Permit

The Agency may issue Fleet Inspection Permits to eligible applicants upon a showing of compliance with the following requirements:

#### A. Equipment

All fleet inspections shall be conducted utilizing equipment that meets the same functional requirements, performance criteria, maintenance standards, and calibration requirements as equipment used in Official Inspection Stations. Fleets can choose workstations capable of performing OBD tests, or workstations capable of performing both OBD and idle tests.

Prior to installation of testing equipment in the designated testing area, Applus will perform a site evaluation along with the Agency to determine the suitability of the testing area for equipment and placement of cameras. After initial installation, Fleet Self-Testers shall have the option to request relocation of equipment at a site within the Illinois testing area.

All requests for relocation will require a site evaluation for the new locations. Up to four (4) relocations per 12-month period, not to exceed two relocations in any 30-day period, will be allowed for each equipment package purchased, at no additional charge. Applus agrees to accommodate equipment relocations exceeding four (4) during a 12-month period or two (2) during a 30-day period at a cost of \$750 to the Fleet Self-Tester. The Fleet Self-Tester will provide a schedule for testing and the various locations as part of their contract with Applus.

### **OBD Test System**

#### Description

The OBD interface uses Multiplex OBD communications module, along with Applus AutoLogic OBD communications software and a standard OBD diagnostic link connector per the specifications below. A





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5-meter cable will be mounted just outside of the testing equipment. The cable and inspection area are laid out to prevent the OBD cable from being used to fraudulently test another vehicle.

### Features/Specifications

Multiplex engineering hardware interface with Applus AutoLogic DLL software interface.

Full OBD, SAE J1978, SAE J1979, SAE HS-3000 Scan Tool Compliant. Capable of reading emission-related codes on model year 1996 and newer vehicles, all makes and models. Test designed to current Agency standards. Supports all protocols including CAN, VPW, PWM, ISO, and KEYWORD (KWP). Meets Agency and federal OBD requirements, as detailed in the Code of Federal Regulations at 40 CFR 85.2231.

Intelligent Previous Vehicle OBD Characteristics. The OBD workstation software works in conjunction with the inspection station server and the e-VID to enable faster and more secure OBD testing. The system records the OBD characteristics of a vehicle during an initial vehicle test for accurate vehicle identification and fraud prevention during subsequent tests. The compliance of the vehicle-specific OBD characteristics will be used in tandem with the general fingerprinting technique described in the next section.

After a single emissions test, the testing equipment:

- 1) Compares initial protocols with subsequent test protocols. The OBD workstation allows the Agency to reject a vehicle from testing if protocols have changed.
- 2) Increases testing efficiency by automatically connecting to the vehicle using the initial protocol.
- 3) Compares initial and subsequent readiness monitors and OBD PID (parameter ID) data in order to reject vehicles for testing, as necessary.
- 4) Identifies a record and vehicle's PID count, PCM module ID, calibration identification number, and calibration verification number.
- 5) Automatically identifies a vehicle by obtaining the VIN when the VIN command is supported by a vehicle. VIN command response will be used as another method of fingerprinting a vehicle.
- 6) Obtains additional important information using the latest generic OBD PIDS, including the number of miles since the malfunction indicator light (MIL) was reset and the number of miles the vehicle was driven with the MIL on.

### Idle Test System





## Gas Analyzer

### Description

The system used for the idle exhaust test will be a BAR97 approved gas analyzer. It will contain heavy duty sample and water filtration system designed to handle high throughput and a large, durable pump for rapid flow rate and sample delivery.

### Features/Specifications

The analyzer will meet the following specifications:

- **Measurement Method**
  - NDIR (non-dispersive infrared) for HC, CO, CO<sub>2</sub>, electrochemical cell for O<sub>2</sub>
- **Measured Gases**
  - HC, as either n-hexane or propane
  - CO, carbon monoxide
  - CO<sub>2</sub>, carbon dioxide
  - O<sub>2</sub>, oxygen
- **Measurement Range**
  - HC: 0 to 30,000 pp, (n-hexane)
  - CO: 0 to 15%
  - CO<sub>2</sub>: 0 to 20%
  - O<sub>2</sub>: 0 to 25%
- **Operating Environment**
  - 0° to 50°C (32° to 122°F) to 95% humidity
  - -300 to 2,500 m (-1,000 to 8,000 ft)
- **Measurement Resolution**
  - HC: 1 ppm
  - CO: 0.001%
  - CO<sub>2</sub>: 0.01%
  - O<sub>2</sub>: 0.1%
- **Measurement Accuracy**
  - Meets or exceeds BAR97 and ASM accuracy standards



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The analyzer system will be contained in a metal enclosure mounted near the outside of the inspector's booth. The enclosure will contain the following items on it:

- A fused AC power inlet.
- A circular plastic connector for the RS232 communications cable.
- A quick disconnect connector for the sample probe.
- Three external ports for calibration.

Each full service station will be equipped with calibration bottle kits as well as a sufficient supply of filters and other consumables.

### Tachometer

#### Description

The tachometer used for RPM pickup will make use of existing RPM measurement technologies.

#### Features/Specifications

It will have a resolution of +/-1 RPM and will be connected to the vehicle using the following methods:

- Number one cylinder using inductive probe.
- Primary circuit using inductive probe.
- Battery tachometer using battery clamps or cigarette lighter

The tachometer will hang on a hook on the outside of the inspector's booth and will be connected to the workstations via a standard RS232 cable.

### Gas Cap Tester

#### Description





The gas cap tester used for pressure testing the vehicle gas caps will be the Waekon WAE-FPT27EX1 tester. The tester will be connected to the workstation via an external RS232 cable. The tester uses a 20 foot coiled hose as well allowing it to be used by hanging it on the wall or allowing the inspector to carry it to the vehicle via a shoulder strap.

### Features/Specifications

The gas cap tester will meet the following specifications:

- **Electrical / Mechanical Specifications:**
  - Tester Size: 12" l x 9" h x 3" w
  - Weight: 76 oz. (4.75 lbs.) without adapters
  - Enclosure: ABS thermoplastic (black)
  - Coil Hose: 20' (15' usable) retracts to 3'
  - Inspector Interface: Red/green/yellow LEDs, 1 push button
  - I/O Receptacle: RJ45 female 8 contact
  - Air Filter: 100 micron - upstream of internal orifice
  - Durability: 6' drop/oil and gasoline resistant
  - Communications: RS232C fixed @ 2400 baud ,N,8,1
  - Input Voltage: 11-14 VDC, supplied by host computer
  - Operating Current: 300 mA. maximum
  - Over Voltage Protection: 20 VDC surge suppressor
  - Over Current Protection: Resettable polyfuse 0.5A
- **Measurement:**
  - Flow Rate Method: Comparative reference
  - Test Duration: 5-20 seconds
  - Test Pressure Regulation: 30" H<sub>2</sub>O gauge +/- 1"
  - Flow Rate Pass/Fail Point: 60 cc/minute +/- 3 cc/minute
- **Operating Conditions:**
  - Temperature Range: 15-110° F
  - Altitude Range: - 60-7000'
  - Humidity Range: 0-100% (non-condensing)
- **PASS/FAIL Adapter:**
  - Pass Setting Flow Range: 52-56 cc/min.
  - Fail Setting Flow Range: 64-68 cc/min.





## Data Communications Requirements

Permittees must provide, at their own expense, a high-speed internet connection (DSL or better) with a static IP address at each location where emissions testing is to be performed.

## B. Training

All fleet personnel conducting emissions tests (inspectors) are required to complete and pass a 30-hour training course given by Applus+ Technologies covering the following topics:

- 1) vehicle emissions testing rules and regulations;
- 2) testing procedures;
- 3) analyzer use;
- 4) analyzer calibration and quality control; and
- 5) data recording, record keeping and submittal.

This training includes 20 hours of classroom instruction covering the following:

The air pollution problem, its causes and effects with particular attention paid to the contribution from motor vehicles.

The purpose, function, and goals of the Illinois vehicle emissions testing program.

Vehicle emissions and standards.

Inspection regulations and procedures.

Technical details of the test procedures and the rationale for their design and utilization.

Importance of meeting performance standards and conducting emissions tests in accordance with Agency approved procedures.

The relationship and expectations between the fleet permittee, the Agency and Applus+ Technologies.

In addition to the subject areas listed above, the training includes at least 10 hours of field (hands-on) instruction covering the following:





Proper identification of vehicles, vehicle data record access, retrieval and validation, and classification of vehicles by type, model year, emissions standards classification, vehicle weight, etc.

Emission control device function, configuration and inspection (with emphasis on location of and access to OBD diagnostic link connectors).

Emission test equipment operation, calibration, and maintenance.

Illinois emissions inspection procedures.

Quality control procedures and their purpose.

Safety and health issues related to the inspection process.

## C. General Requirements

- 1) Fleet Inspection Permits expire two years after the date of issuance.
- 2) Fleet Inspection Permits are not transferable.
- 3) Any change in the name and/or address of any permittee or any fleet inspector(s) employed by the permittee shall be reported to the Agency in writing on forms provided by the Agency within 30 days after the change.
- 4) A permit shall be issued for each location approved for testing.

## D. Fleet Inspection Permit Suspension and Revocation

For the following reasons, the Agency may suspend for a period of up to two years, or revoke with the permittee being ineligible to reapply for two years, a Fleet Inspection Permit:

- 1) the permittee violated any applicable laws, rules, and/or regulations;
- 2) the permittee provided false or misleading information in its application for a Fleet Inspection Permit;
- 3) the permittee failed to keep proper records as required by the Agency, such as but not limited to:
  - i) the permittee failed to notify Applus+ and the Agency that a vehicle has been deleted from its vehicle inventory within 10 days after the vehicle's disposal; or
  - ii) in the event 20 percent of the vehicles in the permittee's fleet have expired compliance certificates;
- 4) the permittee misrepresented any information provided in fleet vehicle lists, vehicle inspection reports, and/or equipment maintenance and calibration reports;
- 5) the number of vehicles subject to inspection in the permittee's fleet becomes less than 15;





- 6) the permittee failed to pay their monthly fee(s); or
- 7) the permittee declared bankruptcy.

In order to participate in the program, Permittees will be required to execute a Fleet Inspection Agreement with Applus+ Technologies. This Fleet Inspection Agreement contains customary contractual provisions, such as termination (for default, for convenience, etc.) and effects of breach (including late and/or nonpayment). In addition to its obligations under applicable law, permittee's nonpayment for its participation in the program may result in permit suspension and/or revocation under the Fleet Inspection Agreement.

### **Fleet Inspection Permittee Operating Requirements**

Fleet Inspection Permittees must comply with the following requirements:

#### **A. Vehicle Eligibility**

The permittee shall furnish the Agency with a list of all vehicles subject to inspection that the fleet wishes to self-test. The Agency will provide forms to the permittee for the purpose of establishing a fleet vehicle inventory and assigning vehicle inspection dates. The information shall be submitted to the Agency either on the forms supplied, or by electronic media in a format specified by the Agency.

The permittee shall notify the Agency in writing on forms provided by the Agency or by electronic media in a format specified by the Agency in the event that any vehicles in the fleet inventory are sold or otherwise removed from fleet service. This notification shall be made within 10 days from when vehicle is removed from fleet.

Unless authorized by the Agency, vehicles contained in the fleet vehicle inventory can only be inspected at the specified Private Official Inspection Station. If authorization is given by the Agency for a vehicle contained in the fleet vehicle inventory to be tested or retested at an Official Inspection Station, any subsequent retests in that vehicle's testing cycle shall be conducted at an Official Inspection Station.

#### **B. Inspection Frequency/Scheduling.**

All vehicles in the fleet inventory shall be inspected biennially. Application for renewal of vehicle's registration will be denied unless the vehicle has complied with the Vehicle Emissions Inspection Law of 2005.

#### **C. Inspection Reports and Stickers or Certificates**





1) Inspection certificates shall be displayed or possessed in accordance with Section 276.310 of the Agency's rules.

2) The permittee shall retain a legible copy of each completed Vehicle Inspection Report for a minimum of two years after the date of inspection. The reports shall be made available for Agency review upon request during normal business hours.

## D. Equipment, Maintenance and Calibration

All equipment used for emissions testing in Private Official Inspection Stations shall meet the functional requirements and performance criteria.

The permittee shall keep records of all calibrations, leak checks, and other maintenance performed on emissions inspection equipment for two years. The records shall be retained at the fleet facility. All records shall be kept on standardized forms provided by the Agency and shall be made available for Agency review upon request during normal business hours.

The maintenance staff of Applus+ Technologies will be prepared to handle all preventative and corrective maintenance, including equipment maintenance and system calibration. This team will be responsible for preventative maintenance, unscheduled maintenance, and quality assurance audits of equipment at all fleet testing locations.

### **Private Official Inspection Station Auditing and Surveillance**

Each workstation installation includes an iris scanner and video surveillance camera(s). The iris scanner restricts access to the workstation and allows only certified inspectors to perform inspections. The surveillance camera(s) can be monitored by the Agency, Applus+ Technologies, and other authorized parties in real time, and a video record of each inspection is stored and maintained for quality control purposes.

The Agency may, on an unscheduled and unannounced basis during normal business hours, conduct an audit inspection of any Private Official Inspection Stations to determine if inspection equipment is properly operating and calibrated, to review vehicle inspection reports and maintenance records, and to check inspector proficiency. During the course of the audit inspection, the Agency representative may take one or more of the following actions:

a) require that if any vehicle emissions test equipment, calibration equipment, or related materials fails to perform as required, such item shall be removed from service until corrective action is taken;





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b) the fleet inspector may be required to perform an emissions inspection on a fleet vehicle. If no fleet vehicles are available, the fleet inspector may be required to perform an emissions inspection on an Agency vehicle.

### Costs

The cost to the fleet operator includes fixed, variable and recurring fee components. Fixed costs include one-time costs for equipment, plus a Fleet Inspector training fee which is charged per inspector. Additionally, there will be a monthly maintenance fee which covers the scheduled and unscheduled maintenance, which will be charged on an ongoing basis as long as the fleet operator continues to conduct self-testing. A per inspection fee will be charged for each completed inspection.

	Option 1 Purchase OBD- Only Workstations	Option 2 Purchase OBD- Only + Gas Bench Workstations
Equipment Cost	\$10,900.00	\$18,900.00
Monthly Maintenance Fee	\$190.54	\$292.38
Per Inspection Fee	\$6.95	\$6.95
Per Inspector Training Fee	\$150.00	\$150.00

