
OPTIMUM
FLEET HEALTH

PREDICTIVE MAINTENANCE FOR DIESEL POWERED FLEETS

FEATURES & BENEFITS

- Improve operational efficiency

- Eliminate the need for multiple OEM solutions

- Reduce or eliminate towing costs completely

POSITIVE SOLUTION

- Our machine learning system does the work for you.
- Full control and visibility of your fleet including scheduling.
- Reduce catastrophic failures to increase safety and save money.
- Brakes – ABS, Toner Rings
- Exhaust - EGR Valve
- Engine - Misfires, turbos

OUR PROCESS

- **Step 1**

  - TSP Data is transmitted from the vehicle.

- **Step 2**

  - All fault codes are processed by our predictive analytics engine.

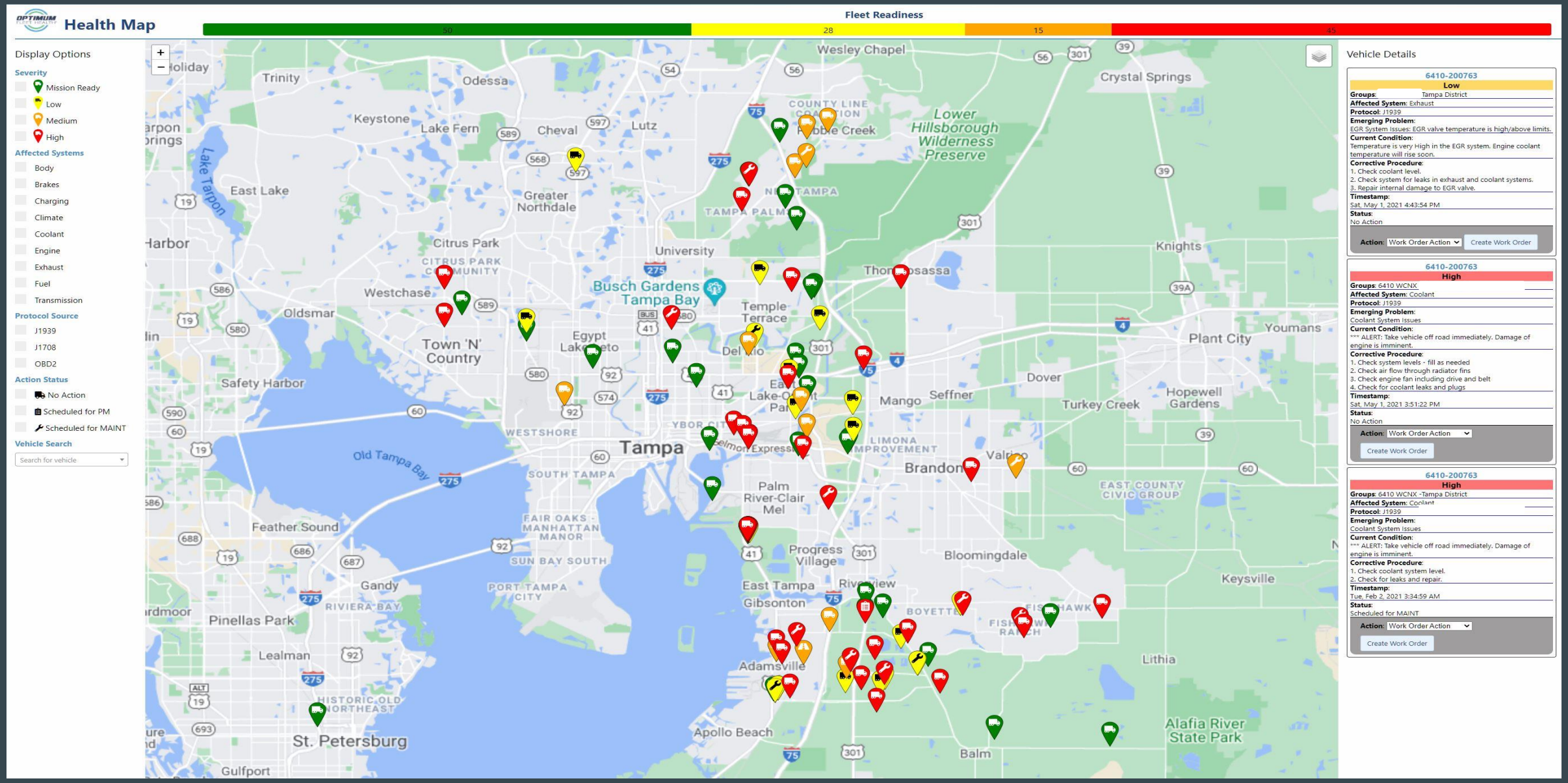
- **Step 3**

  - Service manager is notified by email.

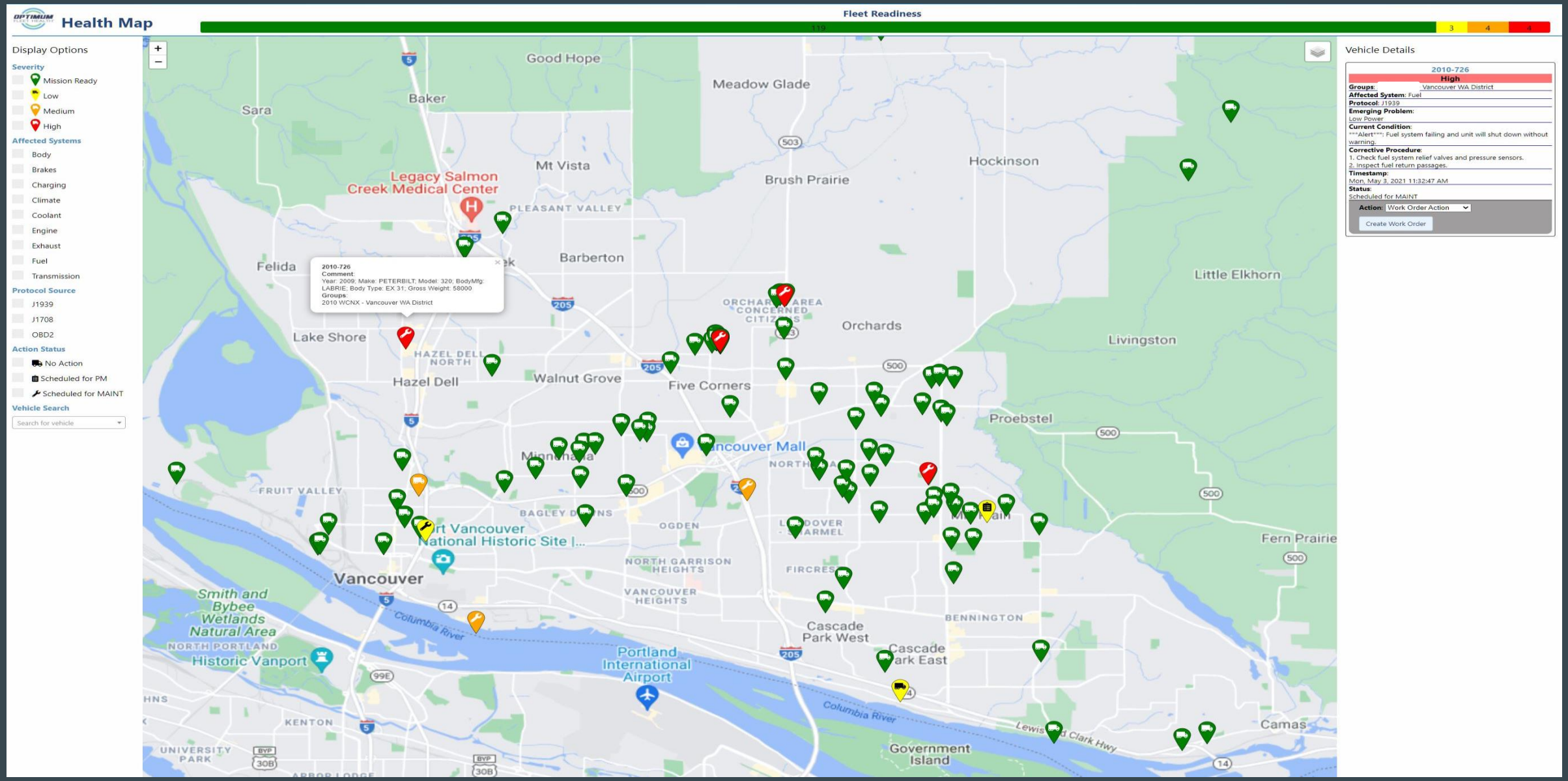
- **Step 4**

  - Maintenance is scheduled by the service manager.

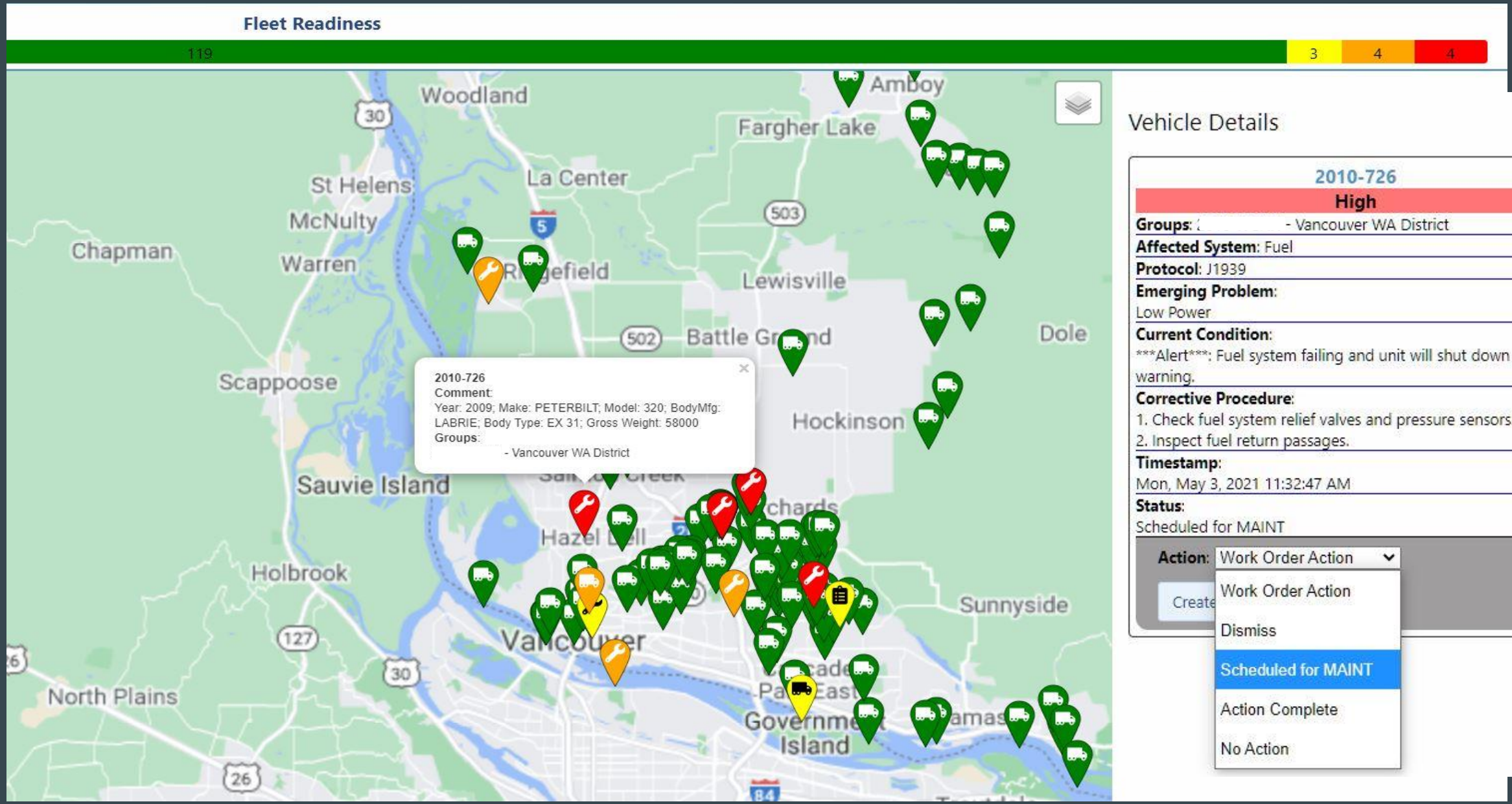
DASHBOARD


Health Map
Fleet Readiness
50
28
15
45
Display Options
Severity
Mission Ready
Low
Medium
High
Affected Systems
Body
Brakes
Charging
Climate
Coolant
Engine
Exhaust
Fuel
Transmission
Protocol Source
J1939
J1708
OBD2
Action Status
No Action
Scheduled for PM
Scheduled for MAINT
Vehicle Search
Search for vehicle
Vehicle Details
6410-200763
Low
Groups: Tampa District
Affected System: Exhaust
Protocol: J1939
Emerging Problem:
EGR System Issues: EGR valve temperature is high/above limits.
Current Condition:
Temperature is very High in the EGR system. Engine coolant temperature will rise soon.
Corrective Procedure:
1. Check coolant level.
2. Check system for leaks in exhaust and coolant systems.
3. Repair internal damage to EGR valve.
Timestamp:
Sat, May 1, 2021 4:43:54 PM
Status:
No Action
Action: Work Order Action
Create Work Order
6410-200763
High
Groups: 6410 WCNX
Affected System: Coolant
Protocol: J1939
Emerging Problem:
Coolant System Issues
Current Condition:
*** ALERT: Take vehicle off road immediately. Damage of engine is imminent.
Corrective Procedure:
1. Check system levels - fill as needed
2. Check air flow through radiator fins
3. Check engine fan including drive and belt
4. Check for coolant leaks and plugs
Timestamp:
Sat, May 1, 2021 3:51:22 PM
Status:
No Action
Action: Work Order Action
Create Work Order
6410-200763
High
Groups: 6410 WCNX -Tampa District
Affected System: Coolant
Protocol: J1939
Emerging Problem:
Coolant System Issues
Current Condition:
*** ALERT: Take vehicle off road immediately. Damage of engine is imminent.
Corrective Procedure:
1. Check coolant system level.
2. Check for leaks and repair.
Timestamp:
Tue, Feb 2, 2021 3:34:59 AM
Status:
Scheduled for MAINT
Action: Work Order Action
Create Work Order
Tampa
St. Petersburg
Clearwater
Brandon
Riverview
Plant City
Lakeland
Wesley Chapel
Lutz
Odessa
Trinity
Keystone
Lake Fern
Cheval
Greater Northdale
East Lake
Citrus Park
University
Busch Gardens Tampa Bay
Temple Terrace
Egypt Lake-Leto
Town 'N' Country
Westchase
Oldsmar
Safety Harbor
Old Tampa Bay
Feather Sound
Gandy
Pinellas Park
Lealman
Palm River-Clair Mel
Progress Village
East Tampa
Gibsonton
Adamsville
Apollo Beach
Balm
Lithia
Bloomingdale
Keysville
Valrico
Mango
Seffner
Dover
Turkey Creek
Hopewell Gardens
Youmans
Knights
Crystal Springs
Lower Hillsborough Wilderness Preserve
Alafia River State Park
Gulfport

DASHBOARD


Health Map
Fleet Readiness
119
3
4
4
Display Options
Severity
Mission Ready
Low
Medium
High
Affected Systems
Body
Brakes
Charging
Climate
Coolant
Engine
Exhaust
Fuel
Transmission
Protocol Source
J1939
J1708
OBD2
Action Status
No Action
Scheduled for PM
Scheduled for MAINT
Vehicle Search
Search for vehicle
2010-726
Comment:
Year: 2009; Make: PETERBILT; Model: 320; BodyMfg: LABRIE; Body Type: EX 31; Gross Weight: 58000
Groups:
2010 WCNX - Vancouver WA District
Vehicle Details
2010-726
High
Groups: Vancouver WA District
Affected System: Fuel
Protocol: J1939
Emerging Problem:
Low Power
Current Condition:
Alert: Fuel system failing and unit will shut down without warning.
Corrective Procedure:
1. Check fuel system relief valves and pressure sensors.
2. Inspect fuel return passages.
Timestamp:
Mon, May 3, 2021 11:32:47 AM
Status:
Scheduled for MAINT
Action: Work Order Action
Create Work Order
Good Hope
Meadow Glade
Baker
Sara
Mt Vista
Legacy Salmon Creek Medical Center
Brush Prairie
Hockinson
PLEASANT VALLEY
Barberton
Felida
Little Elkhorn
Orchards
Lake Shore
Livingston
HAZEL DELL NORTH
Hazel Dell
Walnut Grove
Five Corners
Proebstel
Vancouver Mall
FRUIT VALLEY
BAGLEY DOWNS
OGDEN
Fort Vancouver National Historic Site
Fern Prairie
NORTH GARRISON HEIGHTS
FIRCREST
Vancouver
VANCOUVER HEIGHTS
Smith and Bybee Wetlands Natural Area
NORTH PORTLAND
Historic Vanport
Columbia River
Cascade Park West
BENNINGTON
Portland International Airport
Cascade Park East
KENTON
UNIVERSITY PARK
Government Island
Camas
Lewis and Clark Hwy

WORK ORDER DECISIONS



STAY FIT LIVE

Stay Fit Live

CSV | Excel | Print

Search:

Note: Please click column headings to sort view from top to bottom

Incident ID	Action	Severity	Customer Vehicle ID	Timestamp	Affected System(s)	Emerging Problem	Corrective Procedure	Current Condition
250454	No Action	High	6410-200768	Fri Dec 20 2019 08:22:21 GMT-0500 (Eastern Standard Time)	Coolant (042)	Coolant System Issues	1. Check system levels - fill as needed 2. Check air flow through radiator fins 3. Check engine fan including drive and belt 4. Check for coolant leaks and plugs	Coolant Temp is too high
250455	No Action	High	6410-301184	Fri Dec 20 2019 08:22:19 GMT-0500 (Eastern Standard Time)	Exhaust (043)	Plugged Exhaust System	1. Perform a "Parked Regen" and clear codes. 2. Check DPF outlet pressure sensor voltage and Aftertreatment Device (ATD) harness. Inspect the DPF outlet pressure sensor tube and fittings for kinks, blockage, and restrictions. 3. Perform a DPF inspection for excessive soot loading. 4. If steps 1 through 3 fail, then check: • Charge Air Cooler (CAC) and associated piping • Exhaust Gas Recirculation (EGR) valve stuck open • Turbocharger actuator (perform nozzle sweep test) • Damaged turbocharger blades/vanes Replace DPF.	DPF Filter is beginning to become plugged.
250456	No Action	High	6410-301184	Fri Dec 20 2019 08:22:19 GMT-0500 (Eastern Standard Time)	Exhaust (043)	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency	All three sensors in the aftertreatment system are giving erratic readings. 1. Check quality of DEF. Repair as needed. 2. Check all wiring and connectors. 3. Remove sensor and test OHM's and temperature to ambient room Temperature.	25 percent derate Engine light will come on. Loss of power
250457	No Action	High	6410-301181	Fri Dec 20 2019 08:20:36 GMT-0500 (Eastern Standard Time)	Engine (045)	Internal engine issues are creating high pressures internally and could cause internal damage.	1. Check draft tube for obstructions 2. (If Equipped) check PCV (Positive crankcase valve) for obstruction. 3. Perform a complete engine pressure diagnostic test and repair as needed.	Crank Case Pressure is building and getting high.
250427	No Action	High	6410-200784	Fri Dec 20 2019 08:02:55 GMT-0500 (Eastern Standard	Coolant (042)	Coolant System Issues	1. Coolant sensor is showing voltage issues (High) -- check voltage and repair charging system as needed. 2. Check wiring to sensors and coolant tank ground	Coolant sensor is showing voltage issues (High).

TIMELINE ANALYSIS

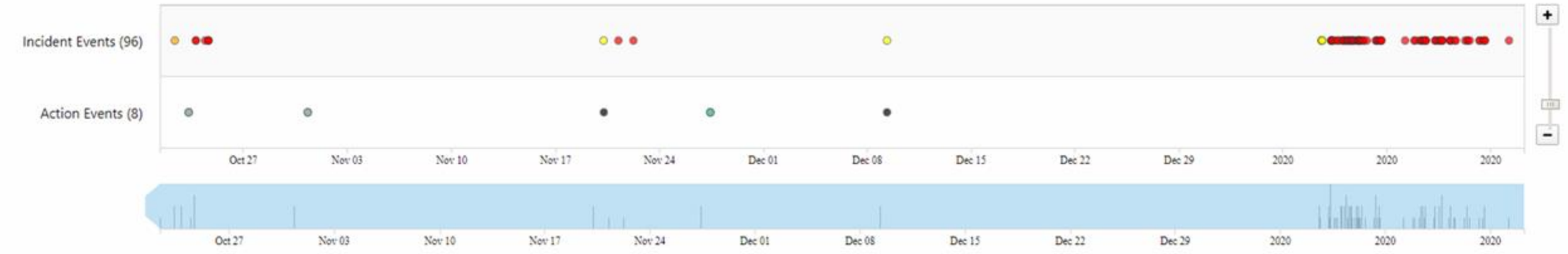
Stay Fit Timeline

Include Historical Activity

Vehicle: 6410-100365

Incident Timeline: Coolant 32

Vehicle Info: Desc: Front Load Body: Heil Chassis: Mack MRU613 2013
Groups: -Tampa District
System: Coolant
Current Condition: Coolant sensor is showing voltage issues (High).
Procedure: 1. Coolant sensor is showing voltage issues (High) -- check voltage and repair charging system as needed. 2. Check wiring to sensors and coolant tank ground.

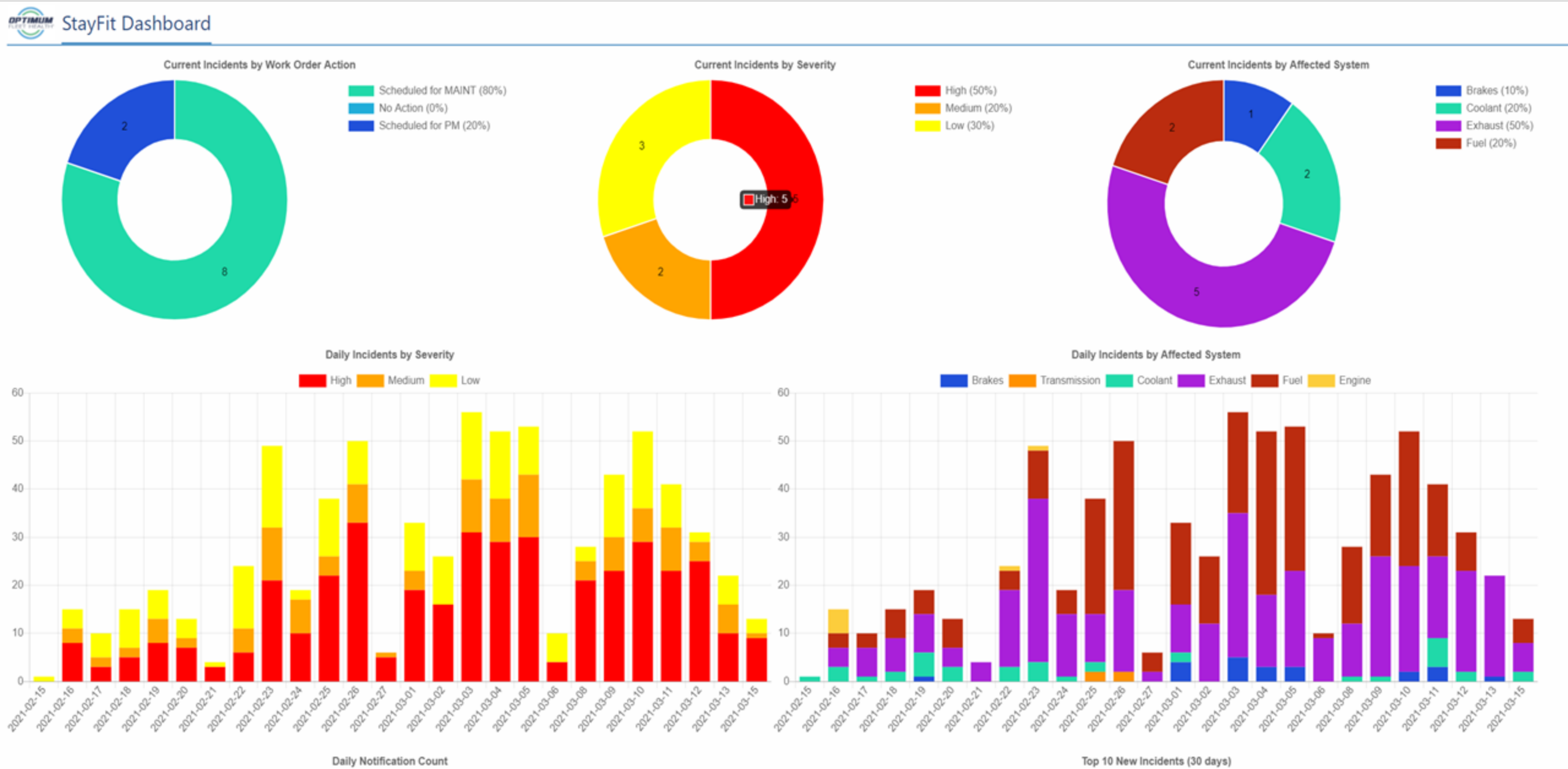


CSV Excel Print

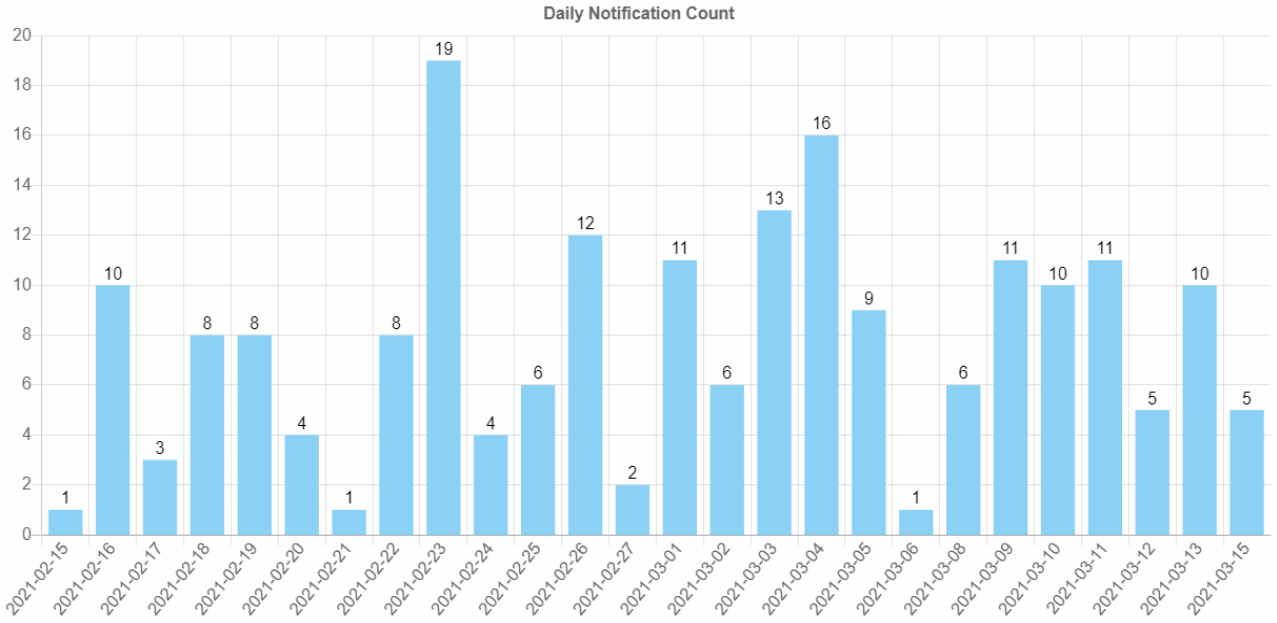
Search:

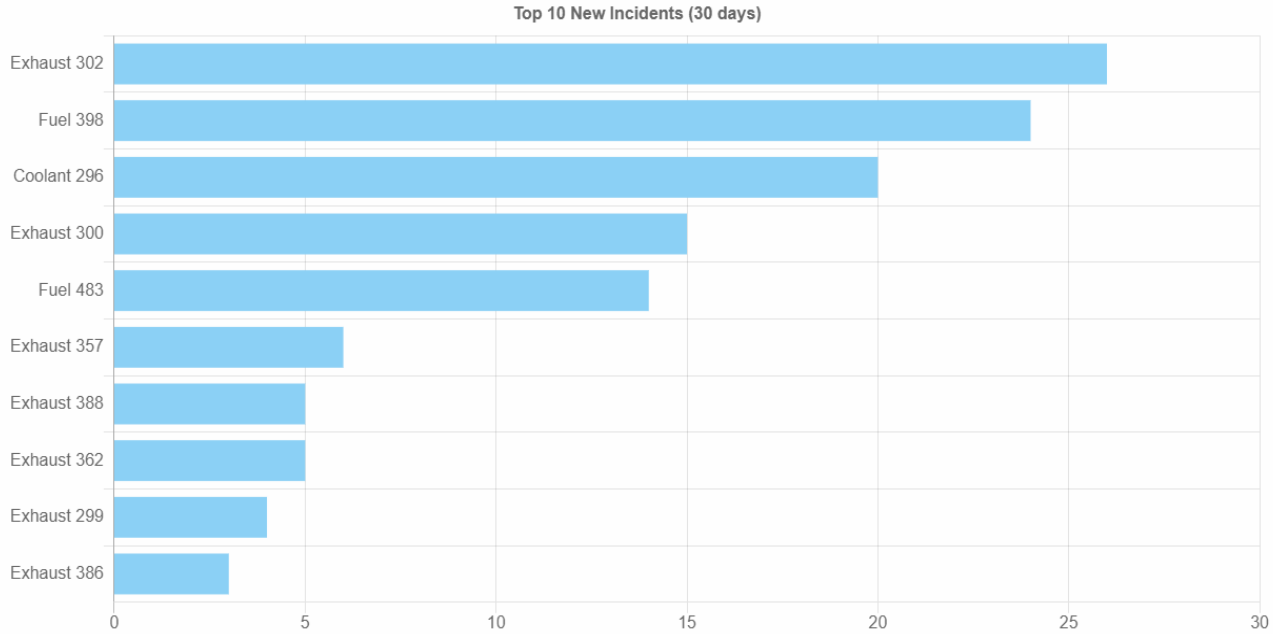
Timestamp	Event Type	Content
Mon Jan 20 2020 05:29:17 GMT-0500 (Eastern Standard Time)	incident	High
Sat Jan 18 2020 14:44:05 GMT-0500 (Eastern Standard Time)	incident	High
Sat Jan 18 2020 14:40:04 GMT-0500 (Eastern Standard Time)	incident	High
Sat Jan 18 2020 11:38:15 GMT-0500 (Eastern Standard Time)	incident	High
Sat Jan 18 2020 06:08:47 GMT-0500 (Eastern Standard Time)	incident	High

REAL-TIME SNAPSHOT



SNAPSHOT CONTINUED





Fleet Health Daily Report

Group	Total	Mission Ready	Low	Medium	High	High Priority %
· Vancouver WA District	132	124	1	2	5	3.79%
Region Totals	**132**	**124**	**1**	**2**	**5**	**3.79%**

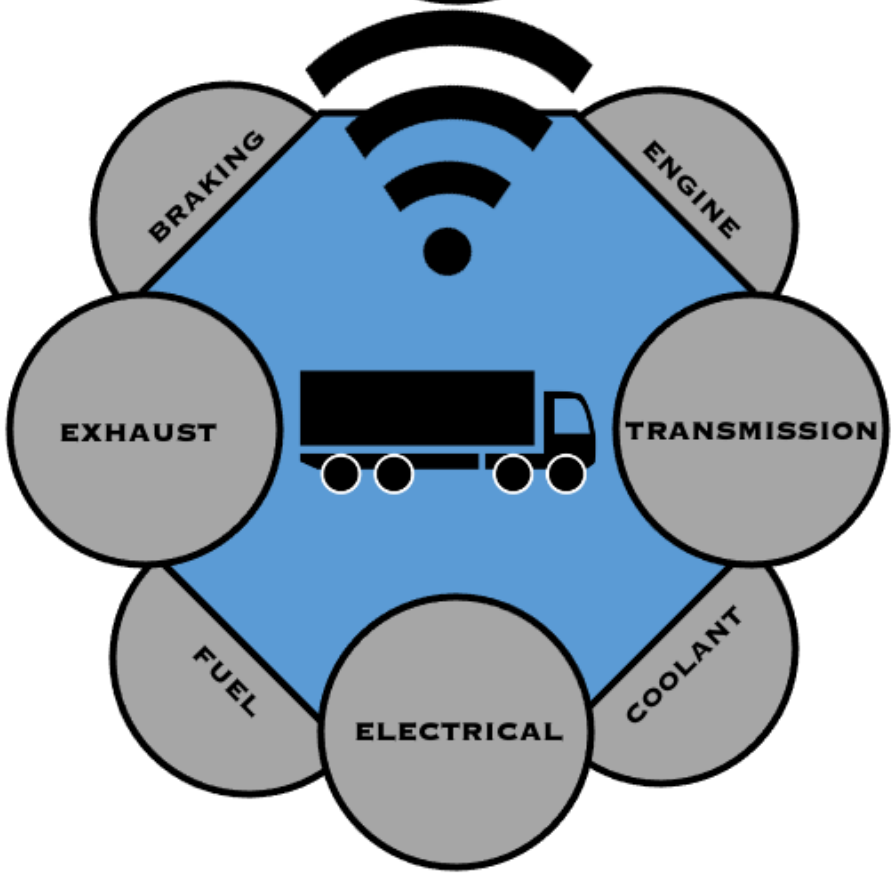
Location Incident Trend Summary

Date	Mission Ready	Low	Medium	High	Daily Notification Count	Maintenance Performed	Dismissed	No Action Taken	Incidents Trend 1		Incidents Trend 2		Incidents Trend 3	
2021-03-15	124	2	1	5	5	87.50%	12.50%	0.00%	Exhaust	50.00%		50.00%		0.00%
2021-03-14	132	0	0	0	0	n/a	n/a	n/a		n/a		n/a		n/a
2021-03-13	123	0	3	6	10	30.00%	70.00%	0.00%	Exhaust	90.00%	Brakes	10.00%		0.00%
2021-03-12	122	0	2	8	5	0.00%	100.00%	0.00%		100.00%		0.00%		0.00%
2021-03-11	114	4	5	9	11	0.00%	100.00%	0.00%	Fuel	50.00%		50.00%		0.00%
2021-03-10	119	3	4	6	10	0.00%	100.00%	0.00%	Exhaust	66.67%	Fuel	33.33%		0.00%

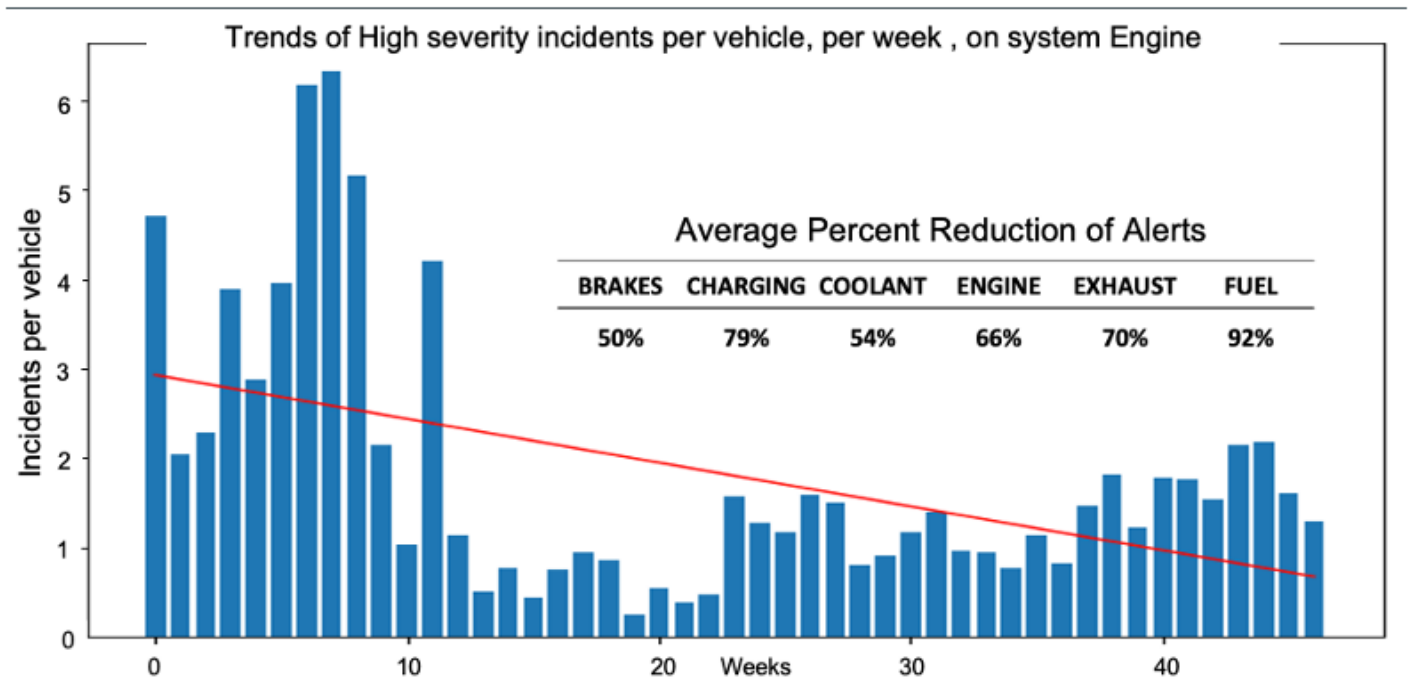
Show 100 entries

Location Incident Trend Details

OPTIMUM FLEET HEALTH



- ✓ **Dynamic fault detection weeks in advance**
- ✓ **Customized analytical solutions to meet safety requirements**
- ✓ **Track vehicle health history**
- ✓ **Improve operational efficiency**



RETURN ON INVESTMENT

Fleet Size
Tow Costs
Engine Rebuild
Annual Cost per spare
Engine Pistons/Sleeves
Tech Labor Rate
Fuel Cost/Gallon
Spare Ratio
Diesel/CNG Fleet Percent

• • •

Payback ROI

Monthly Savings Per Truck	$550
ROI Payback in Days (HRS)	8.1
New Spare Ratio	7%
New Total Spares	7

KEY DIFFERENTIATORS

- TSP Integrated/Agnostic (no hardware to purchase)
- CMMS (Maintenance management systems) Integrated/Agnostic allowing work order creation into existing workflow
- Compatible across all OEM's eliminating the need for multiple diagnostic tools
- Continuously monitoring DTC's and vehicle measurement data in real-time
- Customized corrective procedures with mechanic insights
- On staff technicians to work through customizations and troubleshooting with your technicians

Engine Alerts

- Engine Torque Limit Request
- Engine Oil Pressure Issue
- Cylinder Misfires
- Internal engine sensors (high voltage)
- Internal engine sensors erratic data
- 5V Sensor Supply Bank 1 Circuit Failed
- Internal engine sensors (sensor)
- Engine Oil Pressure Issue (harness issue)
- Internal engine sensors erratic data (harness issue)
- Engine Torque Limit Request (max continuous)

Coolant Alerts

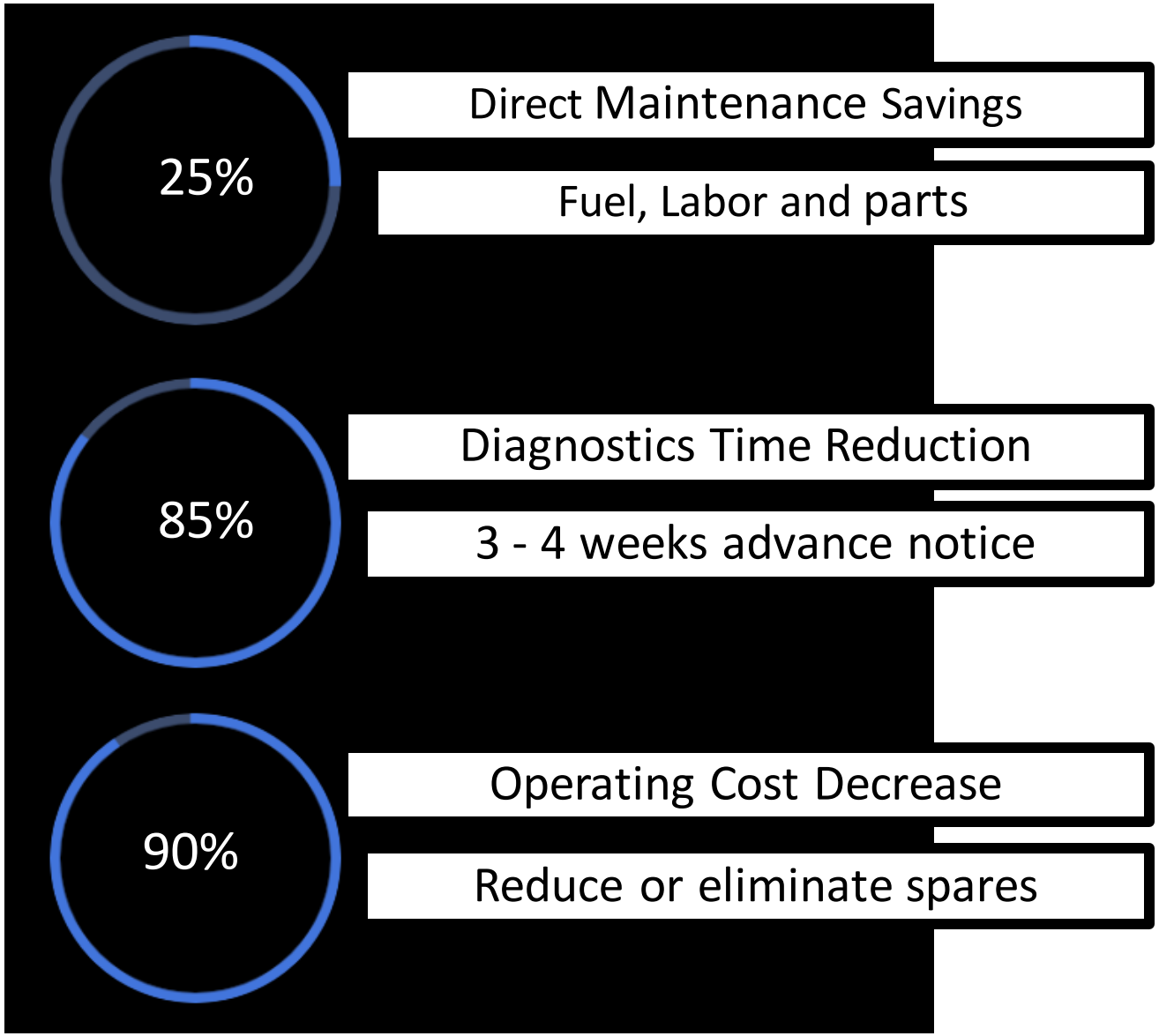
- Coolant Level Wiring. Open circuit or current below normal
- Coolant Level Wiring. Voltage below normal or shorted to high
- Coolant Alert Thermostat Issues.
- Coolant Level. Low Coolant.
- Coolant Temperature. (Below Normal causes ECM to reduce power for cold engine)
- Coolant Temperature. Issues but ECM. Random voltage.
- Coolant Temperature Sensor. Voltage above normal or shorted high voltage.
- Coolant Alert Wiring Grounds.
- Coolant Temperature. Sensor issue but above normal.
- Coolant level below normal.

Exhaust Alerts

- Aftertreatment DPF System.
- SCR Outlet NOx Sensor Change Rate.
- SCR Outlet NOx Sensor Voltage.
- SCR Inlet Temp Sensor Low.
- Aftertreatment DOC Conversion Efficiency.
- Engine EGR Differential Pressure.
- EGR Valve Actuator\Engine EGR System Monitor.
- Aftertreatment 1 SCR Catalyst Conversion Efficiency.
- Particulate Trap Regeneration Inhibit Switch.
- Aftertreatment 1 SCR Catalyst Conversion Efficiency.

Brake Alerts

- Right Rear Drive ABS Issue.
- Left Rear Drive ABS Issue.
- Right Rear Drive Axle 3 ABS Issue.
- Left Front Steer ABS Issue, Sensor Gap.
- Right Rear Drive ABS Issue, Intermittent Signal.
- Right Front Steer ABS Issue.
- Damaged Tone Ring.
- Left Rear Drive ABS Issue.
- Open Circuit.
- Right Rear Drive ABS Issue.
- Incorrect Sensor Gap.
- Right Front Steer ABS Issue.
- Incorrect sensor gap.
- Right Front Steer ABS Issue.
- Damaged Tone Ring.



OPTIMUM FLEET HEALTH