# Township of Edison New Jersey

## Improve Fleet Operations Through the Use of GPS and Telematics

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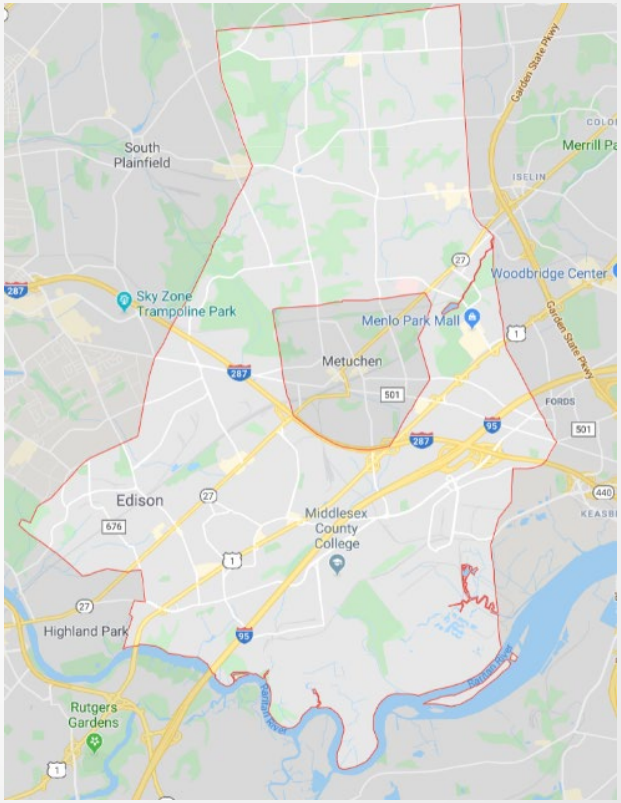
# About the Township




- 32 Square Miles
- 110,000+ residence
- 5th most populated town in NJ
- 1250 miles of roadway
- Fleet of 400 vehicles including public safety
- 1 Mil visitors and commercial employees during the week

# Our Challenges

- Numerous Complaints
  - Snow plowing and property damage
  - Salting
  - Speeding and idling
  - Garbage/recycling pick up
- Tracking Our Fleet Operations
  - Idling
  - Fuel consumption
  - Wear and tear relative to usage
  - Lack of use



# GPS and Telematics

- Track and log vehicle movement
- Track and log driver actions
- Monitor vehicle “health”
- Monitoring fuel consumption

# Information Technology's Role

- To evaluate the best user friendly system and manage the implementation of it.
- Train key leaders and users of the systems use including benefits and shortcomings.
- Maintain the system ensuring vehicle telematics devices are kept up to date and properly installed.
- Play a key role facilitating communications and information sharing between departments
- Assist with custom reporting and data evaluation
- Take the lead to insure all vehicles and departments are in compliance with system deployment practices and policies

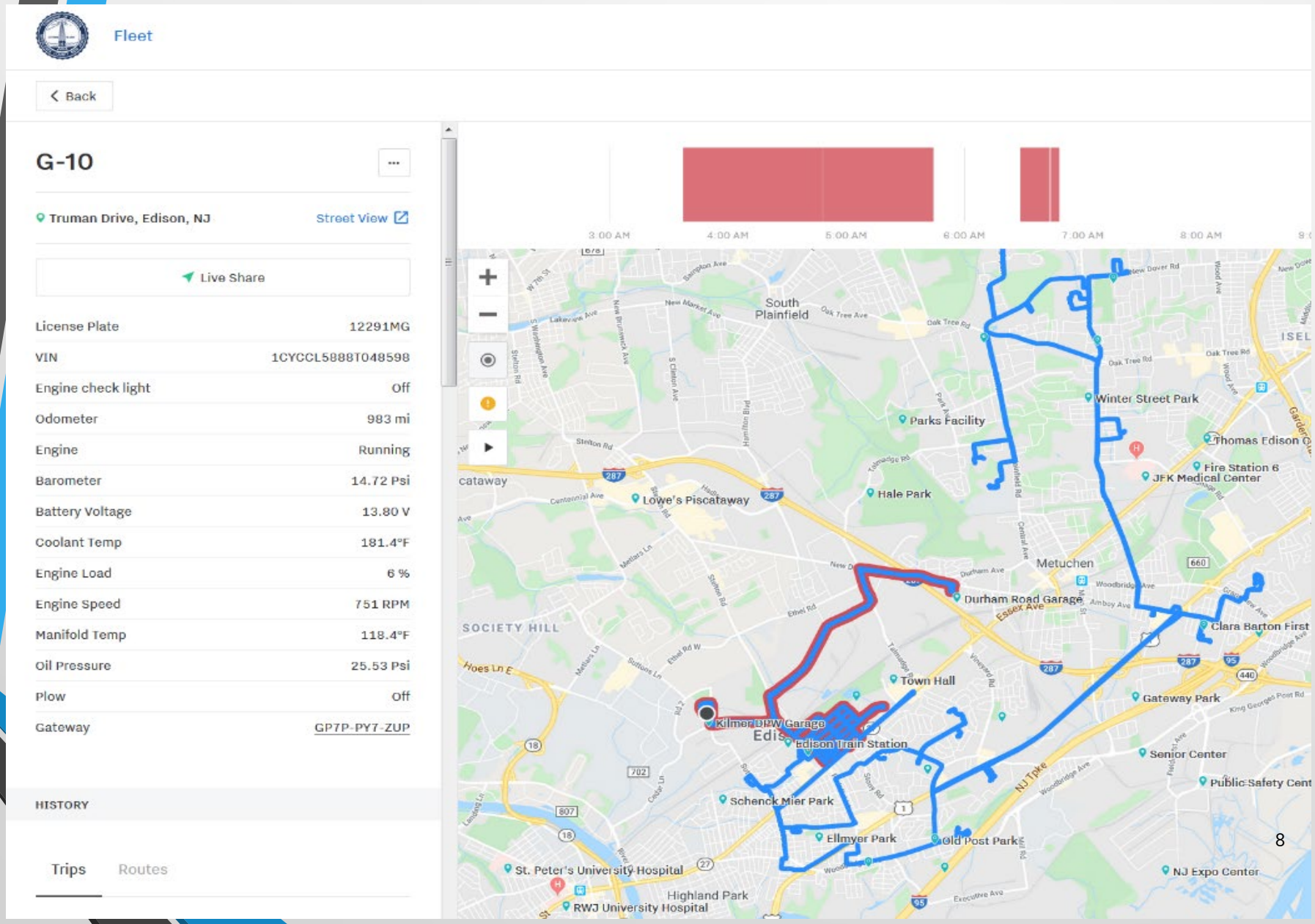
# Winter Weather

- 30-50 complaints per storm regarding property damage
  - Average of 50% were false claims or not township vehicles
  - Reduced insurance claims and payouts by 60%
- Complaints regarding streets not getting plowed or inadequately plowed
  - 30% complaints were true triggering a re-evaluation of routes
  - 70% were not true; often people expectations were unrealistic.

# Winter Weather

- Re-evaluated routes
  - Routes became more efficient reducing man hours by 20% and reducing overtime costs
  - Reduce demand and stress on staff during long storms
  - Reduced wear and tear on vehicles
  - Extended life of plow blades
  - Reduced salt and brine usage by 35%
    - Reduced overlapping routes
    - Used appropriate vehicles on certain roads
    - Timed routes vs storm

# Examples of Plowing Telematics



# Fleet Maintenance

- More effectively monitor vehicles for preventative maintenance
- Drivers don't always report faults or check engine lights
- Real time watch vehicle faults and immediate notifications to fleet dept. when faults occur
  - Saved a brand new fire engine from potentially a $20,000 repair
- Reduced repair costs and improve vehicle uptime
  - Reduced parts and labor by $300,000 annually

# Examples of Vehicle Faults

Proximity Reports Maintenance

Search vehicles | Tags | Faults (1) | 11 vehicles

| VEHICLE | CURRENT DRIVER | MAKE/MODEL | BATTERY VOLTAGE | ENGINE HOURS | ODOMETER (MI) | CHECK ENGINE LIGHT | FAULTS |
|---|---|---|---|---|---|---|---|
| C-17-21 | - | FORD/Explorer | 14.6 | – | 18,227 | Off | P0030 – HO2S Heater Control Circuit Bank 1 Sensor 1 |
| ER-10 | 3920 - Robert Farinick | FREIGHTLINER/114SD | 15.8 | 3,365 | 27,029 | Off | TxId: 3 SPN: 190 FMI: 2 (Erratic, Intermittent, or Incorrect) Count: 127 |
| ER-7 | - | FREIGHTLINER/114SD | 14.8 | 5,026 | 36,325 | Warning, Protect, and Emissions | TxId: 61 SPN: 5018 FMI: 18 (Low—moderate severity) Count: 7 |
| Engine 1 | - | FREIGHTLINER/M2 | 13.8 | 3,369 | 36,176 | Protect | TxId: 61 SPN: 3719 FMI: 31 Count: 3 |
| Engine 6 | - | - | 0.3 | 1,666 | 17,299 | Protect | TxId: 0 SPN: 3720 FMI: 15 (High—least severe) Count: 1 |
| Engine 9 | - | - | 0.3 | 1,407 | 16,011 | Protect | TxId: 0 SPN: 3720 FMI: 15 (High—least severe) Count: 1 |
| G-11 | 3927 - Ryan Naiduk | FREIGHTLINER/114SD | 12.7 | 8,551 | 73,807 | Off | TxId: 33 SPN: 6918 FMI: 7 (Not Responding Properly) Count: 1 |
| G-16 | - | FREIGHTLINER/M2 | 0.6 | 3,722 | 32,897 | Protect and Emissions | TxId: 0 SPN: 3216 FMI: 20 (Data Drifted High) Count: 1 |
| S-3 | - | FORD/F-450 | – | – | 63,327 | Off | P0471 – Exhaust Pressure Sensor "A" Circuit Range/Performance |
| SC-4 | - | FORD/E-450 | – | – | 113,121 | On | P0191 – Fuel Rail Pressure Sensor Circuit Range/Performance Bank 1 |
| TC-2 | 3320 - Nikolas Mpletsakis | FORD/F-450 | – | – | 95,459 | Off | P0088 – Fuel Rail/System Pressure - Too Hi |

Feedback

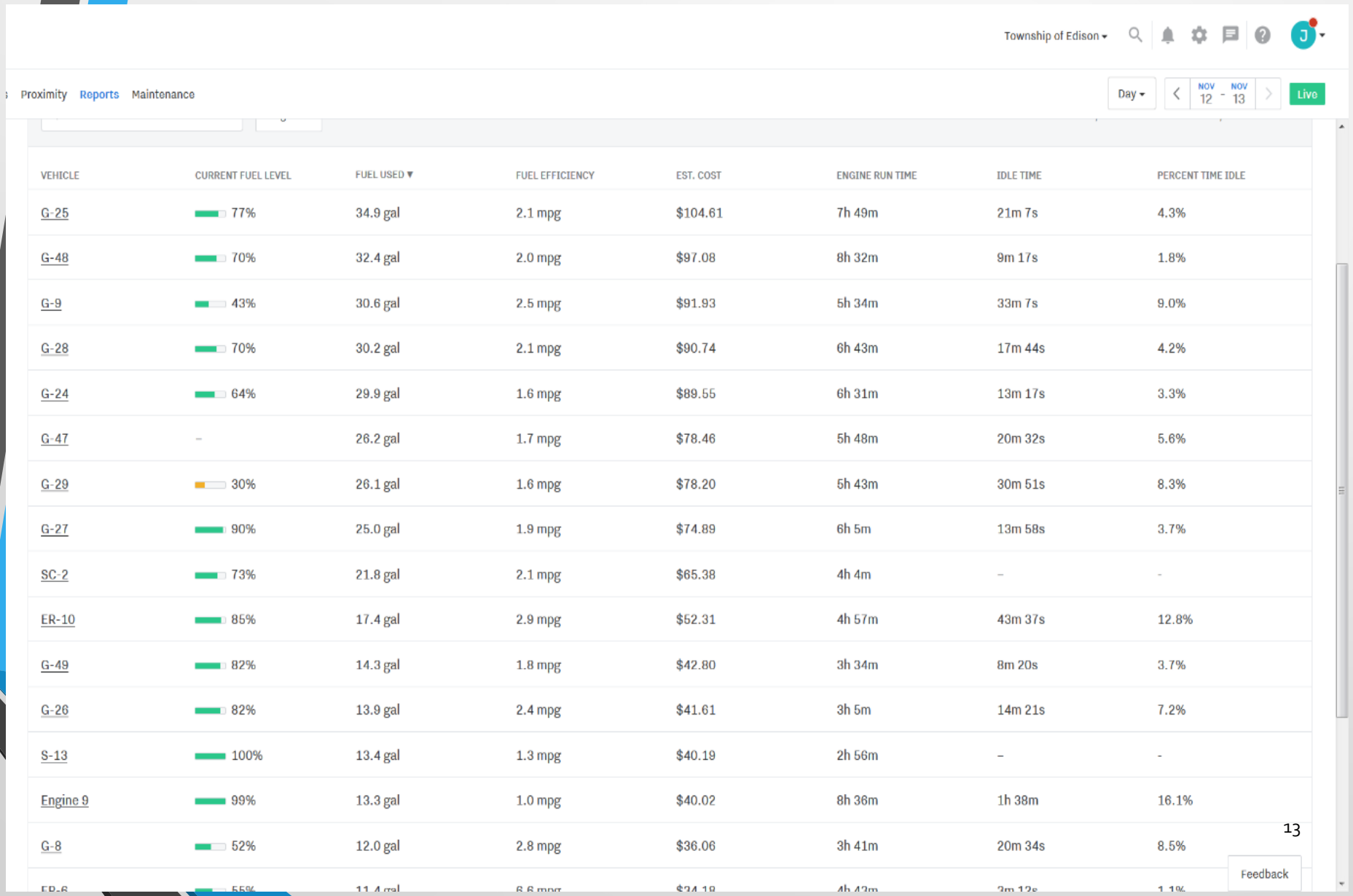
# Fleet Usage

- Study on vehicle usage relative to age and repair costs
  - Identified low use, high maintenance cost vehicles and retired them
  - Found brand new vehicles with very low usage.
    - Construction office purchased 10 new SUVs year over year and without relinquishing older vehicles. At one point they had 40 vehicles model year 2014 and newer for 15 field inspectors.
- Reduced our overall fleet by 35%
  - Reduced insurance costs
  - Reduced parts and labor expense
  - Reduced fuel consumption ( new vehicles had better fuel economy)

# Fuel Consumption and Staff behavior

- Fuel Usage Study
  - Found vehicles idling for hours during inappropriate times
  - Reduced overall fuel consumption by 30%
- Staff Behavior
  - Took long routes to job sites
  - Found various parks and buildings crews crisscrossing town going from job site to job site

# Examples of Fuel Usage




| VEHICLE | CURRENT FUEL LEVEL | FUEL USED ▼ | FUEL EFFICIENCY | EST. COST | ENGINE RUN TIME | IDLE TIME | PERCENT TIME IDLE |
|---|---|---|---|---|---|---|---|
| G-25 | 77% | 34.9 gal | 2.1 mpg | $104.61 | 7h 49m | 21m 7s | 4.3% |
| G-48 | 70% | 32.4 gal | 2.0 mpg | $97.08 | 8h 32m | 9m 17s | 1.8% |
| G-9 | 43% | 30.6 gal | 2.5 mpg | $91.93 | 5h 34m | 33m 7s | 9.0% |
| G-28 | 70% | 30.2 gal | 2.1 mpg | $90.74 | 6h 43m | 17m 44s | 4.2% |
| G-24 | 64% | 29.9 gal | 1.6 mpg | $89.55 | 6h 31m | 13m 17s | 3.3% |
| G-47 | – | 26.2 gal | 1.7 mpg | $78.46 | 5h 48m | 20m 32s | 5.6% |
| G-29 | 30% | 26.1 gal | 1.6 mpg | $78.20 | 5h 43m | 30m 51s | 8.3% |
| G-27 | 90% | 25.0 gal | 1.9 mpg | $74.89 | 6h 5m | 13m 58s | 3.7% |
| SC-2 | 73% | 21.8 gal | 2.1 mpg | $65.38 | 4h 4m | – | - |
| ER-10 | 85% | 17.4 gal | 2.9 mpg | $52.31 | 4h 57m | 43m 37s | 12.8% |
| G-49 | 82% | 14.3 gal | 1.8 mpg | $42.80 | 3h 34m | 8m 20s | 3.7% |
| G-26 | 82% | 13.9 gal | 2.4 mpg | $41.61 | 3h 5m | 14m 21s | 7.2% |
| S-13 | 100% | 13.4 gal | 1.3 mpg | $40.19 | 2h 56m | – | - |
| Engine 9 | 99% | 13.3 gal | 1.0 mpg | $40.02 | 8h 36m | 1h 38m | 16.1% |
| G-8 | 52% | 12.0 gal | 2.8 mpg | $36.06 | 3h 41m | 20m 34s | 8.5% |
| ER-6 | 55% | 11.4 gal | 6.6 mpg | $34.18 | 4h 42m | 3m 12s | 1.1% |



Feedback

# Summary

- Reduced fleet from 320 vehicles to 248 as of today
- Reduced annual insurance expense by $110,000
- Realized a savings of $300,000 in repairs over 3 years
- GPS and vehicle telematics can be an excellent window into fleet usage and health as well as employee behavior
- Did not use the collected data as a means of discipline.

# Summary

- Having a connected fleet allowed department directors and Supervisor to monitor their team's activities in real time.
- Information Technology Division in a central component to ensuring the data is accurate, fleet telematics is working and up to date, and assisting departments with retrieving and manipulating data for analysis.

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