Reducing Municipal Vehicle Fuel Consumption in Rural Massachusetts

A hands-on initiative to improve fuel efficiency across municipal fleets in rural communities

TARGET: TO WORK CLOSELY WITH RURAL “GREEN COMMUNITIES” ACROSS MASSACHUSETTS TO IDENTIFY PATTERNS OF FUEL USE AND HIGHLIGHT AREAS FOR IMPROVED EFFICIENCY AND COST SAVINGS

RATIONALE: Since the establishment of the Green Communities Program in 2008, the greatest challenge for many participating municipalities has been reducing vehicle fuel consumption. While, on average, vehicle fuel use represents roughly 20% of total energy consumption across Green Communities, vehicle fuel use reductions represent a mere 2% of all energy reductions achieved to date. This issue has posed particular challenges for small rural communities, where vehicle fuel usage can represent up to 35% of municipal energy usage.

In order to help rural communities save money and achieve greater fuel efficiency, UMass Clean Energy Extension (CEE) and the MA Clean Cities Coalition will partner with selected Massachusetts Green Communities to aid in their vehicle fuel consumption reduction efforts. Through this process, valuable information will be collected that can help other rural communities with their reduction efforts.

WORK PLAN: UMass CEE will carry out 3 tasks in each participating community:
1. Survey fleet operators and managers about fleet characteristics and potential fuel reduction challenges
2. Deploy GPS Insight telematics systems on up to 20 vehicles within the fleet to collect information about vehicle performance and operation (see following page for details on telematics)
3. Analyze survey and telematics data to identify the best-fit solutions for reducing vehicle fuel consumption in the municipality

PARTICIPATING IN THE PROGRAM: UMass CEE is reaching out to your municipality to see if you would be interested in participating in this vehicle fuel reduction initiative.

- All technical assistance, telematics equipment, and fuel usage analysis will be provided FREE OF CHARGE to participating municipalities for one year.
- In exchange, we will ask your town to sign a data sharing agreement so that findings from your town can be used to develop strategies to help other rural municipalities reduce their own vehicle fuel consumption.
- After one year, if you are interested in continuing with telematics, you can continue to use the equipment, but will be responsible for paying GPS Insight the monthly service charge to access the data electronically (~$20/month per vehicle). If you do not wish to pay this charge, the equipment can be returned to the MA Clean Cities Coalition.
What is Vehicle Telematics?
Vehicular telematics systems utilize a combination of GPS technology and on-board diagnostics to monitor the location and performance of an individual vehicle or a municipal fleet. This process of sending, receiving, and analyzing vehicular data can highlight potential areas of improvement within a fleet, as well as further ensure the secure use and safe operation of municipal vehicles.

What Information Can a Telematics System Record?
Vehicular telematics systems can measure a number of vehicle characteristics in real-time, including:

- Speed (via the speedometer)
- Distance travelled (via the odometer)
- Rates of acceleration and deceleration (via the accelerometer)
- Periods of operation, including when the engine is on, and when the engine is idling
- On-board diagnostic codes
- Location

This data is recorded by the telematics system and uploaded to an online database. The data can then be accessed and analyzed by fleet managers and authorized municipal personnel. These systems can also provide real-time alerts regarding vehicle operation, maintenance, and location to a mobile device or computer.

Massachusetts State Telematics Contract
The state of Massachusetts has negotiated a contract for the purchase of telematics equipment from GPS Insight, a national company based out of Scottsdale, Arizona. GPS Insight has been in business for over 13 years, and has experience working with government fleets at the municipal, state and federal level. GPS Insight offers all the services listed above, with the addition of a personal account manager assigned to every fleet to assist with tasks such as data analysis, trend identification, and fleet rightsizing.

Resources
- For more information on the statewide contract for telematics equipment, please visit: www.mass.gov/files/documents/2018/03/19/VEH106.pdf
- For customer reviews and more detailed information about the services offered by GPS Insight, visit their website: https://www.gpsinsight.com/
How Can Telematics Help a Fleet?

The benefits provided by telematics systems fall into three general categories:

**Cost Savings**
- By highlighting and avoiding wasteful driving habits such as excessive idling, hard braking, and quick acceleration, fuel usage can be reduced by up to 33%
- Many telematics systems provide maintenance reminders which can ensure that each vehicle is performing optimally, increasing fuel efficiency by up to 9% and avoiding costly repairs later on
- Utilizing the GPS capabilities of a telematics system, route optimization can be used to identify the quickest route between various locations, saving drivers valuable time
- Many insurance companies offer premium discounts to organizations utilizing telematics in their fleet, viewing it as a serious commitment to reducing risk

**Convenience**
- Automated record keeping eliminates the need for time-consuming paperwork, such as Driver-Vehicle Inspection Reports (DVIRs) and trip histories
- For larger fleets, real-time GPS monitoring can allow fleet dispatchers to identify which vehicle is closest to a given destination, potentially reducing response time, especially in the case of an emergency
- More accurate estimated time of arrival is another benefit of real-time GPS tracking, allowing for better time budgeting and increased customer satisfaction

**Safety**
- Some telematics systems reduce the risk of theft or unauthorized use by notifying a fleet manager if a vehicle is used outside a designated area or pre-approved timeframe
- Lawful driving is encouraged by most telematics systems, by either notifying the driver or fleet manager when a vehicle exceeds a marked speed limit by a given amount