Idle Reduction Strategies for Emergency Vehicles Webinar

January 30, 2018, 1:30-2:30 pm

Hosted by Dallas Fort Worth Clean Cities Coalition

FOR AUDIO PLEASE CALL INTO THE CONFERENCE LINE
1-800-250-3900   Pin: 442318#
Agenda

- Fleet Success Story: City of Columbus, Ohio
- Low-Cost Technology Example: Intelligent Fleet Solutions
- Fleet Success Story: City of Euless, Texas
- Funding Opportunities: Metropolitan Area Planning Council / Fleets for the Future
City of Columbus Fleet Management
Anti-Idle Initiative
GRIP System
System Requirements

- Officer safety
- Reduce idle time
- Allow all emergency equipment to function normally
- Climate control
- Automatic
- Data logging
Pilot Project

• 5 Test units from different manufactures
  – Havis Idle Right
  – Extreme Energy
  – Vanner Idle Watch
  – Zone Tech
  – Grip Idle Management

• All were tested on single officer vehicles for reliable feedback
How it was accomplished

• Driven from the top down
• Give and take
• Leading by example
  – Chief of Police had Grip installed on her cruiser
• Officer training and understanding
  – Training videos and manual
  – One hour of idle time is equal to 33 miles
  – .44 gal of fuel an hour at idle
• Tampering addressed
Cruiser Duty Cycle

• Police – 274 total units
• Fire – 3 total units
• 24/7 Lieutenants, Sergeants and Patrol
  – 24/7 units are on a five year rotation
• Freeway and K9 are single shift
  – Single shift are on a six year rotation
2016 data

- Cruisers demonstrated a life-to-date reduction in idle time of 30% or 129,215 hours
- Equates to saving approximately 4,264,115 miles on the cruisers by avoiding wear and tear on engines
- Saved estimated 86,800 gallons of fuel
- Reduced carbon emissions by 506 metric tons, the equivalent of removing 107 passenger vehicles from the road
- 2017 data available mid-2018
Idle Reduction

Static Vehicle Analysis

- 69.9% Idle obtained before the GRIP System shuts down the engine. Based on Max Idle Time the vehicle is programmed to shut down at.
- 30.1% Idle removed by GRIP System
## Idle Hours Reduced

### Idle Time Comparison

<table>
<thead>
<tr>
<th>Time in Hours</th>
<th>Actual Time Spent at Idle</th>
<th>Idle Time Removed in Hours With GRIP System</th>
<th>Idle Time in Hours Without GRIP System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in Hours</td>
<td>300,260.30</td>
<td>129,215.60</td>
<td>429,475.90</td>
</tr>
</tbody>
</table>
Fuel Reduction in Gallons

<table>
<thead>
<tr>
<th>Fuel Reduction in Gallons</th>
<th>Fuel Used at Idle</th>
<th>Fuel Removed in Gallons by GRIP</th>
<th>Total Fuel in Gallons Without GRIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>201725.266</td>
<td>86811.5137</td>
<td>288536.7804</td>
<td></td>
</tr>
</tbody>
</table>

Fuel Savings in Dollars

<table>
<thead>
<tr>
<th>Fuel Savings in Dollars</th>
<th>Fuel Used at Idle</th>
<th>Fuel Savings with the GRIP System</th>
<th>Fuel That Would Have Been Consumed Without the GRIP System</th>
</tr>
</thead>
<tbody>
<tr>
<td>$474,054.38</td>
<td>$204,007.06</td>
<td>$678,061.43</td>
<td></td>
</tr>
</tbody>
</table>
Engine Wear Reduction

Actual wear and tear on the engine due to idling: 9,908,589.9 miles
Total avoidance of wear and tear on the engine by using the GRIP system: 4,264,114.8 miles
Total amount of wear and tear on the engine from idling if the GRIP system was not installed: 14,172,704.7 miles
CO₂ Savings in KG

<table>
<thead>
<tr>
<th>CO₂ Produced at Idle</th>
<th>CO₂ Reduction with the GRIP System</th>
<th>CO₂ That Would Have Been Produced Without the GRIP System</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,795,556.59</td>
<td>772,709.29</td>
<td>2,568,265.88</td>
</tr>
</tbody>
</table>
Challenges

• New technology for police officers
• New technology for technicians
• Large learning curve
• Training!
• Advancement
  – Working on updates to new version
  – Battery technology and placement
Questions?
Kelly Reagan, Administrator
City of Columbus Fleet Management
kwreagan@columbus.gov
(614) 645-6254
Low cost solution for fleets
Total Fleet Solution

Reduce your fleet’s fuel consumption by up to 12% with Derive’s low cost engine calibration

Fleet Efficiency with No Risk
- Low cost (money back guarantee)
- No powertrain risk
- 10 minute installation
- 100% reversible and transferable*
- Reduced maintenance costs

Application List:
- GM
- Ford
- Cummins
- Truck or car, gas or diesel

Intelligent Fleet Solutions
Total Fleet Solution

HOW IT WORKS - Efficiency in the form of an app...

- **Eco-Shift**: Creating comfortable shift patterns
- **Idle Reduction**: Reduce idle RPM and idle fuel consumption by up to 30%
- **Speed Limiter**: Control a vehicle’s top-end speed anywhere from 25-85 mph

**Financially Smart**
- Shortest payback compared to other fleet efficiency products
- Can be used in conjunction with other technologies
- GUARANTEED 1 year ROI
City in FL Example

Selected vehicles
All department qualified vehicles
Estimated savings 10-15%

Cost: $400*1,000= $400,000
Savings in year 1= $600,000
Profit in year 1= $200,000

Savings over 5 years= $2,600,000
Savings over 7 years= $3,800,000

Unique financing plan!

<table>
<thead>
<tr>
<th>Year</th>
<th>Make</th>
<th>Model</th>
<th>Fuel Quantity</th>
<th>Fuel Amount</th>
<th>Fuel savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>GMC</td>
<td>7493.8</td>
<td>$15,297.43</td>
<td>$1,835.60</td>
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<tr>
<td>2008</td>
<td>Cherv</td>
<td>3014.2</td>
<td>$5,768.13</td>
<td>$692.18</td>
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</tr>
<tr>
<td>2013</td>
<td>Ford</td>
<td>2500.4</td>
<td>$5,535.55</td>
<td>$664.27</td>
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<tr>
<td>2015</td>
<td>Ford</td>
<td>2421.3</td>
<td>$5,370.29</td>
<td>$644.44</td>
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<tr>
<td>2006</td>
<td>Ford</td>
<td>2367.9</td>
<td>$4,613.33</td>
<td>$553.60</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Ford</td>
<td>2045.1</td>
<td>$4,580.25</td>
<td>$549.63</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Ford</td>
<td>2046.6</td>
<td>$4,557.86</td>
<td>$546.94</td>
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<tr>
<td>2014</td>
<td>Ford</td>
<td>2047.7</td>
<td>$4,434.74</td>
<td>$532.17</td>
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<tr>
<td>2014</td>
<td>Ford</td>
<td>1738.9</td>
<td>$4,031.44</td>
<td>$483.77</td>
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</tr>
<tr>
<td>2015</td>
<td>Ford</td>
<td>1905.9</td>
<td>$4,018.67</td>
<td>$482.34</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Ford</td>
<td>1810.6</td>
<td>$3,830.07</td>
<td>$471.65</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Ford</td>
<td>1739.5</td>
<td>$3,870.01</td>
<td>$464.40</td>
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</tr>
<tr>
<td>2015</td>
<td>Ford</td>
<td>1771.4</td>
<td>$3,830.18</td>
<td>$459.62</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Payment</th>
<th>Total</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment 36mo</td>
<td>$11,111</td>
<td>mo</td>
</tr>
<tr>
<td>Projected Savings</td>
<td>$16,666</td>
<td>mo</td>
</tr>
<tr>
<td>Monthly Cost Avoidance</td>
<td>$5,555</td>
<td>mo</td>
</tr>
</tbody>
</table>

No payment for 90 days
Fleets using this technology

- >2 Million Calibrations Sold to date
- 90,000 are Efficiency
- Guarantee Minimum 6% fuel savings
- Municipalities, Gov’t, Corporate Fleets
Intelligent Fleet Solutions provides free consulting services to fleets looking to reduce their fuel consumption, risk, and operating costs. Pricing and fuel reduction percentages are all assumptions and may vary based on actual data.
Thank You!
City of Euless

Fire Department - Idle Reduction Project
Daily occurrence at Fire Administration building.

- Station staff in training classes.
- Units / Gensets left idling for hours.
- Resulting in fuel loss and air pollution.
- How can we get control of this?
The city could reduce the idling time by...

- Setting time limits.
- Enforcement signage.
- Idle reduction equipment.
- City vehicle policy.
But we took a different approach…

…Thinking outside the box.
What if we brought the power to the vehicles??

- Each unit is already equipped with a shoreline plug.
- Units are plugged in while sitting in the station.
- Let’s do the exact same thing but outside!
Grant Funding Possibility?

• Contacted NCTCOG regarding possible funding.
• Funded through the Diesel Idle Reduction Program possible.
• Concept type - New idea under this grant opportunity.
• Project prepared and submitted.
• APPROVAL!
Implementation

- Construction time 2-3 Weeks.
- Each pole allows for (4) units to power-up.
- Power cords stored on site.
- Allows unit HVAC system and drug storage to remain functional while parked.
Success!

- 5,975 total hours in idle reduction to date.
- Estimated 3,585 gallons of fuel saved (+/-).
- Units remain heated or cooled and medication chilled.
- Maintenance costs – Virtually Zero!
More is Better...

- Additional power pole added under a TERP grant.
- Allowed for other Fire Apparatus to shut down and plug in for power.
- Up to (8) units can now hook-up.
Key Issues

• Wet weather concerns
  - To date there have been no weather related issues.
  - All outlets are GFI protected.

• Material procurement
  - All components available locally. RV supply locations.
  - Power is drawn from nearby electrical transformer.

• Employee Buy-In
  - Usage / hookup same as is in stations.
  - Savings can be readily seen.
What Next?

• Other areas of usage?
  – Recreation centers
  – TCC Fire Training Campus.
  – Hospitals.

• EV hook-ups?
  – City Hall campus.
  – Library.
  – Recreation Centers.

• Guest accommodations?
  – Hook-ups for joint training at Fire Administration.
Questions?
Clean Technology for Emergency Vehicles

Purchasing Opportunities to Green Your Fleet in 2018!

Megan Aki
Metropolitan Area Planning Council (MAPC)

January 30, 2018
MAPC: ABOUT US

- Regional Planning Agency
- 101 cities and towns
- 80+ employees
- Wide range of planning expertise
MAPC: CLEAN ENERGY

Regional Energy Projects
- ESCO Procurement
- Regional Solar Initiative
- LED Streetlight Purchasing Program
- Community Electricity Aggregation
- Green Mobility Program
- Energy Resiliency

Climate and Energy Planning
- Connecting municipalities with incentives + plug-and-play programs
- Community energy and climate baselining, planning, and strategizing
- Outreach programming and education
- Net Zero Planning

Energy Technical Assistance
- Grant Writing
- Green Communities Designation
- Methane Leaks
- Solar Permitting and Zoning
- State and Local Policy
- Net Zero Guidance & Education
Accelerate the deployment of alt. fuel vehicles (AFVs) by reducing their incremental costs and building fleet capacity to plan procurements.

Propane, electric, and natural gas vehicles and infrastructure.
Massachusetts Statewide Contracts

Alternative Fuel Options on VEH98 and VEH102
OSD maintains contracts procured for specific commodities and services which may be used by any executive department or eligible entity.

These contracts follow “Best Value Procurement.”

**MGL Chapter 30B**

- Cities and towns and others must follow M.G.L. c. 30B, although they may purchase from OSD statewide contracts.
- per M.G.L. c. 7, §22A and M.G.L. c. 30B, §1(c).
ELIGIBLE ENTITIES

PUBLIC ENTITIES NATIONWIDE

- Municipalities
- State agencies
- Ind. public authorities/quasi-public agencies
- Public libraries
- Public schools
- Public higher ed.
- Public hospitals
- Public purchasing cooperatives
- Non-profit certified orgs. working with Massachusetts
WHAT’S ON VEH98?

### Battery Electric Vehicles
- Ford C-Max Energi
- Ford Fusion Energi
- Toyota Prius Prime
- Hyundai Sonata Plug-In
- Chrysler Pacifica (Van)

### Plug-In Hybrid Electric Vehicles
- Chevy Bolt EV
- Chevy Volt
- Ford Focus
- Nissan Leaf
- Firefly ESV

### Hybrid Electric Vehicles
- Honda Accord
- Toyota Camry
- Ford C-Max
- Ford Fusion
- Chevy Malibu
- Toyota Prius
- Toyota Prius Hybrid
- Wagon

- Hyundai Sonata Hybrid
- Chevy Volt
- Toyota Highlander (SUV)
- Toyota RAV4 (SUV)
- Ford F150 Police Responder Hybrid Sedan

### CNG Vehicles
- Chevy Express Cargo (CNG)
- Dodge RAM 2500 (CNG)

VEH98: Statewide Contract for Vehicle Purchases
18 local dealers – as of 1/1/2018
## WHAT'S ON VEH98?

<table>
<thead>
<tr>
<th>Hybrid Electric Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honda Accord</td>
</tr>
<tr>
<td>Toyota Camry</td>
</tr>
<tr>
<td>Ford C-Max</td>
</tr>
<tr>
<td>Ford Fusion</td>
</tr>
<tr>
<td>Chevy Malibu</td>
</tr>
<tr>
<td>Toyota Prius</td>
</tr>
<tr>
<td>Toyota Prius Hybrid</td>
</tr>
<tr>
<td>Wagon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plug-In Hybrid Electric Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevrolet Bolt EV</td>
</tr>
<tr>
<td>Chevrolet Volt</td>
</tr>
<tr>
<td>Ford Focus</td>
</tr>
<tr>
<td>Nissan Leaf</td>
</tr>
<tr>
<td>Firefly ESV</td>
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<tr>
<th>CNG Vehicles</th>
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<tbody>
<tr>
<td>Chevrolet Express Cargo (CNG)</td>
</tr>
<tr>
<td>Dodge RAM 2500 (CNG)</td>
</tr>
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<thead>
<tr>
<th>Battery Electric Vehicles</th>
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</thead>
<tbody>
<tr>
<td>Chevrolet Volt</td>
</tr>
<tr>
<td>Nissan Leaf</td>
</tr>
<tr>
<td>Firefly ESV</td>
</tr>
</tbody>
</table>

VEH98: Statewide Contract for Vehicle Purchases
18 local dealers – as of 1/1/2018
WHAT’S ON VEH102?

Category 1
CHARGING STATIONS

Category 2
IDLE REDUCTION

Category 3
AFTERMARKET CONVERSIONS

VEH102: Statewide Contract for Advanced Vehicle Technology
WHAT’S ON VEH102?

Category 1
CHARGING STATIONS

Category 2
IDLE REDUCTION

Category 3
AFTERMARKET CONVERSIONS

VEH102: Statewide Contract for Advanced Vehicle Technology
EMERGENCY VEHICLE TYPES

Solar Auxiliary Power System
Any 12V/24V vehicle battery/battery bank – emergency/EMT vehicles, police vehicles
Case Study

Hydraulic Hybrid Energy Recovery System (ERS)
Type III Ambulances on a Ford E350, Ford E450 or GM 3500 or GM4500 chassis
Case Study

Hybrid Electric Conversion System
Type III Ambulances on a Ford E350, Ford E450 or GM 3500 or GM4500 chassis
Case Study
MAPC’s Green Mobility Group Purchasing Program

Upcoming Opportunities & Next Steps
GROUP PURCHASE ROUND 1

Accelerated Time-Based Discounts

DAY 1 – DAY 30
3%

DAY 31 – DAY 90
1.5%

DAY 91 – DAY 180
0%

Volume-Based Discounts

6+ vehicles
20+ vehicles
100+ vehicles

6+ vehicles
20+ vehicles
100+ vehicles

6+ vehicles
20+ vehicles
100+ vehicles
**PROCESS & TIMELINE**

**FEBRUARY – APRIL**
- Public entities submit Letters of Interest & Vehicle Interest Lists

**MAY**
- MAPC collects vehicle specifications for **ROUND 1**

**JUNE**
- MAPC partners with OSD and DOER on **ROUND 1**

**JULY**
- MAPC/DOER issue Statement of Work to XL Hybrids

**AUGUST**
- 30 day accelerated discount window closed 8/25

**OCTOBER**
- 60 day accelerated discount window closed 10/25

**JANUARY 2018**
- Pricing Agreement with XL Hybrids closed 1/25/18
ROUND 1 RESULTS

- 28 vehicles
- 4 fleets
- 11-19% discounts
- 1-2k per vehicle
- 25-30% average fuel economy improvement
UPCOMING IN 2018!

Electric Vehicle Charging Stations

Electric Vehicles

Aftermarket Conversion Technology
Thank you!

If you’re interested in participating in MAPC’s Group Purchasing Program, fill our community interest survey at:

www.surveymonkey.com/r/GreenMobility

Megan Aki
Clean Energy Analyst, MAPC
617-933-0795
maki@mapc.org
Thank You!

Webinar Presentations Will be Posted on the DFW Clean Cities Website at:

https://www.dfwcleancities.org/webinars

Questions? Contact Bailey at Bmuller@nctcog.org