NASA Born, Technology Driven

How EDAR Can be an Enhancement to Your Current I/M Programs

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EDAR

- Update on EDAR Worldwide and Advancements
- How Does EDAR Benefit the Motorists
- The Advantages of Remote Sensing for the States

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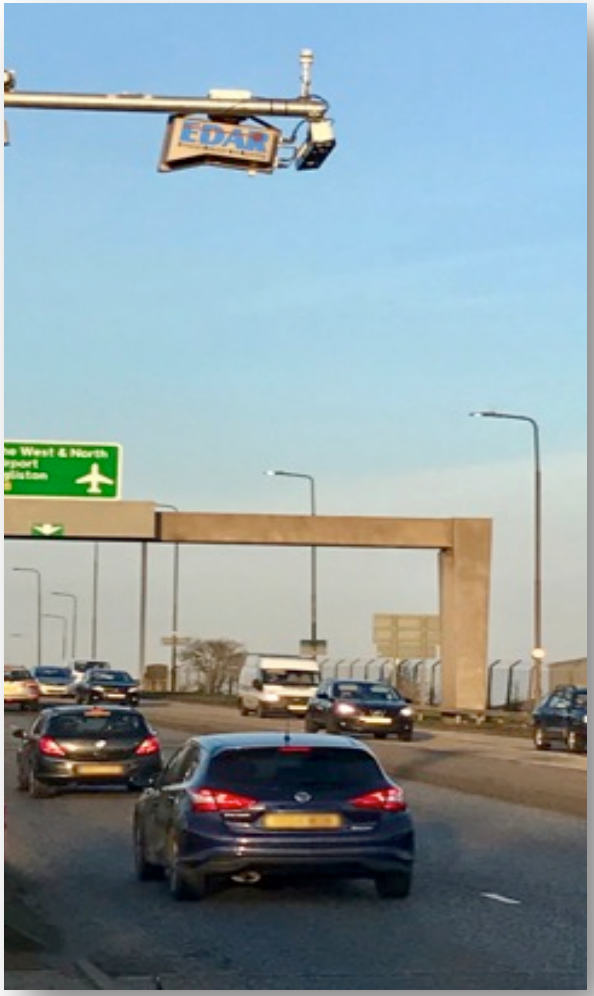
An Update on EDAR Worldwide



- <u>Scotland</u>
  - Month long pilot program with Scottish Government at 3 locations in the Edinburgh and Glasgow areas
  - In-road retroreflector
    - Gave ability to scan in mist and light rain
  - Detected CO_2, NO, NO_2, & $PM_{2.5}$
  - Average valid hit rate of 92%

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An Update on EDAR Worldwide

Nashville: The "It" City

- Bringing the "It" Technology to the "It" City
- Screening 30% of the Fleet's Light-Duty Vehicles
- Set to launch later this year

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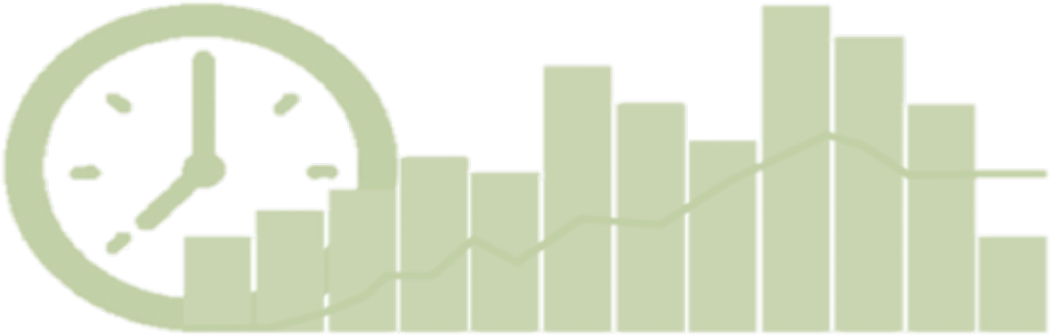
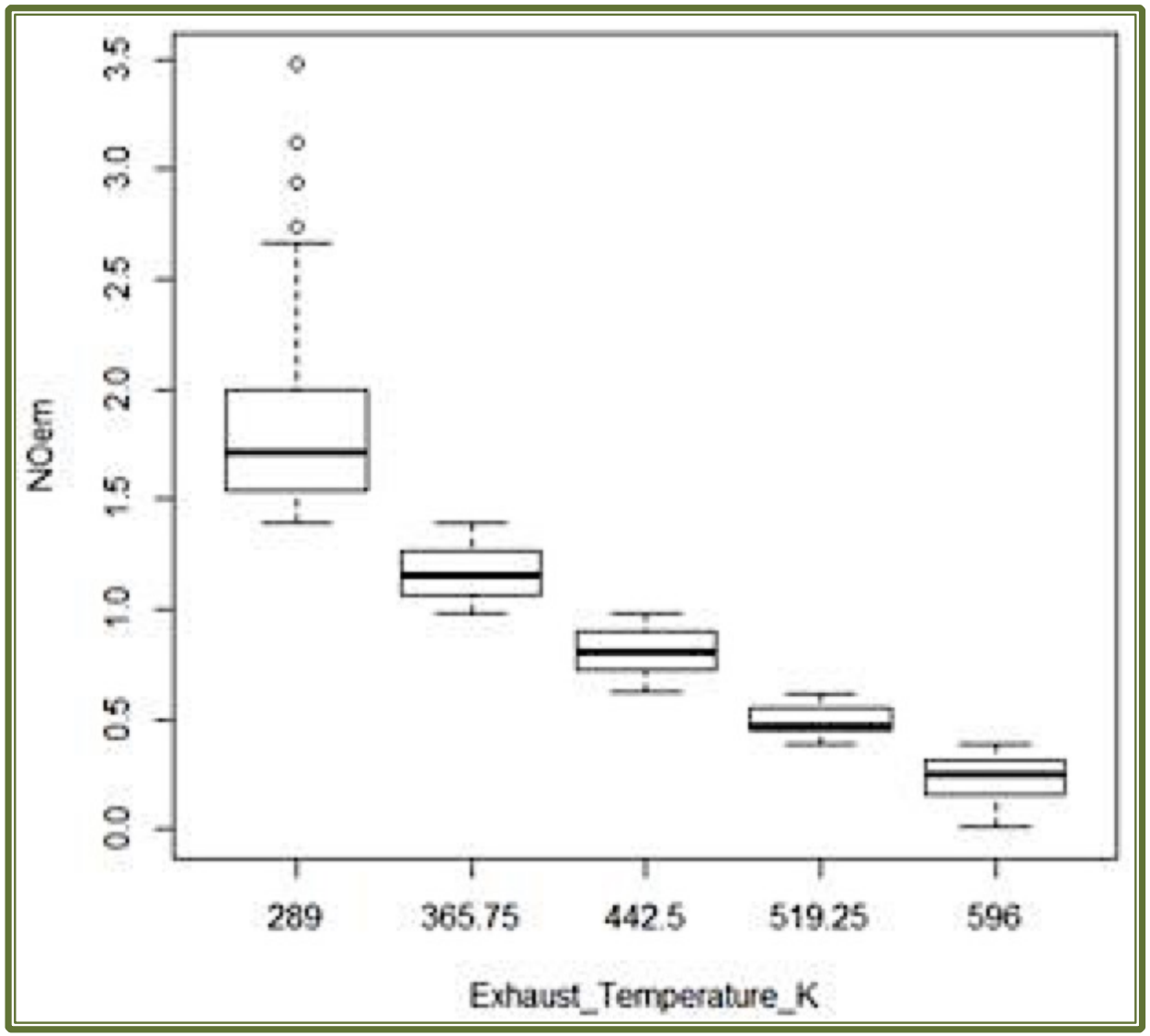
Update on EDAR Advancements

- EDAR can detect up to 7 gases from 1 unit
- New retroreflector design allows for unprecedented "up time" due to being able to continue data collection in light rain or mist therefore increasing valid hit rate



A First for Remote Sensing



NOx Reduction detected as catalytic converter heats up as seen by EDAR

EDAR: A NASA Spinoff Technology

Published as a NASA Spinoff Technology

- You may read the issue featuring EDAR at : https://spinoff.nasa.gov/Spinoff2017/index.html

Spinoff (spin´ôf) -noun.

1. A commercialized product incorporating NASA technology or expertise that benefits the public. These include products or processes that:
   - were designed for NASA use, to NASA specifications, and then commercialized;
   - incorporate NASA technology in their manufacturing process;
   - are successful entrepreneurial endeavors by ex-NASA employees whose technical expertise was developed while employed by the Agency;
   - are commercialized as a result of a NASA patent license or waiver;
   - are developed using data or software made available by NASA.

2. NASA's premier annual publication, featuring successfully commercialized NASA technologies.

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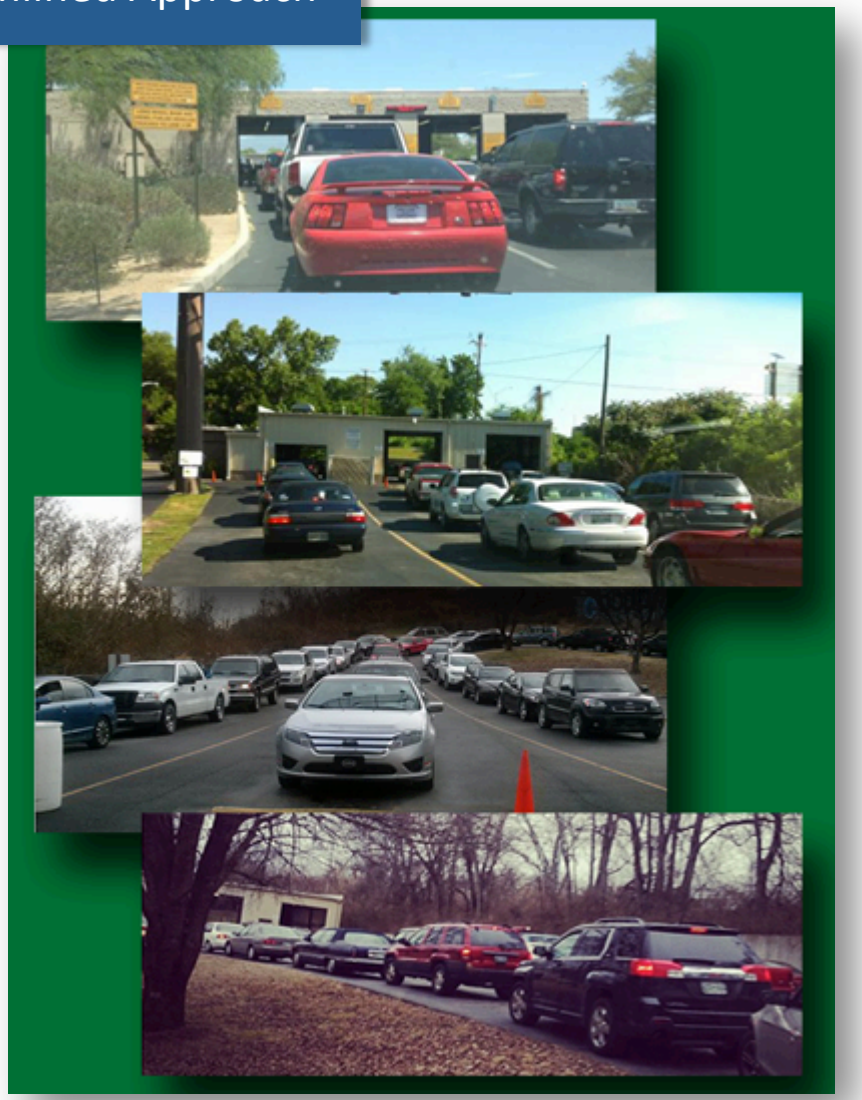
How EDAR Benefits Motorists

A Convenient & Streamlined Approach



The Advantages of Remote Sensing for the States

- Cost Effectiveness
- Real-World Driving Data
- Continuous Monitoring
- Express Screen
- Hot Running Mass Emissions
- Create Emissions Inventory for the Entire fleet.

- Colorado's program exempts on average approximately 30% of their IM testable fleet
- In 2014, 238,138 motorists participated Cost saving is estimated to be close to **$4M** based on:
  - Average travel time to a brick and mortar facility (28 min.)
  - Average wait/test time (27 min.)
  - Local area hourly wage (half of the DMA average = $12.53)
  - 2014 IRS travel expense of $0.56 per mile

(Jim Sidebottom IMS 2016)

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Conclusion:
By Expanding Our Minds We are Able to Help You Change Your World

- ✓ Major projects happening worldwide for EDAR
- ✓ Technology advancements increasing the robustness of the system
- ✓ Provide a convenience factor for motorist while assisting states with enhancing their programs

Check Out Our New Website at:

www.heatremotesensing.com

Expand Your Mind,
Change Your World