

# Improving Air Quality - Cenex Projects / Case Studies

Tony Machin

Business Development Manager



Improving Air Quality



## Cenex Introduction

Transport

Innovation

Energy

Low Carbon Vehicle Show



**cenex**

Cenex was established in 2005 as the UK's first Centre of Excellence for Low Carbon and Fuel Cell technologies

Today, Cenex operates as an independent not-for-profit consultancy specialising in the delivery of projects, supporting innovation and market development, focused on low carbon vehicles and associated energy infrastructure

## Reducing Emissions From Transport



Helping clients to assess, evaluate, implement and deliver low emission vehicle and associated infrastructure strategies

# Nottingham Workplace Travel Scheme

*Ultra Low Emission Vehicle (ULEV) Experience*



## ULEV Experience

- Programme supporting Nottingham businesses to understand, trial and implement ultra low emission vehicle technology through:
  - Fully funded fleet reviews (3 levels)
  - Low emission vehicle loans
  - Local business engagement events
- Target of 8,000 more ULEVs on road
- 13 engagement events
- 16 fleet reviews completed (4100 vehicles)
- 450 vehicles identified for EV swap
- Potential annual TCO saving £170,000 and 900 tonnes CO<sub>2</sub>!



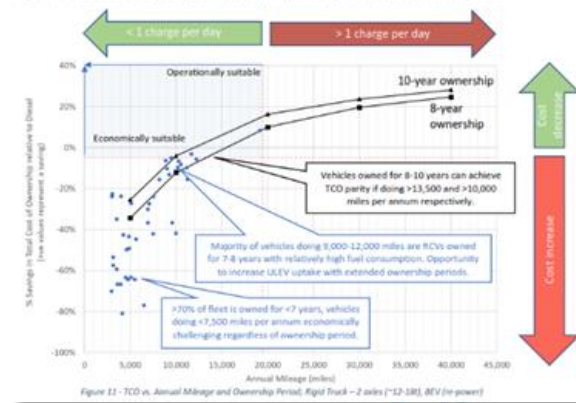
# Improving Air Quality

## ULEV Experience

- Also review of 500+ Nottingham City Council fleet
- Over 10% now ULEVs
- Potentially 80 more ULEVs (including Cage Tippers, Electric Sweeper and Minibuses)
- Plus Infrastructure support – site mapping, stakeholder engagement, technical due diligence, procurement support, tender evaluation to service level specification



Figure 11 shows the sensitivity analysis for BEV (re-power) in the Rigid Truck (12-18t) vehicle segment.



# Taxi & Private Hire Services

*Supporting the Uptake of ULEV Taxis*



## Taxi & Private Hire Services

- Support on uptake of ULEV taxis / associated infrastructure (local and regional):
  - Hackney Carriage and Private Hire Fleet Assessments
  - ULEV Business Case Assessment
  - Review Vehicle Licensing Policy/Best Practice
  - Review EV charging infrastructure requirements / siting
- Nottingham/Derby/Oxford Councils:
  - Operational suitability, TCO and business modelling for ULEVs (BEV/Rex/Plug-in Hybrids)
  - Influenced Licensing Policy (Oxford zero emission by 2025)



## Taxi & Private Hire Services

- St Albans & District Council:
  - Feasibility of EV taxis and uptake support
  - Awareness raising, infrastructure provision, financial incentives, enforcement
- Wolverhampton City Council:
  - Policy orientated low emission taxi proposition to improve air quality
  - Supported successful OLEV bid for deployment of Rapids
  - Commit proportion of taxi fleet to EVs by 2020



## Inclusiv EV & Shared Urban Sustainable Mobility (SuSMo)

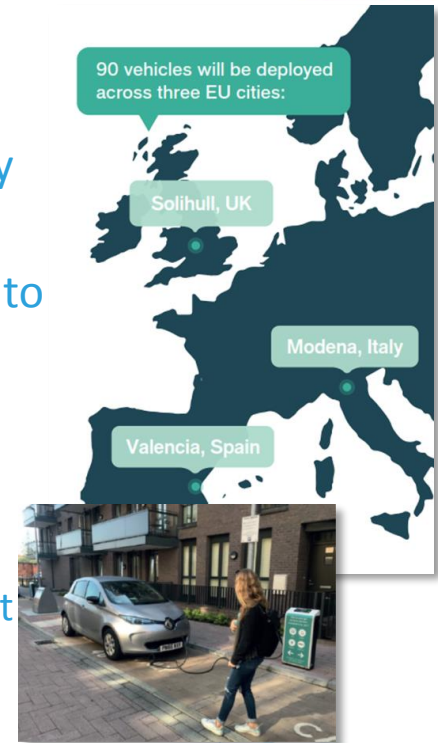
*Shared Mobility Solutions*



# Improving Air Quality

## Inclusiv EV

- Pan-European Climate KiC funded demonstrator project
- Exploring potential for EV car sharing schemes in low income city areas
- Worked already with commercial Car Clubs/Housing Developers to identify best delivery of low emission mobility
- Key objectives to demonstrate/test:
  - Business case for EVs in low income/disadvantaged neighbourhoods
  - Different business models/payment mechanisms
  - Benefits of shared EV mobility and integration with existing transport



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## Inclusiv EV / SuSMo

- 3 year project to deploy 90 EVs
- Also managing infrastructure installation & procurement
- Ultimately to develop commercial, technological, environmental and social business case for car share/EV use with local community & business

### SuSMo

- Cenex led consortium to address challenges faced by cities with introduction of low carbon shared mobility services
- 3 year project – Stockholm, Madrid, Bologna and Sofia
- Provide policy makers with tools and knowledge to better implement shared, low carbon mobility solutions in Europe



# Autonomous & Connected Vehicles for Cleaner Air

*Project ACCRA*



# Improving Air Quality

## Project ACCRA

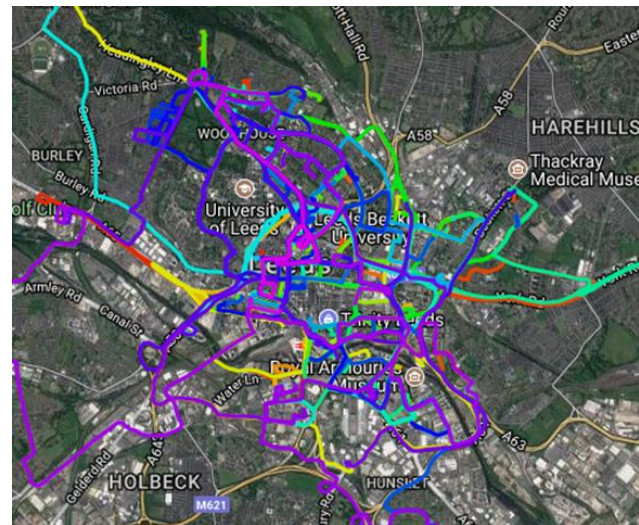
- Joint project with Leeds City Council completed summer 2018
- To develop system to reduce emissions of HGVs in designated inner city areas to improve air quality
- Used smart city 'geo-fencing' technology
- Remote control of 7.5t Tevva Motors Range Extended EV's energy management system
- Allowing switch to zero emissions running within designated Dynamic Control Zone (DCZ)



# Improving Air Quality

## Project ACCRA

- DCZ can be adjusted in real-time based on air quality status by:
  - Location
  - Size
  - Time duration
- Data loggers and roadside emission sensors with predictive function for weather and traffic data
- Development of emissions model to show impact of traffic activity to air pollution levels in Leeds
- Also investigating implementation across UK



# Midlands Connect

*Alternative Fuels Research for Freight & Logistics*



## Improving Air Quality



### Midlands Connect

- Recommend transport projects providing largest economic and social benefits for the Midlands (and UK)
- 35% warehouse space, 35 of 50 global automotive suppliers and 1300 supply chain companies in Midlands
- Targeting logistics, automotive and energy industry
- Analytical, business and stakeholder engagement
- Assessing development potential and intervention options to stimulate uptake of clean, alternative fuels in freight/logistics sector



# ATKINS



# Thank you for listening

*Tony Machin*

Business Development Manager

[tony.machin@cenex.co.uk](mailto:tony.machin@cenex.co.uk)

[www.cenex.co.uk](http://www.cenex.co.uk)

