

Solutions

City & Urban Charging

Increasing the quality of life

CONGESTION
CHARGING

TRANSIT
CHARGING

POLLUTION
CHARGING

LOW
EMISSION ZONES

City & Urban Charging

City & urban charging is used to charge drivers a fee for entering into or driving within a designated urban area or city centre. The city & urban charging system should be implemented using electronic tolling technology. Fees could vary based on factors such as the time of day, the level of congestion, or the emissions of the vehicle. The aim of city & urban charging is to reduce traffic congestion, improve air quality, promote the use of public transportation or alternative modes of travel within densely populated urban areas, and generate revenue for urban infrastructure improvements.

SCAN ME



More information:
qrfy.com/p/2023_cuc_p2

Solutions:

01 Congestion Charging

Toll-based system designed to reduce traffic congestion by discouraging travel in congested areas during peak periods.

02 Transit Charging

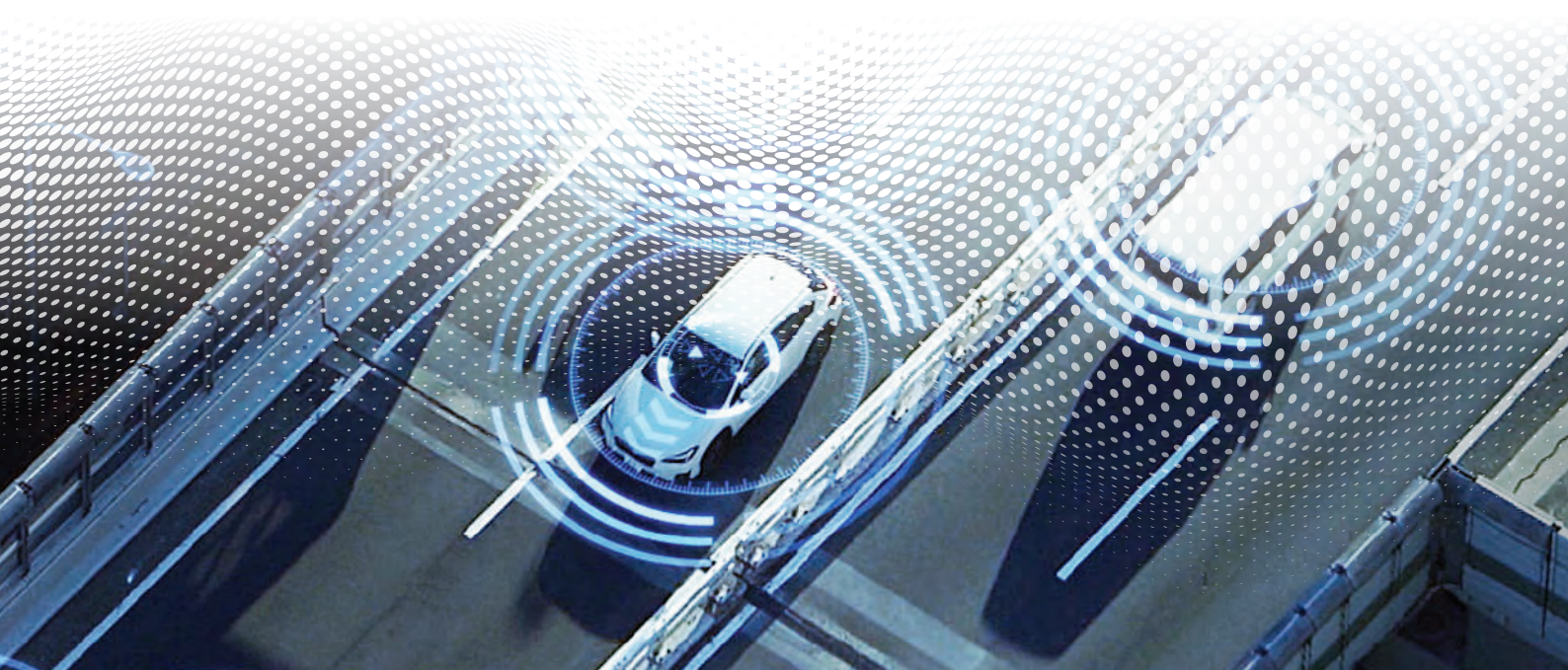
Collects fees from road users to fund and sustain transportation systems while influencing travel patterns and congestion.

03 Pollution Charging

Involves charging vehicles to enter certain areas at certain times or on the basis of their emissions.

04 Low Emission Zones

Specific geographical areas within a city where access is restricted or regulated on the basis of vehicle emissions.



01

Congestion Charging

Congestion charging is a transportation management strategy implemented to reduce traffic congestion and improve mobility, especially in cities. Congestion charging aims to discourage drivers from using busy roads during hours when the traffic is at its highest point to reduce overall traffic and congestion.



Congestion charging involves charging vehicles a fee for entering certain designated areas, typically busy urban centres, or specific zones with high traffic density, during peak hours or congested periods. The application of the system is highly flexible and can be tailored to the needs of the road operator.

Main types of congestion charging

- **Cordon areas**

set up with a cordon line around the perimeter of the area. Charges are then applied to each vehicle passing the cordon line. This option is usually chosen to reduce traffic accidents, air pollution or urban deterioration.

- **Area - wide congestion pricing,**

where all vehicles within a certain area are charged. The charges can vary based on a variety of factors, such as vehicle type, time spent in the area or the distance the vehicle has travelled on roads within the selected area.

- **A toll ring**

around the city centre, where vehicles are charged for passing through its checkpoints. This option encourages lower traffic through the busiest parts of the city. It allows for a safer environment for pedestrians, as well as freeing up the roads for public transit, making the average commute much faster.

- **A corridor or facility charging**

for a small area or a single road. Usually, a single toll point is set up at the entrance to a road or facility to gather fees. This option can prevent increased traffic load on roads that do not have enough lanes to handle the increase and to stop congestion that can easily spread outside these roads.

Main advantages

- **Reduced traffic jams**

by deterring unnecessary car trips. Congestion charging can lead to smoother traffic flow and a reduction in time spent stuck in traffic jams

- **Cleaner environment**

lower vehicle emissions from reduced traffic improve air quality, which is benefits both public health and the environment

- **Encourage sustainable transportation**

by making driving in congested areas more expensive, congestion charging encourages the adoption of more sustainable transportation options, such as public transit, cycling, and carpooling

- **Safer roads**

with fewer cars on the road the risk of accidents decreases, improving road safety for pedestrians, cyclists, and drivers alike

- **Funding for transportation projects**

The revenue generated from congestion charging can be reinvested in transportation infrastructure, making it possible to fund projects that further enhance urban mobility and accessibility

Thanks to advancements and modernisation of electronic toll collection technologies, congestion charging has become an accessible option to most cities and other road operators. Implementing congestion charging has become much less of a financial burden on the road operators thanks to the ability to implement it using existing infrastructure. Further versatility comes from the option of being able to charge congestion fees during specific hours of the day or season.

Charging for congestion can prove to be a lucrative way of generating additional funds for the purpose of road maintenance and other public services. As it has the option of lowering operational costs of roads by reducing their wear through excessive usage, the newly generated revenue stream can also be used for infrastructure development of new roads.

Key benefits for road users

- **Reduced congestion**

By discouraging unnecessary car trips and managing traffic demand, congestion charging leads to reduced traffic congestion in designated areas. This means shorter travel times and a more predictable driving experience for those who need to enter congested zones.

- **Reduced fuel usage**

Congestion charging helps smooth traffic flow so there are fewer abrupt stops and starts, which are less fuel-efficient compared to consistent driving at optimal speeds.

- **Faster travel**

With fewer vehicles on the road during peak hours, road users experience faster and more reliable travel times.

The effectiveness and acceptance of congestion charging vary depending on local attitudes, existing infrastructure, and the specific policies implemented by road owners. Successful implementation often involves careful planning, public engagement, and coordination with other transportation measures.

Drawing on our extensive know-how and proficiency in the toll industry, we've developed a suite of solutions designed to address congestion charging. These solutions encompass a range of technologies that can be tailored to meet the specific needs of our clients.

Platforms

- Satellite-based electronic toll collection system (GNSS)
- Video-based electronic toll collection system (ANPR)
- DSRC-based electronic toll collection system
- RFID-based electronic toll collection system
- Combination of technologies tailored to specific implementation (Hybrid)

For each client we craft a bespoke, personalised solution that meets their unique requirements, local conditions, resources, and the specific environment. Our solutions include a combination of technologies, and in certain scenarios, we can integrate new technologies for congestion charging with existing infrastructure. Our steadfast commitment to innovation ensures our solutions are cutting-edge. We're harnessing advancements like AI to increase their effectiveness and efficiency.

02

Transit Charging

The costs associated with building and maintaining infrastructure like bridges, tunnels and roads can be substantial. Transit Tolling helps recover some of these costs, reducing the burden on public funds or taxes.



Charging tolls for passages through cities, tunnels, and bridges generates revenue that can be used to fund the construction, operation, maintenance, and improvement of the infrastructure. This revenue helps offset the costs associated with building and managing these essential transportation assets, ensuring they remain safe and functional.

Transit tolling adheres to the principle that those who use and benefit from specific infrastructure should contribute to its upkeep. This principle is seen as more equitable than relying solely on general tax revenue. Equally, social equity has to be considered. If transit tolling is implemented without careful planning, it has the potential to disproportionately affect lower-income individuals who use tolled infrastructure. Balancing the financial burden with considerations of social equity is important.

Transit tolls can help fund the expansion of transportation infrastructure to meet the growing needs of a population or a region. New bridges or tunnels may be needed to accommodate increased traffic.

Key benefits

- **Traffic management**

Transit tolling can be used as a congestion management tool to encourage transit drivers to use routes and schedules that minimize traffic congestion in heavy traffic areas. Tolling could be structured to encourage off-peak transit operations.

- Transit tolling can also play a role in **public-private partnerships** involving transit infrastructure. Private companies might invest in transit systems in exchange for the right to collect tolls and share in the revenue.

- **Encouraging efficient transportation modes**

Transit tolling might be used to promote more sustainable modes of transportation, such as walking, cycling, or carpooling. By making public transit relatively more attractive in terms of cost, transit tolling could support broader transportation goals.

- **Specialized funding**

directed towards specific transportation-related projects or initiatives, such as construction of new bridges or improvements to existing roadways.

Due to the progress and modernisation of electronic toll collection systems, Automatic Number Plate Recognition (ANPR) technology and smart transit solutions, transit tolling has become a viable choice for many urban areas and transportation authorities. Implementing transit tolling has become significantly more financially feasible for these authorities, as it can be seamlessly integrated into existing infrastructure.

Utilizing our extensive expertise and competence in the tolling sector, we have formulated a comprehensive set of solutions aimed at tackling congestion tolling. Our array of solutions encompass a variety of technologies that can be customised to precisely match the requirements of our clients.





Platforms

- Satellite-based electronic toll collection system (GNSS)
- Video-based electronic toll collection system (ANPR)
- DSRC-based electronic toll collection system
- RFID-based electronic toll collection system
- Time and distance-based ticketing (eTicket)
- Combination of technologies tailored to specific implementation (Hybrid)

Pollution Charging

Pollution is a significant problem in cities due to a combination of various factors that arise from urbanisation, industrialisation, and the concentration of human activity. Pollution charging can be an effective tool to reduce pollution in cities by encouraging the use of cleaner modes of transportation and addressing traffic congestion.



Pollution charging is implemented by cities and urban areas to improve air quality, reduce traffic congestion, and mitigate environmental pollution. It involves imposing tolls or charges based on the emissions profile of vehicles. Higher-polluting vehicles face higher charges, while cleaner vehicles, such as electric or hybrid receive discounts or exemptions. This creates a financial incentive for individuals to choose vehicles with lower emissions to reduce overall pollution levels.

Pollution charging also raises awareness about the environmental impact of vehicle use and can influence long-term behavioural change. People become more conscious of their transportation choices, opting for cleaner options to both save money and reduce their carbon footprint. Pollution charging encourages people to shift from private vehicles to public transportation, cycling, and walking.

Key benefits

- Better air quality
- Incentivising cleaner vehicles
- Shift to public transit and sustainable transport modes
- Reduction in traffic congestion
- Revenue for sustainable initiatives

In essence, pollution charging works by altering individual behaviours and motivating collective actions that lead to reduced traffic congestion, cleaner vehicle choices, and an overall shift towards more sustainable modes of transportation. This combination of factors helps to reduce pollution levels in cities, improve air quality and public health, and create a more environmentally sustainable urban environment.



Cities that implement pollution charging often invest in improved urban planning, including the creation of pedestrian-friendly zones, enhanced public spaces, and the development of efficient public transportation networks. These measures contribute to a reduction in vehicle dependency and pollution.

Pollution charging is similar to the low emission zones concept. Both low emission zones and pollution charging aim to reduce pollution in urban areas, but they do so through different mechanisms and with specific objectives. Low emission zones restrict vehicle access within specific zones based on emissions criteria. Pollution charging imposes fees or tolls on vehicles entering certain areas for better traffic management and to incentivise cleaner transportation choices.

Pollution charging is primarily designed to selectively influence specific vehicles, strategically discouraging or regulating their passage to mitigate pollution. Our solutions' adaptability enables

the calculation of vehicle charges based not only on their emissions but also on the time and location of travel. More environmentally harmful vehicles can be charged higher fees, whereas hybrid and electric vehicles may qualify for reduced fees or even full exemptions.

Using the latest technologies, such as automatic number plate recognition, cameras or globally available satellite technologies, our pollution charging solutions can be cost-effective for cities and urban areas. To minimise implementation costs and ensure sustainability, our solutions can be integrated into existing infrastructure. Reliable and uninterrupted operation of our pollution charging solutions is guaranteed.

By leveraging our extensive experience and expertise within the tolling industry, we've created a collection of solutions designed to address the challenges of pollution charging. These solutions include a variety of technologies that can be customised to meet



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We craft unique and tailored solutions for our clients that meet their specific requirements, local conditions, resource availability, and environmental considerations. Our strategies include diverse technologies, and can integrate new technologies into pre-existing infrastructure in certain situations. Our commitment to innovation ensures our solutions stay at the forefront by leveraging innovations such as artificial intelligence to increase efficiency and effectiveness.

04 Low Emission Zones

Low emission zones are a traffic management tactic used to combat pollution and improve air quality, especially in cities. These zones discourage drivers from using high-polluting vehicles in cities to reduce overall pollution levels.



Low emission zones are designated areas where highly polluting vehicles are regulated for the purpose of improving air quality. They are the most effective measure that towns and cities can undertake to improve the level of local air pollution.

Low emission zone types

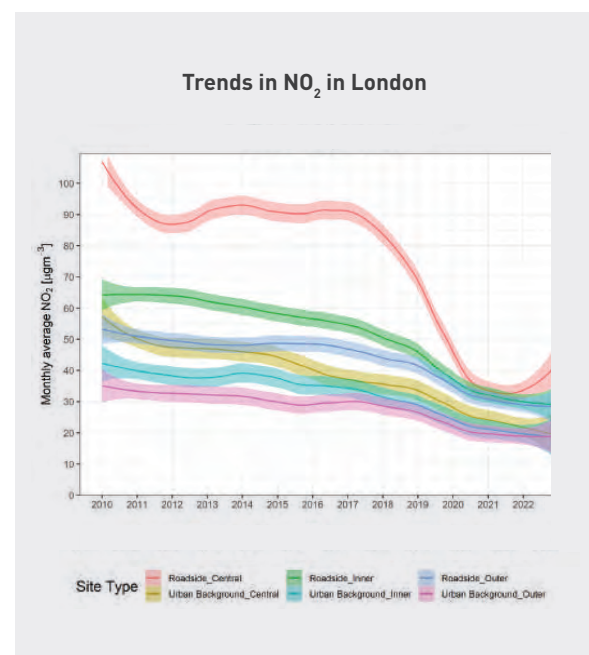
- **Prohibiting high-emission vehicles** from entering these areas
- **Increasing the toll for high-emission vehicles** to disincentivise road use within the area

Low emission zones are an amazing solution for expanding towns, and cities that are looking to reduce the number of private cars or transition to modern electric vehicles to meet the growing demands of urbanisation. These zones help to vastly reduce the city's dependence on motor vehicles while offering a valid and accessible alternative.

The low emission zones concept has been growing in popularity and we're seeing an annual increase worldwide. The creation and maintenance of these zones reduces the emissions of various pollutants that cause damage to our bodies and environment.

Despite their effectiveness, low emission zones are low cost as they can be integrated into existing systems.

They can be easily implemented if the area already contains the infrastructure for toll collection or road monitoring. State of the art technologies, such as Automatic Number Plate Recognition cameras or GNSS can be used for monitoring vehicle entry into the zones as they compare vehicle data against vehicle databases. This allows for the reliable and uninterrupted operation of low emission zones. As such, most zones currently operate 24 hours a day, 365 days a year.



Key benefits

- Improved air quality
- Reduced traffic congestion and faster road travel
- Reduced noise pollution
- Reduced damage to roads and lower maintenance costs

Thanks to the configurability of our systems, it is possible to set vehicle fees in accordance with the amount of pollution the vehicle produces. Higher-polluting vehicles may pay higher fees, while hybrid and electric vehicles pay lower fees or are completely exempt. Low emission zones are mainly set to affect only certain vehicles in a targeted manner in order to discourage or control the frequency of passage through the protected areas.

The most affected vehicles

- Buses
- Heavy Goods Vehicles
- Vans



Priced low emission zones are a great way of generating revenue for the city in which they are implemented. This revenue can be used to further improve the infrastructure and create a better environment for its citizens.

As an additional option, cities can choose to **completely ban problematic vehicles within the zone**. This step allows for the creation of more walkable and accessible cities. These zones contain roads that are free for public transport, bicycle users and create a safer environment for local pedestrians.

By leveraging our substantial expertise and proficiency within the toll industry, we've created a collection of solutions crafted to tackle low emission zones. These solutions encompass a variety of technologies that can be customised to align with our clients' specific requirements.

Platforms

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- RFID-based electronic toll collection system
- Combination of technologies tailored to specific implementation (Hybrid)

We tailor solutions to individual clients that meet their specific needs, local circumstances, available resources, and the environment. Our approach involves using multiple technologies and can seamlessly integrate new low emission zones technologies with existing infrastructure in certain situations. Our commitment to innovation ensures that our solutions stay at the forefront by leveraging advancements such as AI to amplify impact and efficiency.

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