

PITTSBURGH, PA

CURB AUTOMATION SUPPORTS SAFER STREETS IN PITTSBURGH

Pittsburgh is leading the way for cities to create safer, less congested streets that better support the needs of all curb users, including pedestrians, cyclists, drivers, commercial fleets and local businesses.

PROJECT HIGHLIGHTS

CHALLENGES

- Rising congestion, double parking, and safety hazards caused by increased commercial activity at the curb
- Challenges enforcing bike lane and no stopping zone violations with traditional parking tools and strategies
- Lack of visibility into how curbs are being used

OBJECTIVES

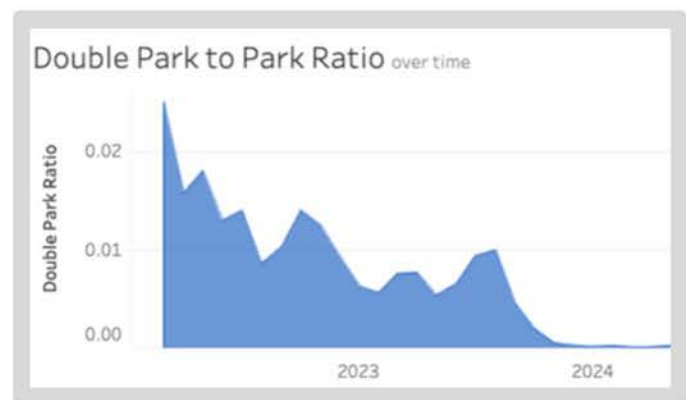
- Support Vision Zero - managing urban streets to prevent injuries and fatalities
- Support local businesses with better turnover and delivery access
- Design data-driven curbside policies to meet real-time demand

IMPACTS AT A GLANCE

- **95%** reduction in double parking
- **23%** decrease in dwell time in loading zones
- **31mT** reduction in CO₂ emissions per zone annually

CREATING WIN-WINS FOR ALL STAKEHOLDERS

- **City Staff:** Aligning planning and operations to support Vision Zero and efficient curb management.
- **Commercial Fleets:** Enhancing loading access to improve efficiency, safety, and reduce citation-related costs.
- **Gig Economy Drivers:** Improving access for food delivery and rideshare drivers to earn more tips and avoid citations.
- **Local Businesses/BIDs:** Facilitating delivery access and curb turnover.
- **General Public:** Reducing congestion and safety hazards to save commute time and enhance pedestrian and cyclist safety.



THE PROBLEMS: THE RIPPLE EFFECTS OF INCREASING CURBSIDE COMPETITION

Curbside deliveries have increased dramatically in Pittsburgh, mirroring trends in cities across the U.S. This surge is particularly evident with the rise of same-day and instant deliveries. Conventional curb users, such as passenger vehicles, buses, taxis, and bikes, are now competing with ride-hailing services, food delivery vehicles, and delivery trucks and vans for limited curb space.

Without effective management of loading access, the strain on curb space leads to cascading issues, particularly safety hazards. Commercial drivers, who often make over 150 stops per day, are under immense pressure to meet tight delivery schedules. Unlike regular drivers who might park further away and walk, these drivers frequently resort to unsafe and illegal behaviors to complete their deliveries, including:

- Double parking, which disrupts traffic flow and increases congestion.
- Blocking bike lanes, jeopardizing cyclist safety and deterring bike use.
- Obstructing no-stopping zones, creating safety risks for pedestrians and other road users.

These behaviors underscore the urgent need for proactive curb management solutions to balance the demands of all users while prioritizing safety and efficiency.



CurbSight camera mounted on traffic signal

MODERNIZING LOADING ZONE POLICIES

Historically, Pittsburgh, has not charged for loading zone access—a policy rooted in outdated practices from an era with far fewer demands on curbs. As the needs of the curb have evolved, policies have struggled to keep pace.

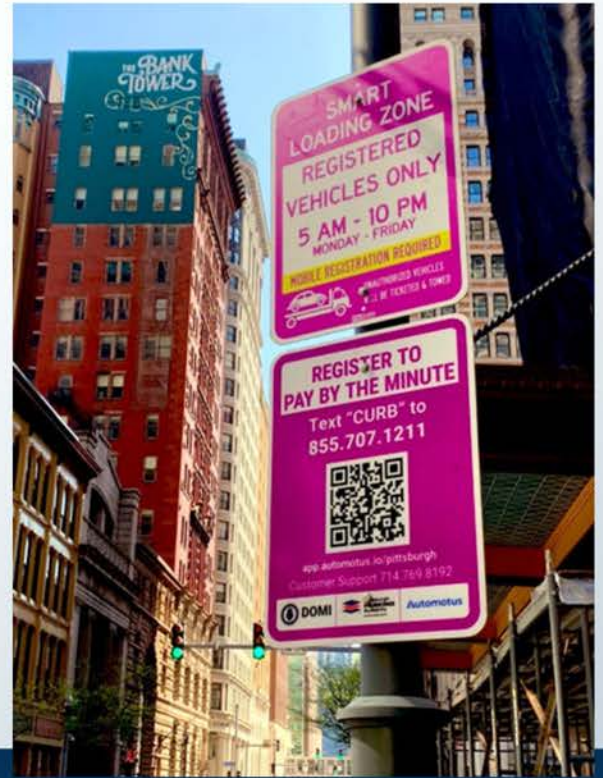
However, Pittsburgh has consistently been a leader in innovative parking and mobility solutions. In 2012, it became the first U.S. city to adopt a pay-by-plate system for on-street parking, mirroring European methodologies. This forward-thinking approach set a precedent, with pay-by-plate becoming a standard best practice nationwide.

Building on this tradition, Pittsburgh's Department of Mobility and Infrastructure pioneered a strategy to manage loading demand—linking usage to fees. Their progressive rate structure keeps short stops affordable while increasing costs for longer stays, encouraging efficient curb use.

AUTOMATED ENFORCEMENT: A KEY TO SAFETY AND EFFICIENCY

Managing short-term violations like double parking, bike lane obstructions, and unauthorized loading zone use is nearly impossible with manual enforcement alone. Recognizing this, Pittsburgh saw automated enforcement—using cameras to capture violations and mail citations—as essential but lacked supporting policies.

Starting with feasible actions and leveraging data at each step, the city iteratively built the framework needed to enable automated enforcement, enhancing compliance and streamlining curbside management.



FROM ANALYTICS TO ACTION: PITTSBURGH'S SMART POLICY EVOLUTION

Pittsburgh's innovative approach exemplifies how leveraging data at every stage can drive transformative urban policies and move beyond the status quo. By iterating and learning from each step, the city created a data-driven path to smarter curbside management:

- **2021:** Launched 20 zones to collect multimodal parking and traffic data, establishing a foundation for informed decision-making.
- **2022:** Introduced 20 smart loading zones, implementing charges for commercial loading to manage curbside demand effectively.
- **2023:** Used double-parking data to refine pricing and policies, optimizing the smart loading zone program.
- **2023:** Earned the International Parking & Mobility Institute (IPMI) Award of Merit for Innovation in Mobility, Transportation, and Parking.
- **2024:** Utilized program data to pass local legislation enabling automated enforcement for loading zones, bike lanes, and no-stopping zones.
- **2024:** Secured City Council approval to transition the pilot into a permanent program.

Pittsburgh's data-driven journey demonstrates how cities can evolve curbside management policies to meet modern challenges and achieve sustainable, scalable solutions.

THE PROCESS

CROSS-DEPARTMENTAL COORDINATION

The success of the Smart Loading Zones relied on collaboration between:

- **Pittsburgh Parking Authority (PPA):** Responsible for parking enforcement and payments.
- **Department of Mobility and Infrastructure (DOMI):** Responsible for designating curb uses and setting meter rates.

Weekly meetings between Automotus, DOMI, and PPA ensured alignment on contracts, legal authority, system integration, and more.

STAKEHOLDER ENGAGEMENT

Engaging with stakeholders was a crucial first step. Automotus collaborated with DOMI to:

- Reach out to council members, business improvement districts, community organizations, and local businesses.
- Validate observed curbside issues and determine locations for Smart Loading Zones.

During the pilot, Automotus provided on-the-ground support to educate users, improve registration, and enhance compliance. This proactive approach increased trust and confidence in the program.



PITTSBURGH
DOWNTOWN
PARTNERSHIP

HOW DO SMART LOADING ZONES WORK?

Automated Smart Loading Zone Workflow

One-time registration



- License plate number
- Digital wallet w/auto-reload

Fully automated billing



- No driver action needed, like a toll road
- Billed for exact time used

Automated enforcement

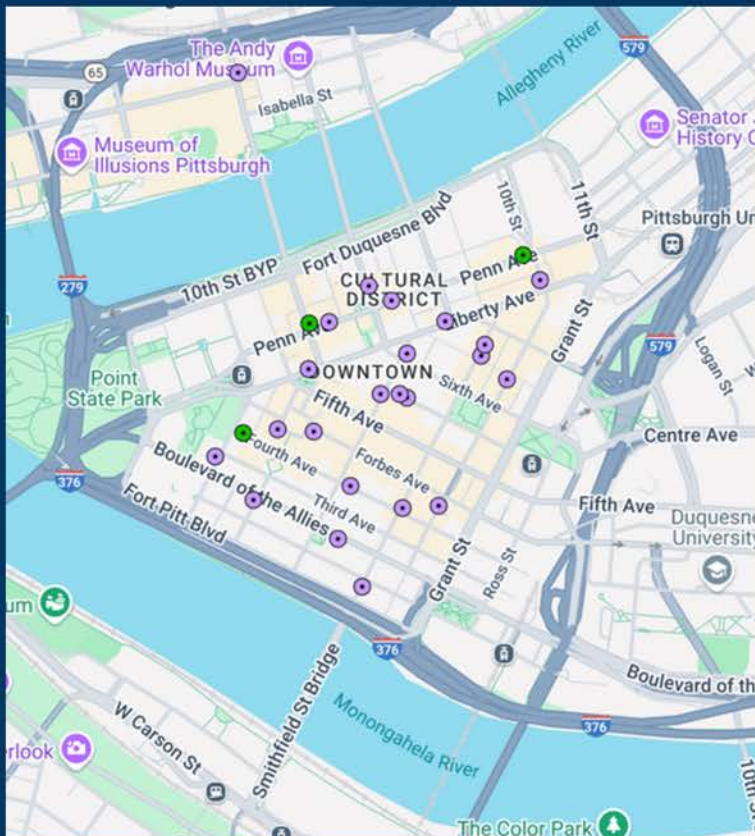


- Unregistered receive a citation by mail based on license plate number

IDENTIFYING LOCATIONS

Without reliable data on double parking or idling time, DOMI initially relied on anecdotal evidence to identify areas needing intervention. The team:

- Initially reviewed about 40 high-conflict areas with local stakeholders to validate proposed zones.
- Assessed the availability and suitability of infrastructure for camera installation, focusing on City-owned streetlights for ease of implementation.
- Maintained a queue of locations for expansions and prioritized based on demand, feedback from stakeholders and available infrastructure



MARKETING AND COMMUNICATIONS

To ensure the success of the program, Automotus collaborated with the City of Pittsburgh on a robust marketing and communications strategy to raise awareness and educate users about the Smart Loading Zones. Key initiatives included:

- **Printed Materials:** Flyers and wallet cards were created to inform drivers about the program's purpose, benefits, and how to use the zones effectively.
- **Online Content:** Informational webpages and social media campaigns were developed to reach a broader audience. Content included instructions on how to register vehicles, payment processes, and the environmental and safety benefits of the program.
- **Driver Outreach:** Automotus and the city collaborated on direct outreach efforts to engage delivery drivers, fleet managers, and other key users. This included attending community meetings, holding Q&A sessions, and distributing materials at high-traffic locations.



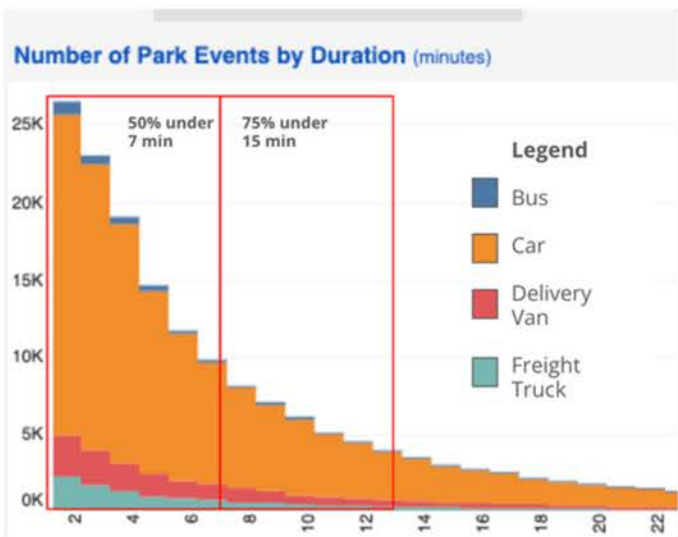
By combining traditional and digital communication strategies, Automotus ensured that the program's goals and operations were clearly understood, fostering higher compliance and positive public perception.

KEY RESULTS AND INSIGHTS

SUMMARY OF RESULTS

The implementation of Smart Loading Zones has delivered significant benefits:

- **Increased Turnover:** Turnover in Smart Loading Zones rose by 40%, while the average stay decreased by 23%.
- **Enhanced Efficiency:** Delivery efficiency improved for small businesses and drivers, reducing vehicle idling and lowering emissions by an estimated 12 metric tons per zone annually.
- **Improved Safety:** Double-parking incidents decreased by 95%, easing traffic flow and reducing obstacles for cyclists and pedestrians.
- **Potential Revenue Growth:** As user adoption grows, the program is poised to generate additional revenue, encouraging compliance through streamlined payment processes and graduated pricing.



KEY RESULTS

95%

reduction in double parks

87%

violators never receive a second citations- behavior is changing!

61%

initial collection rate on mailed citations

>8,000

registered fleets and drivers as of Dec. 2024

KEY INSIGHTS

Flexible access to smart loading zones benefits a wide array of today's commercial curb activity. As opposed to loading zones policies that allocate loading access for traditional commercial vehicles, like box and freight trucks, smart loading zones are available for any driver who registers and pays. Approximately 89% of activity in the zones is from passenger vehicles - a combination of gig economy drivers and local mom and pop businesses using personal vehicles.

Progressive rates are effective for driving turnover. While policy allows up to 120 minutes of loading time, 50% of sessions are 7 min or less, and 75% are 15 min or less

THE FEEDBACK

CITY PARTNERS

"We've seen great impacts the implementation of the Smart Loading Zones. In terms of safety, you can see that in some instances we've seen a greater than 74% reduction in double parking, a congestion decrease in 40% for parking related traffic and an improvement in our air quality through the reduction of emissions. These are super compelling statistics... We've even heard from many delivery companies, including Amazon, that this has been a game changer for their operations in the city."

Kim Lucas, Director, Department of Mobility and Infrastructure

"Automotus enabled the Pittsburgh Parking Authority to maintain their status as an industry leader. The data collected over the past year has proven to be very beneficial to the Authority vision, that we extended our current contract for an additional two years and expanded the Smart Loading to 200 zones."

Dave Onorato, Director of Pittsburgh Parking Authority, Chairman of IPMI

DELIVERY COMPANIES

"I own and operate a small delivery service company for Amazon and the majority of our routes are in the more congested areas of Pittsburgh. the implementation of the Smart Zone Parking program it has increase delivery efficiencies, minimized any delivery traffic congestion and most importantly reduced driver stress and improved driver safety."

Vince Parrucci, Owner of VIP Delivery Solutions, Amazon DSP

"We received really positive feedback from our Pittsburgh Delivery Service Partner. Are cities soliciting feedback for locations of future SLZs? They've been really happy with the service and we would love to see more spaces."

Carina Fortuna, Senior Product Manager of Fleets, Amazon

LOCAL BUSINESSES

"It has been advantageous for us restaurant owners in the Downtown of the city to have the fast unloading line, it allows us to unload the merchandise at the door of our business and avoids double lines and congestion on the street and improves access. We support this initiative."

Danielle Figueroa, Owner of Arepitas

"These are very convenient for business owners and managers when stopping into their businesses. I use the smart loading zones many times a week"

Maggie Colella, Owner of Beauty Boost

Automotus



RESOURCES

ARTICLES AND WEB RESOURCES

DOMI Website:

- [Smart Loading Zones](#)
- [Automated bike lane and no-stopping enforcement](#)
- [Policy on enforcement](#)
- [Code for Smart Loading Zones](#)

Articles

- [Smart Loading Zones Impact Analysis](#); Aaron Burns of Carnegie Mellon University -
- [Do Smart Loading Zones help reduce traffic congestion? A causal analysis in Pittsburgh](#); Tao Tao, Sean Qian of Carnegie Mellon University;

PROGRAM ACCOLADES

Pittsburgh's purple curb parking program to remain indefinitely Monday, Nov. 25, 2024 **TRIB** LIVE

International Parking & Mobility Institute (IPMI) 2023 Award of Merit for Innovation in a Mobility, Transportation, or Parking Program. [Source](#)



World Economic Forum Global Partnership for Local Investment 2024 Public-Private Collaboration Award at the WEF Urban Transformation Summit in San Francisco.

[Source](#)



APPENDIX A - SIGNAGE AND CURB TREATMENTS

2 MAX **PAID**
HR **LOADING**

MON - SAT
8 AM - 6 PM

REGISTRATION REQUIRED

TEXT
"CURB" TO
(855) 707-1211



CAMERA ENFORCED
VIOLATORS SUBJECT TO A \$40 TICKET

APPENDIX A - SIGNAGE AND CURB TREATMENTS

PURPLE CURBS

The eye-catching signage and curb paint used on the smart loading zones created a buzz about “the purple curbs”.

Why purple?

- **Unique and Unclaimed:** Purple is one of the last unclaimed colors in urban design, as defined by the Manual on Uniform Traffic Control Devices (MUTCD).
- **Designated for E-Tolling:** The MUTCD assigns purple for electronic tolling, aligning with smart loading zones as “e-tolling for the curb.”
- **High Visibility:** Purple curbs and markings clearly signal these are not regular parking spaces.



APPENDIX B - LOCAL BUSINESS AND DRIVER EDUCATION MATERIAL

Brochures handed out to local businesses to inform about the program

CHANGES TO Smart Loading Zones

we've heard your feedback, and starting in January we're implementing the following updates to make the program easier for all users

- reduced and simplified pricing
- extended grace period; park free for 15 mins
- loading period extended to 2 hours
- automatically enforced to provide equal access, reduce double parking, and improve efficiency

REGISTER NOW

YOUR FIRST REGISTERED PARK IS FREE



or

[more about](#)

SMART LOADING ZONES



PRIORITIZING PRIVACY

100% surveillance-free
Each Smart Loading Zone license plate reader is private-by-design to ensure it collects only the data it needs.

EACH LICENSE PLATE READER CAPTURES:

- Only information necessary such as park duration and license plate
- Faces and other identifying features

THESE CAMERAS WILL NEVER COLLECT, TRANSMIT, SHARE OR STORE PERSONALLY IDENTIFIABLE INFORMATION FOR ANY PURPOSE OTHER THAN FACILITATING PAYMENTS & CITATIONS

Program Achievements:

- 50% increase in parks, meaning more use of the zones and more parking turnover for local businesses
- 25% reduction in double park dwell times
- Buy in from delivery fleets that have requested additional locations for improved delivery access

SMART LOADING ZONES 101

Why Smart Loading Zones?
Commercial delivery is surging, causing more traffic, pollution, and safety risks. Smart Loading Zones present a chance to ease congestion for the benefit of cities, businesses, residents, and fleets.

Where are the Smart Loading Zones located?
In high-congestion commercial districts around Pittsburgh, including Downtown, Bloomfield, Lawrenceville, South Side Flats, Oakland, Squirrel Hill, Shadyside, and other neighborhoods.

How are the Smart Loading Zones enforced?
Starting this year, tickets may be issued for unregistered use, parking beyond the 2 hour maximum, and double parking. The ticket will be sent to the vehicle owner in the mail.

How does CurbPass work?
Drivers or fleets can register their vehicle(s) once to create a CurbPass account. CurbPass is an automated payment system where users sign up once for access to all zones. The CurbPass account is automatically charged only for the parked time. The account refills automatically when running low.

LOOK FOR THESE SIGNS



ZONE INFO

HOURS: 8am-6pm Monday-Saturday

PRICING:

local parking rates reflected

First 15 mins are FREE
Max Parking 2 hours
Max Cost \$12 for 2 hours

zones will be enforced with license plate readers

APPENDIX B - LOCAL BUSINESS AND DRIVER EDUCATION MATERIAL

Education cards put on the windshields of vehicles parked in Smart Loading Zones to notify of registration requirements. These were handed out by Parking Enforcement Officers and Automotus team at the start of the program.



REGISTER HERE



- ✓ First registered park is free
- ✓ First 15 min is free
- ✓ One-time registration for hands-free access to all zones