eleven-x

Case Study

How Highly Accurate Data Is Driving Parking Changes in Arlington County, Virginia

With the eXactpark Smart Parking & Curbside Management Platform

Customer Challenge

Arlington County, Virginia, which is located directly across the Potomac River from Washington, D.C., features a bustling downtown that attracts a large number of drivers looking for parking spots in order to visit or work in the area. A busy curb with multiple competing demands – including space for bike lanes, restaurant patio seating, loading zones, and rideshare and food delivery apps – meant many drivers were left circling for parking or double-parking, making the busiest areas unsafe and difficult to manage.

As a result, the County wanted to better manage the curb and improve driver experience by providing better parking availability information and pricing tools to influence demand for metered curbspace.

Busy curbspace in Arlington County, Virginia

In particular, the County was looking for a way to collect accurate data that clearly showed how parking was being used in real-time, as well as historically. This would allow them to make informed decisions around metered parking spaces pricing changes without any guesswork or gaps in data.

Accurate, reliable data would make parking in Arlington County better than ever before by drastically improving availability of metered parking spaces, sharing useful information

about parking options in real time, and reducing the negative impacts associated with the search for metered parking (including cruising, double parking, going somewhere else to do business, high greenhouse gas emissions, etc.).

A major factor in the County's decision-making process was finding a solution that respects privacy (by collecting zero personally identifying information) and is non-intrusive. As a result, camera-based systems were excluded from selection.

The Solution

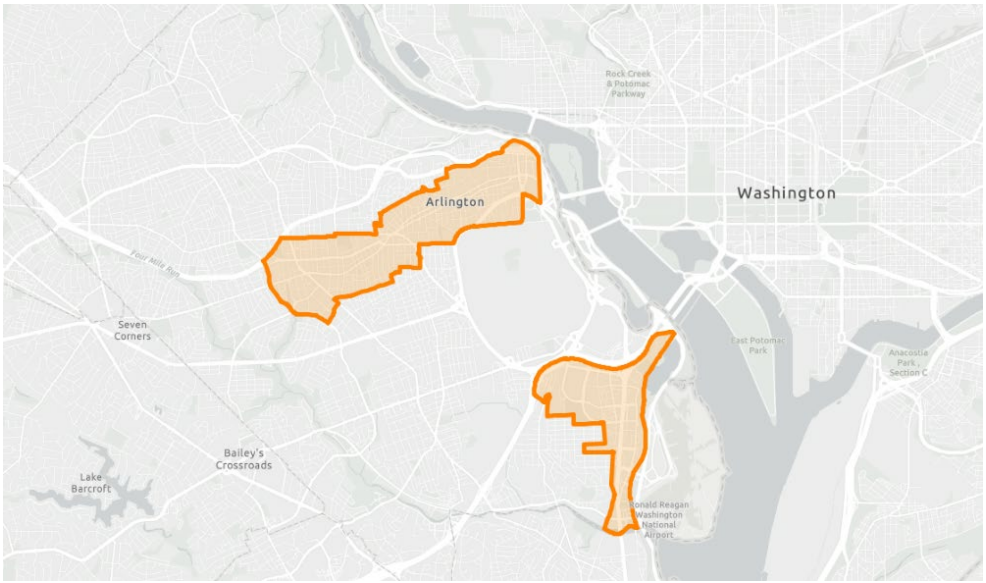
eXactpark Smart Parking System

- 99.7% accurate sensor technology for all environments
- Ironclad data security and no identifying driver information recorded
- Exceptional, continually tested reliability

Arlington County selected the eXactpark™ smart parking system for a 3-year pilot project with approximately 4500 sensors being installed in mostly on-street spaces in two busy areas: the Rosslyn-Ballston and the Richmond Highway/Pentagon City/Crystal City Metrorail corridors. eXactpark presented the best opportunity for the County to implement its strategy of using demand information to change pricing so that parking utilization is more balanced, freeing up curb space and improving parking experience as a result.

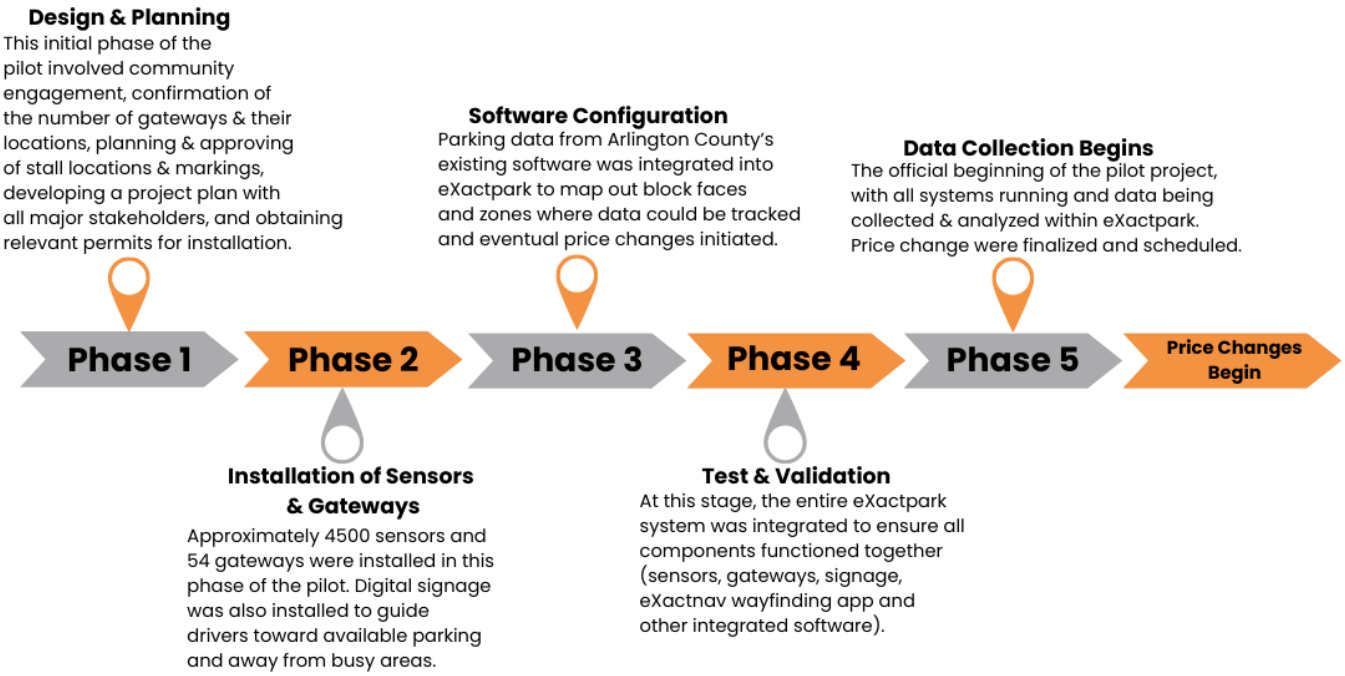
In summary, on higher demand streets, parking would be priced at a higher rate (particularly at busier times); on lower demand streets, pricing would stay the same or be less, thereby serving as an impetus for drivers to park on the less busy streets or increasing turnover in the busier areas.

Highly accurate data was essential for this project, and the SPS-X sensor's reliability and accuracy would ensure that real-time and historical data was as precise as possible.

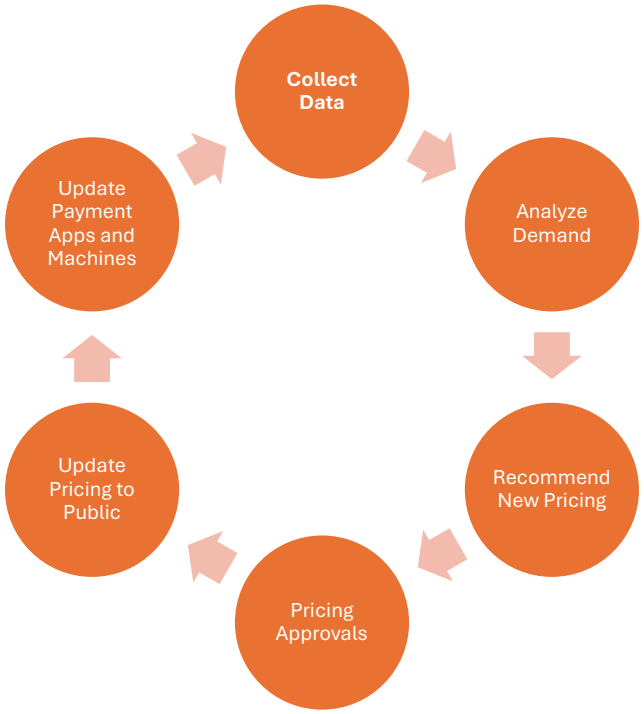


Map of the Arlington County Performance Parking Pilot project corridors

In terms of project implementation, the Pilot has followed the steps in the graphic below (over the course of 2 years):



Quarterly Price Change Cycle & Examples of First Price Changes



Change 1: ↑ by $0.50/hour for 12% of parking spaces

Change 2: ↓ by $0.25/hour for 15% of spaces with very low occupancy & ↑ prices at peak occupancy times (over 80% full) for 22% of parking spaces.

Change 3: ↑ prices at peak times for 51% of spaces; ↓ prices for 11% of spaces with very low occupancy; ↑ & ↓ prices at 10% of spaces

Change 4: ↑ prices at peak occupancy times for 36% of spaces & ↓ prices for 1% of parking spaces with very low occupancy

Results & Next Steps

Public Accessibility

Wayfinding signage in Arlington County

It was imperative that drivers were able to easily find available parking, especially in congested areas and at busier times. To make this happen, the eXactnav™ wayfinding stall availability app was used in tandem with dynamic signage to alert drivers of which areas were busier, which were more open, and the prices of parking in each.

The County also created a Public Dashboard and a Historical parking trend data so that interested members of the public could monitor pricing and availability in all areas of the deployment at all times *and* have access to historical parking data. This unprecedented transparency with the public was enabled by the SPS-X sensors, whose accuracy ensured the trustworthiness of the available data, as well as eXactpark's API, which allows for the data being collected within the platform to be displayed and aggregated in other software.

Price Changes

As of January 2025, there have been 4 price changes in the pilot project zone. In March 2024, prices were increased for 12% of the busiest parking spaces (an average occupancy of 80% or more) in the pilot area by $0.50, with a focus on the Rosslyn-Ballston Corridor. These increases would be in effect from 10am-2pm, Monday through Saturday.

Insight from eXactpark: In some areas, Sunday has the highest average occupancy with unique parking patterns. Currently parking is free on Sundays

In June 2024, prices were decreased by $0.25/hour for 15% of parking spaces in the pilot area with very low occupancy, while prices were increased for 22% of parking spaces at peak occupancy times. September saw prices decrease for 11% of parking spaces in the pilot with low occupancy, increase at peak occupancy times for 51% of parking spaces, and increase *and* decrease at 10% of parking spaces. Increases and decreases in the same area allowed the parking team to experiment with different methods and see if they affected driver behavior.

December 2024's changes saw pricing stay the same in areas with average parking occupancy of 40-80%, increase for 35% of parking spaces, and decrease for 1% of parking spaces. These price changes, whether increases or decreases in specific areas, will allow the County to see if there is a trend in parking behaviour changes, and will continue through to the end of the pilot timeline. They would not be possible without the reliability of eXactpark's data.

Installation of sensors in on-street parking stalls in Arlington County, Virginia

Improvements in Parking Compliance

Since compliance rates are one of the data sets collected by the SPS-X and analyzed by the platform, this data is then sent to the Arlington County Police Department, and more resources are sent to areas with low compliance. As a result, Parking compliance was boosted from around 30% to 50.3% in the entire County. Although not an initially intended goal of the pilot program, this increase in parking compliance demonstrates the holistic effectiveness of the eXactpark smart parking system.

Insight from eXactpark: Peak occupancy hours often extend well into the evening past the paid parking end time of 8PM

Next Steps

The eXactpark pilot project in Arlington County has enabled the precise monitoring of approximately 4,500 parking spaces in the project zone, and the County will continue to experiment with pricing changes and ramp up guidance and wayfinding initiatives (including the installation of 8 more wayfinding signs at street-level) in order to achieve the initial goals of the deployment:

- Making metered parking spaces more available, more often
- Sharing useful information about parking options in real time
- Reducing the negative impacts associated with the search for metered parking (cruising, double parking, going somewhere else to do business, etc.)

Insight from eXactpark: Parking utilization is quite low in the early hours of the paid parking period that begins at 8AM