

MANAGING PARKING THROUGH SMART PARKING SYSTEMS

A Case Study: City of Greenville, SC

OVERVIEW

Organizations overlook counting systems or move it to the “wish list” due to infrastructure requirements, maintenance requirements and upfront costs. Technological advances in recent years have provided new options while minimizing labor requirements for installers.

The City of Greenville pursued a quick solution to display real time facility counts on their website. City requirements for this system: not a significant capital expense considering the number of facilities, no major infrastructure needs and could be up and running relatively quickly.

Through the use of Bluetooth and wireless communications they now have a solution that utilizes wireless sensors that communicate to a base station using long-range radio protocols and 4G connectivity to pass on information to the Cloud system.

PRESENTERS



Pam Corbin, CAPP
Parking Services Manager
City of Greenville, SC



Paul Ilyasov
CEO
Nwave Technologies
Inc.



Brittany Moore, CAPP
Account Executive
Carolina Time & Parking
Group



ABOUT CITY OF GREENVILLE

- Population over 70,000
- 11 Municipal Garages
- Over 8,000 spaces
- Several garages attached to hotels and/or residential units
- One garage attached to downtown concert and event venue with 15,000 seats
- Multiple garages serve downtown performing arts center with 2,100 seats

WANT

Overall facility counts to manage inventory

Be able to reset the numbers as needed – special events

Initially display on website, possibly on monument signs in the future

Expandable system – manage reserved spaces

No facility down time during deployment

Compliment other deployed systems – Tiba Parking Systems and Parking Guidance Systems

Be able to maintain current special event practices

REQUIREMENTS

Not on the city
network

Easy and relatively
inexpensive installation
that requires little to
no civil work

No significant upfront
capital expenses

Quick installation and
“go live” timeline

Provide link to real
time facility counts
embedded in city
website

OPTIONS



Wireless
Per-Space Sensors



Cameras:
Occupancy & LPR



Vehicle Counters



Wired Per-Space
Ultrasonic/Radar/
Lidar

OPTIONS

Wireless Sensors – Individual sensors that communicate to a base station using long-range radio protocols and 4G connectivity to pass on information to a Cloud system.

Camera Based – Machine-learning technology, intuitive occupancy counting, vehicle identification, guidance and parker management.

Vehicle Counters – Ability to count vehicles using third-party loop detection (or overhead sensors) and gates. Paired with smart signage and software.

Wired Per Space – Custom, technology driven parking guidance. Ceiling mounted, ultrasonic sensors for single space or multi-space camera detection system.

ABOUT CITY OF GREENVILLE'S SOLUTION

The solution utilizes wireless sensors that communicate to a base station using long-range radio protocols and 4G connectivity to pass on information to the Cloud system.

The only requirement for the base stations was a power source.

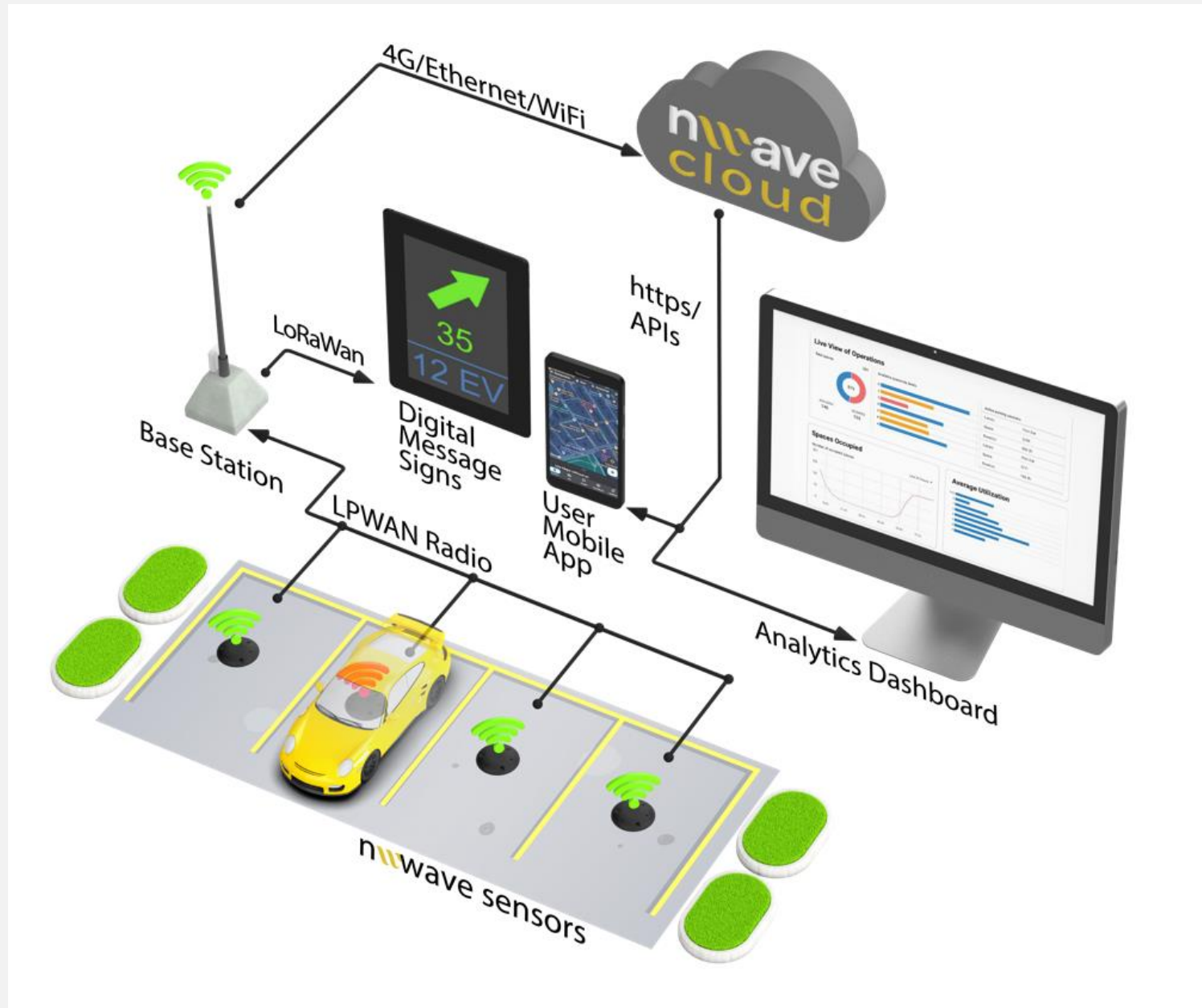
Sensors are weather rated – can be installed on-street or off-street in all types of climate.

Cost-effective and software driven.

Sensors are surface mounted with commercial grade adhesive while the base station is centrally located in the facility.

NWAVE WIRELESS PARKING GUIDANCE

- Key Components:
 - Wireless sensors (in per-space or counting mode), gateway(s) for cloud connectivity
 - Wireless RGB LED Matrix Digital Messaging Signs and RGB LED Overhead Lights
 - Driver App
 - Dashboard Analytics
- Key advantages:
 - High detection accuracy
 - Fast installation time & cost efficiency
 - Modularity and flexibility
 - Universal application for any environment - indoor, outdoor, rooftops



INSTALLATION

The sensors are surface mounted using an industrial grade outdoor adhesive, centered in each entry and exit lane.

Each garage requires one or two base stations for the best communication to the lanes based on the layout of the facility.

The only requirement for the base stations was a power source. The wireless counting solution was installed by one technician in just days per facility without having to close down lanes or cause disruption to users.

The majority of the monitoring and testing can be done remotely.

LINK TO WEBSITE

- <https://s-car-counter.nwave.io/greenville-parking-table>

PICTURES



OTHER APPLICATIONS



Counting per space



Guidance - Deploy smart signage
throughout the facility



Access Control



Enforcement – Reserved spaces,
ADA, EV

QUESTIONS?