

Effective Curbside Management with Parking Enforcement Specific Vehicles

December 4, 2019



Florida
Parking and
Transportation
Association

1979

40
YEARS

2019

Agenda

- Overview of curb management
- History of specialized curb vehicles
- Code compliance
- Evolution of parking enforcement
- Impact of parking-specific vehicles
- Case studies
- Q&A

What is Curb Management?

- **Curb Management:**
 - seeks to inventory, optimize, allocate, and manage curb spaces to maximize mobility and access for the wide variety of curb demands. (ITE.org)
- **Changing landscape:**
 - Balancing the needs for all roadway users
 - Growth of TNCs
 - Online shopping and associated deliveries
 - Demand for curbside pickups, drop-offs and dwell times



6 key Functions of the Curb

The City of Seattle has defined the following six essential functions of the public right-of-way:

- **Mobility** – The movement of people and goods, including sidewalks, bicycle lanes and protected bikeways, dedicated bus or light rail/streetcar lanes.
- **Access for People** – People arriving at their destination or transferring between different modes of transportation. This includes transit stops, passenger loading/unloading zones, taxi zones, short-term parking, bicycle parking, and curb extensions.
- **Access for Commerce** – Goods and services reaching their customers and markets primarily through commercial vehicle or truck loading zones.
- **Activation** – Provision of vibrant social spaces that encourage people to interact and congregate.
- **Greening** – Enhancements to aesthetics as well as environmental health via such accoutrements as planted boulevard strips, streets trees, planter boxes, rain gardens, and bio-swales.
- **Provision of storage for vehicles and equipment**, including bus layover spaces, reserved spaces for specific uses such as police or government vehicles, short-term vehicle and bicycle parking, longer-term on-street parking, and construction vehicles

All these dynamic functions require integrated intelligent enforcement and effective code compliance

Goals of Effective Parking Enforcement

Let's face it, the goal of *EVERY* operation should be and is to create...

CODE COMPLIANCE



How can we enforce code compliance?

- **Technologies**

- ALPR, pay-by-plate, time enforcement, and more can now efficiently enforce the curb.

- **Efficiencies**

- Be the first responders in parking.
- Infinite curbs to patrol and only so many operators.
- Tools for quick and timely enforcement are imperative.

- **An approachable environment**

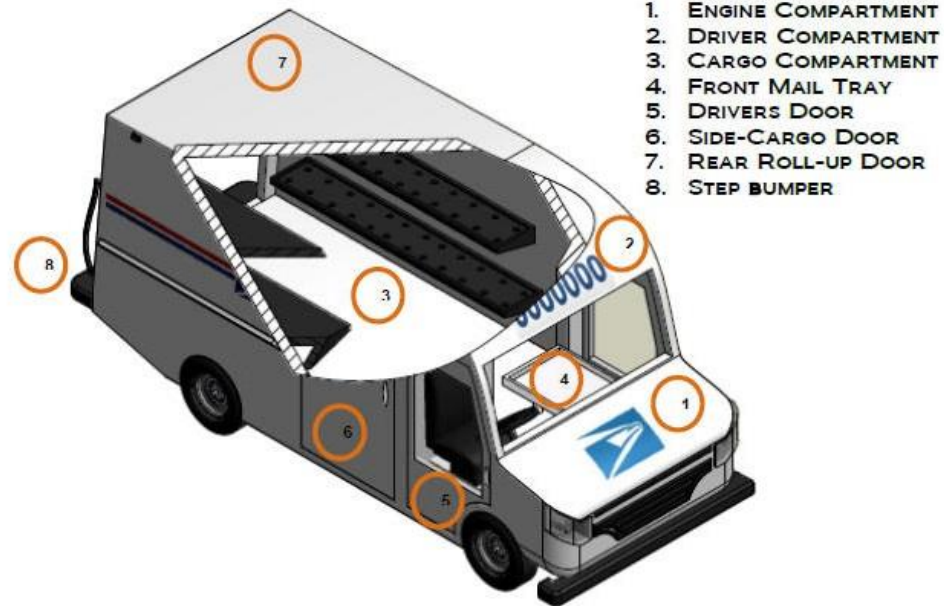
- Be part of the community (vital to communities accepting code compliance).
- Reinforce approachability instead of “US vs THEM” mentality.
- PEOs should be helpful ambassadors helping civilians understand the curb.

History of Specialized Curb Vehicles



- Designed to avoid dooring.
 - Typically have double sliding doors.
- Specialized curb vehicle benefits:
 - Single exit entry
 - Tall and visible in all traffic
 - Task efficiency – can perform the task faster than a conventional vehicle.

USPS



- USPS identifies need for a task-specific vehicle for curb management
- Ongoing "competition" to create a new vehicle

What are the Goals of Parking Enforcement?

Promote

Promote parking compliance

Maintain

Maintain financial stability

Prevent

Prevent parking chaos

Obtain

Obtain valuable parking data

Efficient Parking Enforcement Tools



- **Walking**

- Chalking
- Single meters time enforcement
- ALPR handhelds
- Kiosks with handhelds

- **Parking-Specific Vehicles**

- Chalking
- Single meters time enforcement
- Mounted ALPR
- Kiosks
- Pay by plate

Types of Mobility for Parking Enforcement



Walking and Stand ups : Pros & Cons



Pros:

- Approachable
- No or low vehicle purchase

Cons:

- Speed –average walking speed is 2.5 to 3 mph
- Safety: Not protected by elements or angry civilian.
- Exposed to all forms of traffic
- No room for accessories such as wheel boot.

Conventional Vehicle : Pros & Cons



Pros:

- Increased driving speeds
- Comfort
- Protected

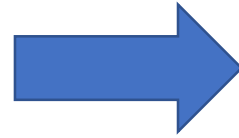
Cons

- Not very approachable. Looks like “Enforcement”
- More costly purchase compared to walking
- No easy access to vehicles
- Have to park and walk back for placing citations
- Low maneuverability

Evolution of Parking-Specific Vehicles



Early model built for chalking.
Improved efficiency over walking.



The function slowly improved
by adding sliding doors. The
overall compact size is always
key to minimize traffic
interruption



Newer versions allow traditional
chalking or installation of technologies,
EVs also available reducing carbon
footprint. Safety has been improved
dramatically with roll bar chassis. Ease
of use with automatic transmissions

Refining a design that works!

Eliminate “Us vs Them”

- Become community ambassadors
 - Interaction
 - Dialog
 - Sharing knowledge
 - Approachability
- Open doors allows for less of an isolated enforcement look.
- *During an Aspen case study we witnessed constant positive interaction with the community and knowledge sharing*



Safety & Durability

- Dooring: so common they invented a word for it.
 - Sliding doors - exit either side, avoid traffic
- PEO safety
 - Narrow width – reducing traffic disruption
 - Fully enclosed
 - High Visibility
 - Durable roll bar chassis's
 - Distress lights and safety glass wrap available
- Long lifespan – active fleets with 15 - 20 year old vehicles



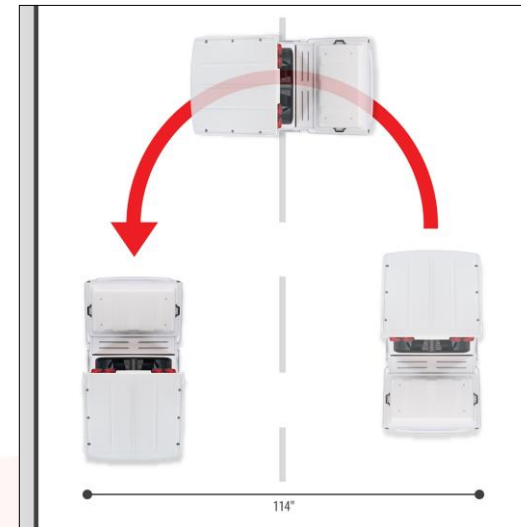
Navigating traffic & Ergonomics

- Turning diameter

1. 3 wheel parking vehicle = 18 feet
2. Sedan = 35-38 feet
3. Pick up Truck = 41 to 55 feet



- With a typical width of only 4.5 feet. Parking specific vehicles are half the footprint of a larger vehicle and can maneuver traffic.
- At 6 feet tall they are easy to enter and exit all day long. Reducing back strain. Air ride seats are also available.



Manage parking & allow traffic flow

- As the landscape of the curb changes to accommodate mobility, parking-enforcement vehicles should be designed to reduce traffic interruptions.

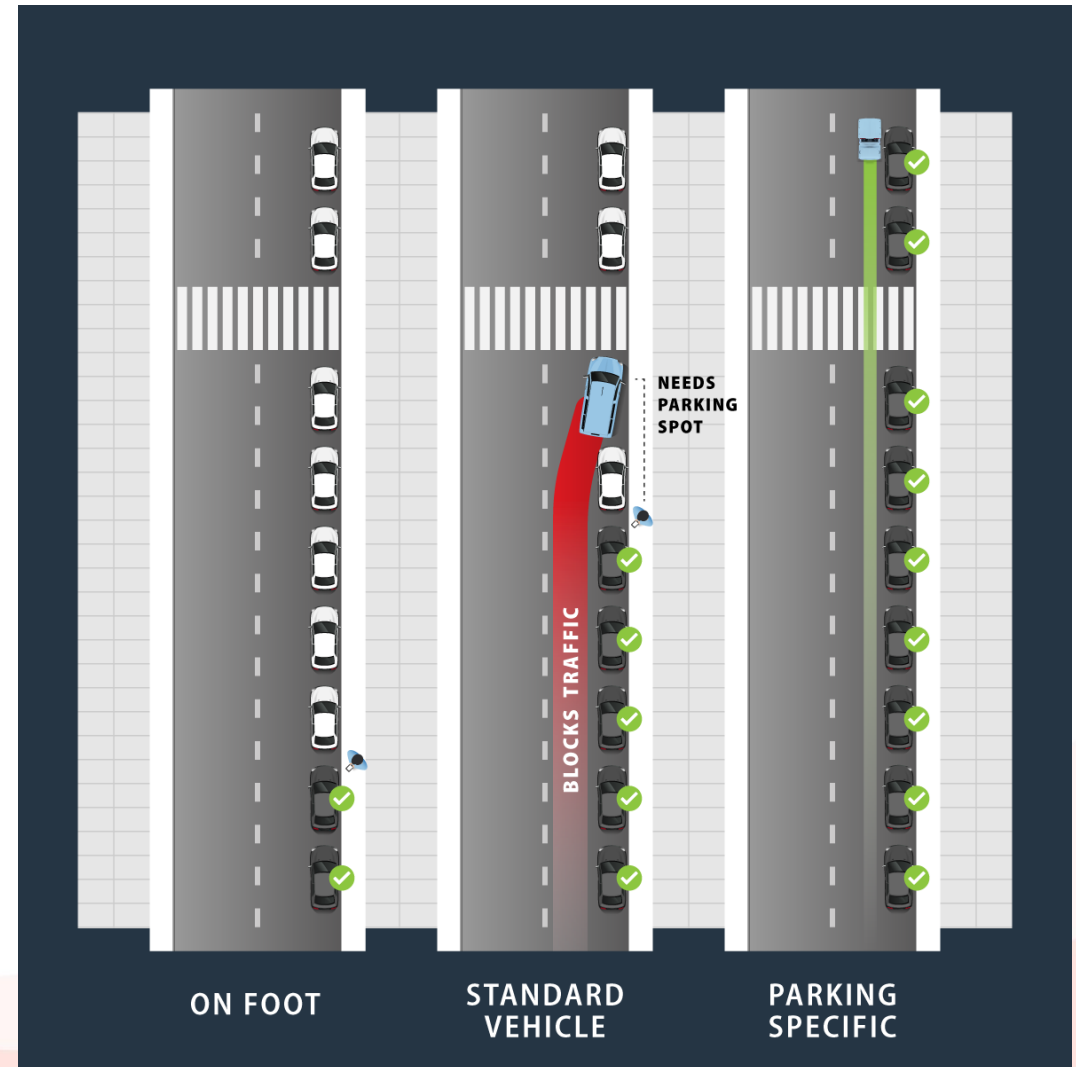


Efficiency comparison study

For this study we assumed the physical time aspect of traversing 10 city blocks and enforcing 5 citations.

Comparisons and fact checking were done when comparing Walking speeds vs conventional vehicle vs parking specific speeds:

- NY city block: 900 feet long, 10 blocks is 1.7 miles.
- Average walking speed 2.5mph
- Average vehicle speed 20mph (with LPR)
- Conventional vehicle needs time for walk-back



Efficiency Comparison Study

Ten city blocks and 5 parking citations.

	Walking (Avg. speed: 2.5 mph)	Conventional Vehicle (Avg. speed: 20 mph)	Parking-Specific Vehicle (Avg. speed: 20 mph)
Travel time	41 mins	5 mins	5 mins
Citation time (5 citations)	25 mins	25 mins	25 mins
Parking / walking to vehicle (5 citations)	0 mins	15 mins (3 mins total per walk back assuming 1/3 block)	0 mins
Traffic lights	6 mins	6 mins	6 mins
TOTAL TIME	72 mins	51 mins	36 mins

Sustainability

- Significant emissions reductions
- Reduced VMTs (vehicle miles driven)
- Up to 45 miles per gallon
- EV versions – up to 100 miles per charge
- Extended life span – construction is industrial grade
- Multi purpose platforms. Specialized vehicles can also be used to help haul, transport, tow, for various departments with flat beds. Again reducing VMT's



Sustainability Comparison						
As per fueleconomy.gov and Carb certifications						
	CO2 grams/mile	CO2 tons/year	Fleet of 20 Savings- CO2/yr	Barrels of Oil Used	Fleet of 20 Oil barrels	Fleet of 20 Savings - Barrels of oil/yr
SUV 2.0l 4 cyl (small engine)	375	6.20		13.7	274	
Parking Specific Fuel -CARB	219	3.62	51.58	7	140	134
Parking Specific EV	0	0	124.00			274
Based on 15000 miles						

Task Specific vs Conventional

- Acquisition Cost vs Cost of Ownership
 - Task specific is more expensive to acquire
 - Based on fuel efficiency and reliability, that delta shrinks dramatically
 - 45 MPG vs. anywhere between X and Y
 - EV further improves delta
- Efficiency
 - Task specific does not block lanes, is easier to park and can traverse narrow or crowded streets
 - Should lead to an uptick in citations or compliance that eliminate any cost delta
- Sustainability
 - Reduced CO2 Emissions
- Ergonomics
 - Easy to enter and exit from either side, increased safety
 - More friendly than a competitive vehicle





Enhanced Parking Enforcement

A small technology lab on wheels

- Integrate LPR or digital chalking factory direct
 - Arrives ready for final set up and can be purchased through less vendors
- Optimize enforcement routes through collected data
- Obtain effective parking data
- Record images for disputes and appeals
- Increase ticketing rates

City of Sarasota

- Numerous curb management issues
- Angled parking in prime/desired spaces
- Numerous cross-walks
- Small inadequate alleyways, causing on-street deliveries
- Enforcement technique for time restrictions vs. metered parking
- Standard vehicle versus small maneuverable vehicle



City of Sarasota



City of St. Petersburg

City of St. Petersburg Overview

- 5th largest City in Florida
- Population of 265,000 and 15 million annual visitors
- Downtown St. Pete has approx. 1,700 single space meters
- 3,600 time-restricted spaces



City of St. Petersburg

Our Scooters Today

- Has been a fundamental resource to our operation
- Driver seat positioned in the middle
- Officers are able to chalk vehicles on the right or the left side
- 3-wheel vehicle mobility – easy to navigate around traffic
- Easy for traffic to navigate around the Scooters



History

History of Scooters

- City acquired 10 scooters in 1998.
- Experienced major challenges (repairs, difficult to acquire parts)
- Unsatisfactory response time

Transitioned to Neighborhood Electric Vehicles

- Lack of durability
- Parking Enforcement Officers having to come back to the office to re-charge the vehicle
- Reduction in citation production
- Maintenance issues
- No Air Conditioning
- No Heat

Challenges

- AC not as effective when doors are still open
- The back of our trunk has shown discoloration.



Recommendations

- Schedule vehicles for routine maintenance
- Oil changes
- Check tires
- Fleet dept maintain open lines of communication with manufacturer



Q & A

Appendix I: Cost of Ownership Comparison

- Initial acquisition price on a specialized vehicle is typically higher.
- However, when we consider other ongoing costs of larger vehicles, and we consider operational efficiencies from our previous Efficiencies Comparison, additional monthly revenue will pay back the vehicle cost difference in a matter of months, and then create sizeable additional revenue per month.



CALCULATIONS OF OWNERSHIP						
Over a 7 year life cycle						
15000 miles						
Model	Parking Gas	Parking EV	Small Compact	SUV/RH Drive Custom	Mid size Pick up Truck	
Price Municipal	\$27,000	\$33,000	\$18,000	\$34,000	\$23,500*	
Fuel for 7 years	\$6,533	\$2,200	\$10,888	\$12,782	\$14,000	
Maintenance	\$3,150	\$2,100	\$3,150	\$6,825	\$6,825	
Total cost	\$36,683	\$37,300	\$32,038	\$53,607	\$44,325	
Total monthly cost	\$437	\$444	\$381	\$638	\$528	
Economy rating	2	3	1	5	4	
\$25 Tickets needed per mth to recoup purchase	just over 2	just over 2	-	-	-	
		Zero Emissions	-	-	-	

Appendix II: Cost of Ownership Comparison - Walking

- Initial acquisition price on a specialized vehicle is typically higher.
- However, when we consider time efficiency improvements compared to walking or biking, additional monthly revenue will pay back the vehicle cost difference in a matter of months, and then create sizeable additional revenue per month.



CALCULATIONS OF OWNERSHIP					
Model	Walk/bike/stand up	Small Compact	Parking	Mid size Pick up Truck	SUV/RH Drive Custom
Over a 7 year life cycle					
15000 miles					
Price Municipal Estimated	\$2,500	\$18,000	\$27,000	\$23,500*	\$34,000
Fuel for 7 years	\$0	\$10,888	\$6,533	\$14,000	\$12,782
Maintenance	\$0	\$3,150	\$3,150	\$6,825	\$6,825
Total cost	2500	\$32,038	\$36,683	\$44,325	\$53,607
Total monthly cost	<u>\$30</u>	<u>\$381</u>	<u>\$437</u>	<u>\$528</u>	<u>\$638</u>
Economy rating	1	2	3	4	5
Protection	no	yes	yes	yes	yes
Time Efficiency	low	medium	high	medium	medium



Contact

Kevin Woznicki

ParkTrans Solutions

kevin.woznicki@parktransolutions.com

Chris Franz

Westward Industries

chris@wwi-go4.com

Mark Lyons

City of Sarasota

mark.lyons@sarasotafl.gov

Ted Civil

City of St. Petersburg

ted.civil@stpete.org

Sources cited for Cost Comparison are from:

- *Automotive fleet.com for maintenance numbers per class*
- *Fuel mileage numbers are direct from OEM websites and Fueleconomy.gov and Carb. Average national gallon price of \$2.80 was used.*
- *MSRP's are based off of the Virginal Sheriffs Procurement Contract, * = with basic options.*
- *Sustainability figures are from Fueleconomy.gov and Carb*