Planning and Designing for an Unknown Future

Institute of Transportation Engineers
Florida Section • District 10

November 2, 2017

Agenda

- Florida Parking & Transportation Association (FPTA)
- Hot Parking Topics
- Parking Design Trends
- Parking Technology Trends
- What's Next?

Mark N. Santos, P.E.

- 18 years of experience dedicated to parking
- Diverse background in parking studies, parking design, structural engineering, and restoration
- Florida Parking Association (FPA) Board Member
- International Parking Institute (IPI) Planning, Design, and Construction Committee Co-Chair
- Parksmart Advisor

FPTA — Florida Parking and Transportation Association

FPA — Florida Parking Association

IPI — INTERNATIONAL PARKING INSTITUTE

Parksmart

Florida Parking and Transportation Association

- Founded in 1979

- Approximately 250 members
  - One of the largest State Regional Associations
  - Municipalities, Higher Education, Consultants, Vendors

- Events
  - Front line training
  - Annual conference and exhibition

FPTA

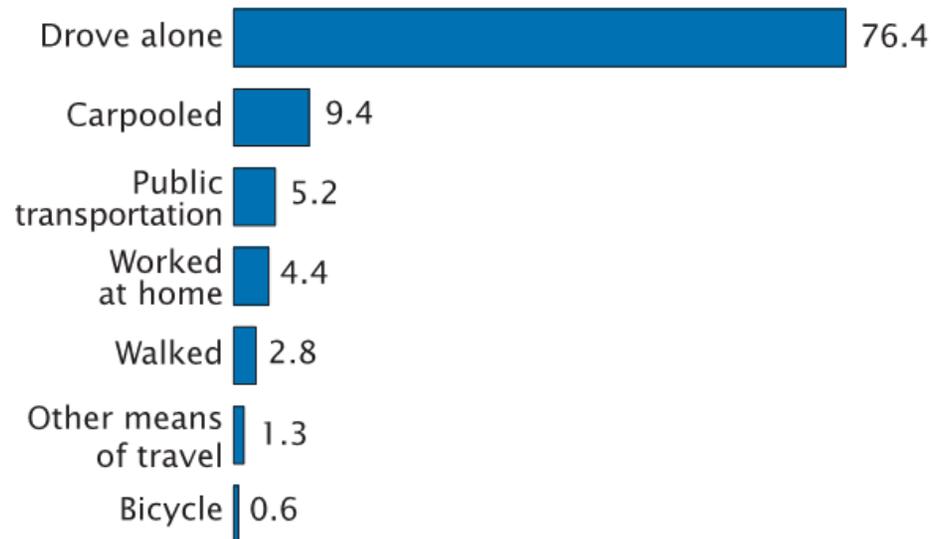**Florida Parking and Transportation Association**

Hot Topics

Mobility and Alternative Transportation Trends

Figure 1.
How People Travel to Work: 2013
(Percentage of workers. Universe: workers 16 years and older. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)

- Drove alone — 76.4
- Carpooled — 9.4
- Public transportation — 5.2
- Worked at home — 4.4
- Walked — 2.8
- Other means of travel — 1.3
- Bicycle — 0.6

Source: U.S. Census Bureau, 2013 American Community Survey, Table S0801.

Cars Still Dominate

Figure 3.
Commuting by Automobile: 1960 to 2013
(Percentage of workers. Universe: workers 16 years and older. Data based on sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see *www.census.gov/acs/www/*)

Total automobile

64.0 77.7 84.1 86.5 87.9 86.7 86.3 85.8

Drove alone

64.4 73.2 75.7 76.0 76.6 76.4

Carpooled

19.7 13.4 12.2 10.7 9.7 9.4

| 1960 Census | 1970 Census | 1980 Census | 1990 Census | 2000 Census | 2006 ACS | 2010 ACS | 2013 ACS |
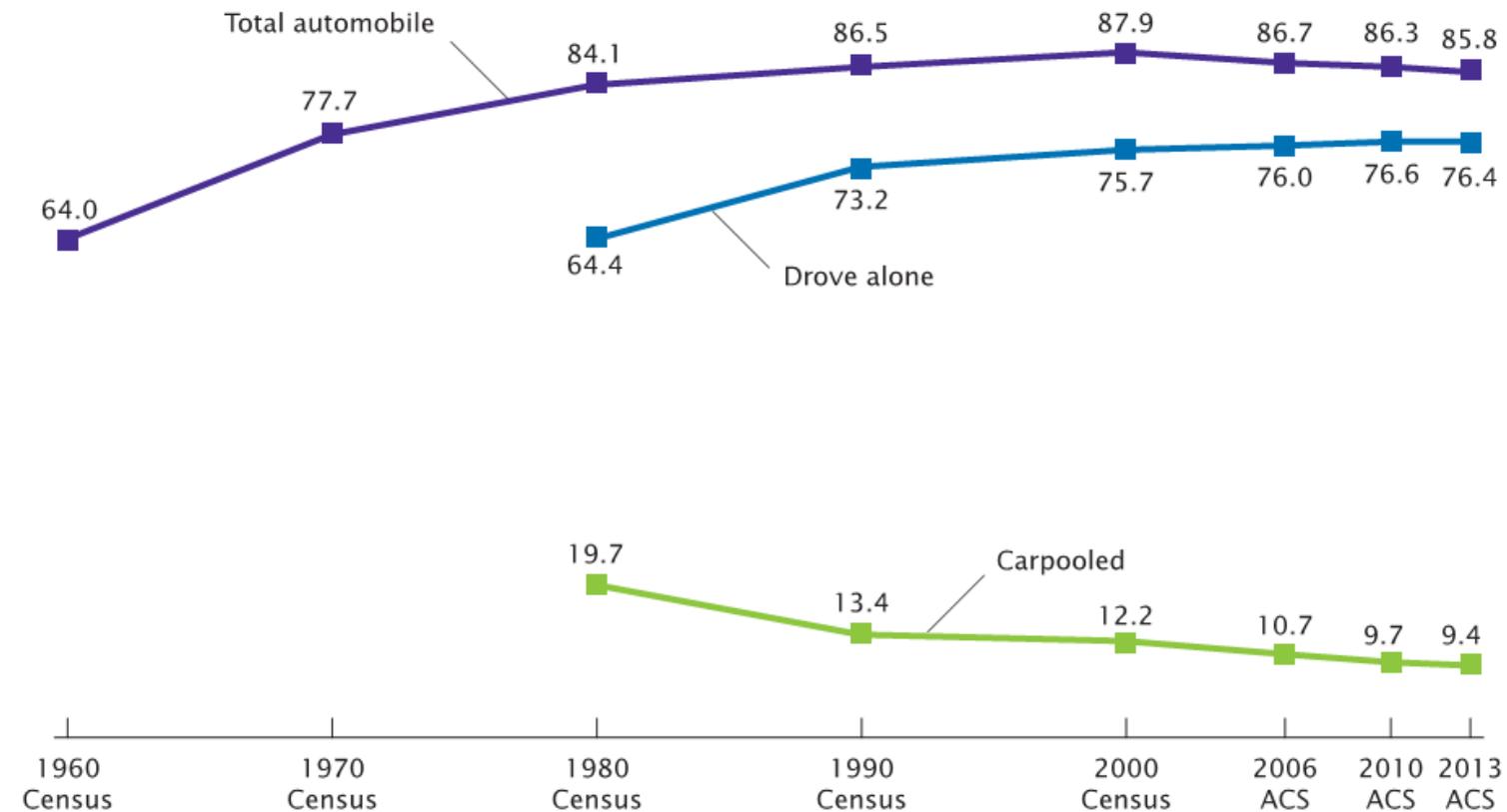
Sources: U.S. Census Bureau, 1960, 1970, 1980, 1990, 2000 Census; 2006, 2010, 2013 American Community Survey.

Millenials don't love cars.
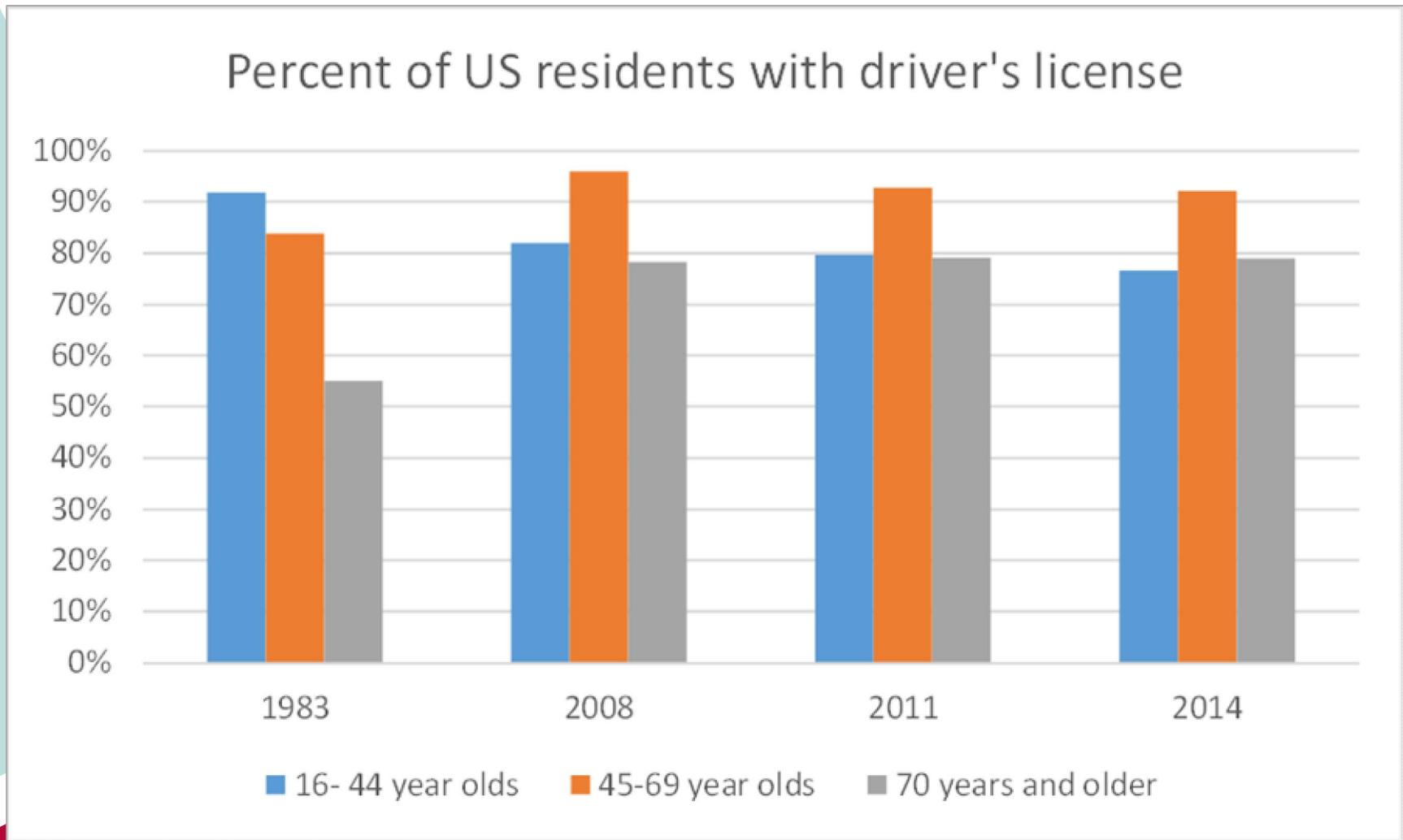
Self-Driving Cars

- All of the major car manufacturers are working on autonomous vehicle technology.

Shared Use Mobility

- Ride Sharing
- Car Sharing
- Bike Sharing
- Uber/Lyft
- Taxis /Limos
- Other

UberPool Ride Sharing

- Launched in San Francisco in August 2014

- Each uberPOOL car removes 3 – 4 cars from the roads.

- In Los Angeles, 14% of uberPOOL trips start or end at Metro stations.
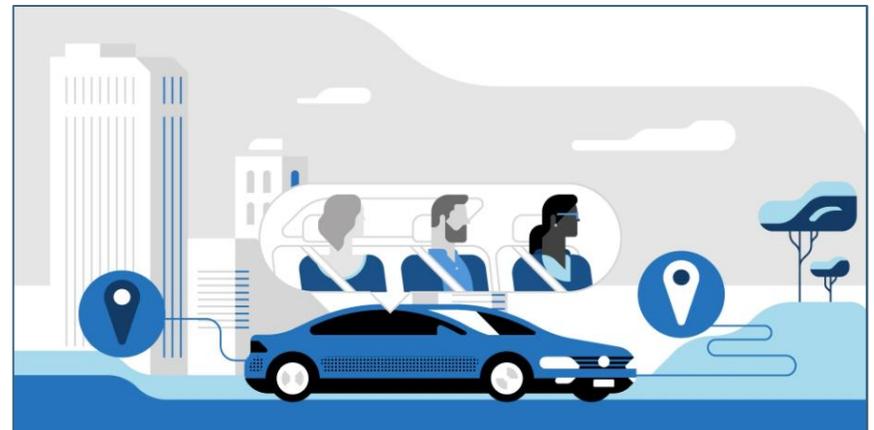
Parking Design Trends

Evolution of the Parking Garage

1970

1980

- Utilitarian   - Auto Oriented
- S.F. /Space

1990

- Aesthetics   - Exterior Facade

2000

2010

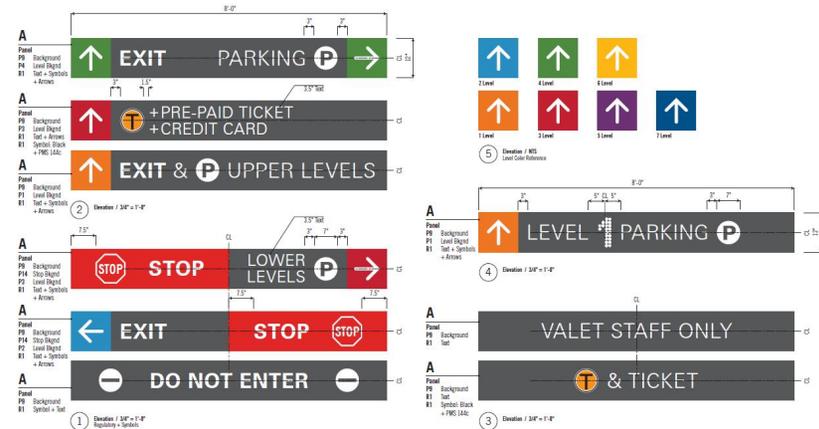- Interiors   - Pedestrian Oriented
- Human Space

Market Trends

High quality experience:

- Safety
- Aesthetics
- Comfortable
- Lighting/Daylight
- Wayfinding
- Sustainability
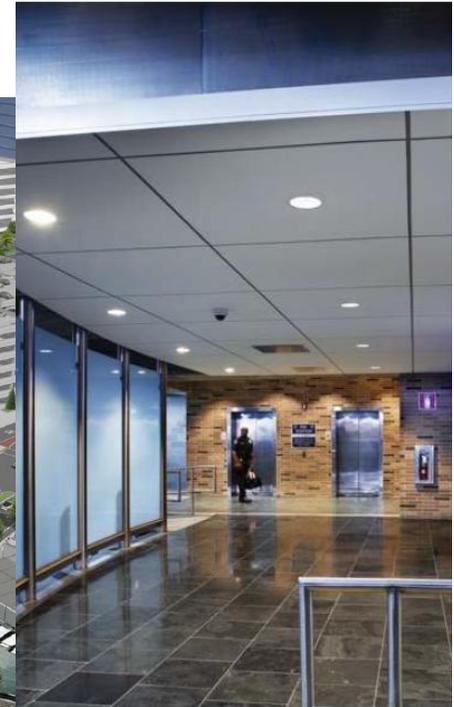
Design with the User in Mind

- Pedestrian connectivity
- Lobby areas
- Lighting/painting of structure
- Conceal MEP (conduits)
- Graphic signage themes

Demand-Based Pricing

- Creative data sources
- Setting goals
- Focusing policy on the right aspects
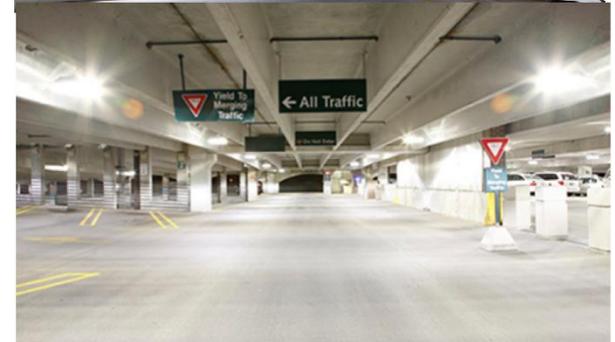- Crafting the right message
- Using within a Smart City concept
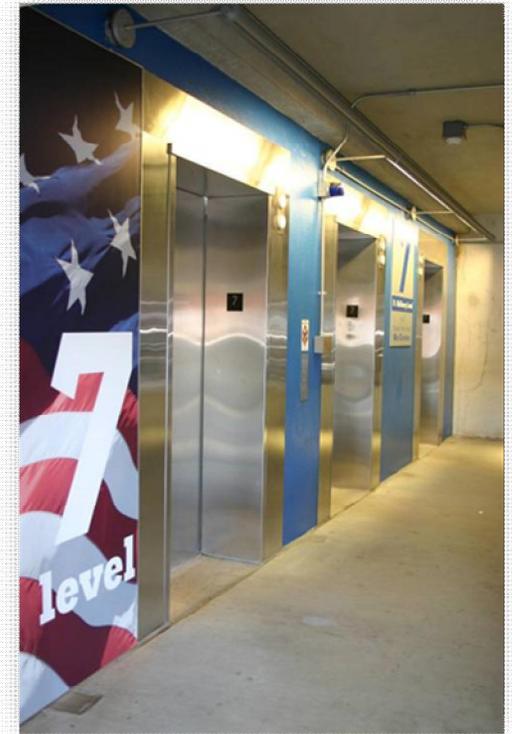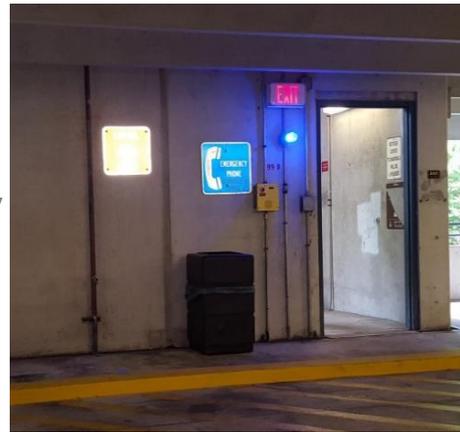
Design Aspects

Parking Fundamentals

- Functional design
- Safety/security
- Sustainability/ Parksmart
- Structure/Durability
- Technology

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Parksmart

Management
(Facility Operations)

Pricing, Shared Park
Recycling
Cleaning
Commissioning
Construction
Life Cycle Assessment

Programs
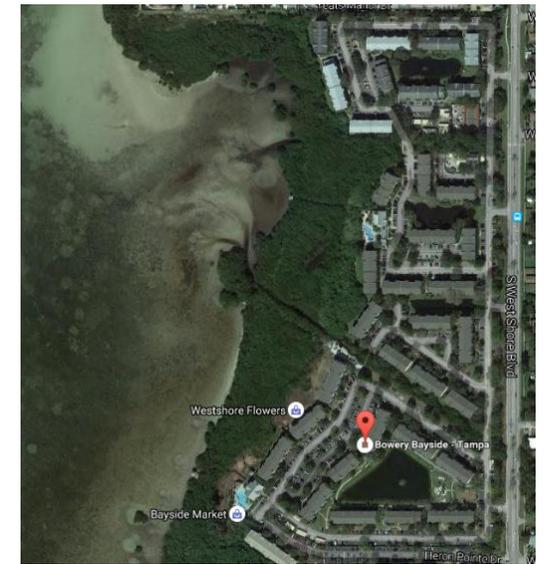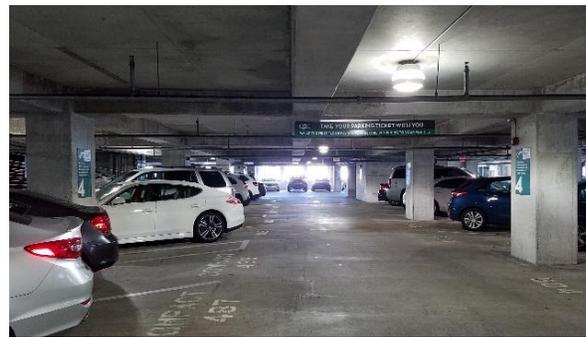*(Services Offered to Patrons)*

Placemaking
Wayfinding
Green Spaces
Bicycles
Education
Alt Fuel Fleet

Technology & Design
(Features & Initiatives)

EV Charging
HVAC
Lighting
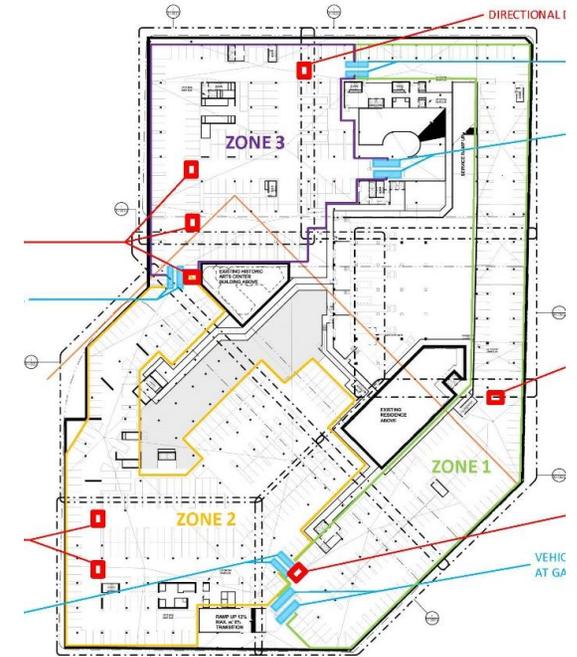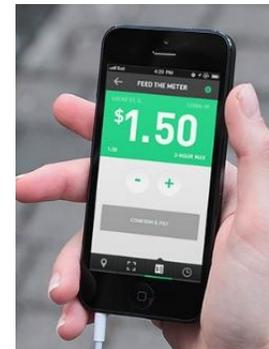Water Resources
Idle Reduction
Renewable Energy

Parking Fundamentals

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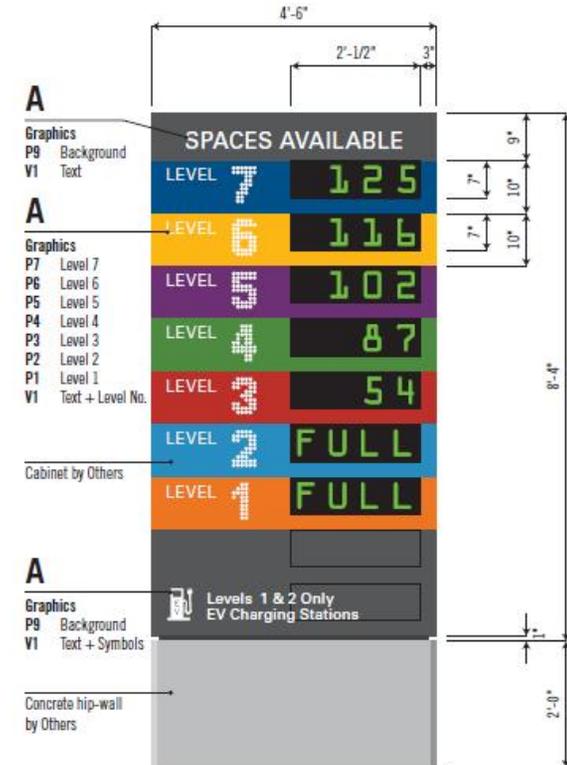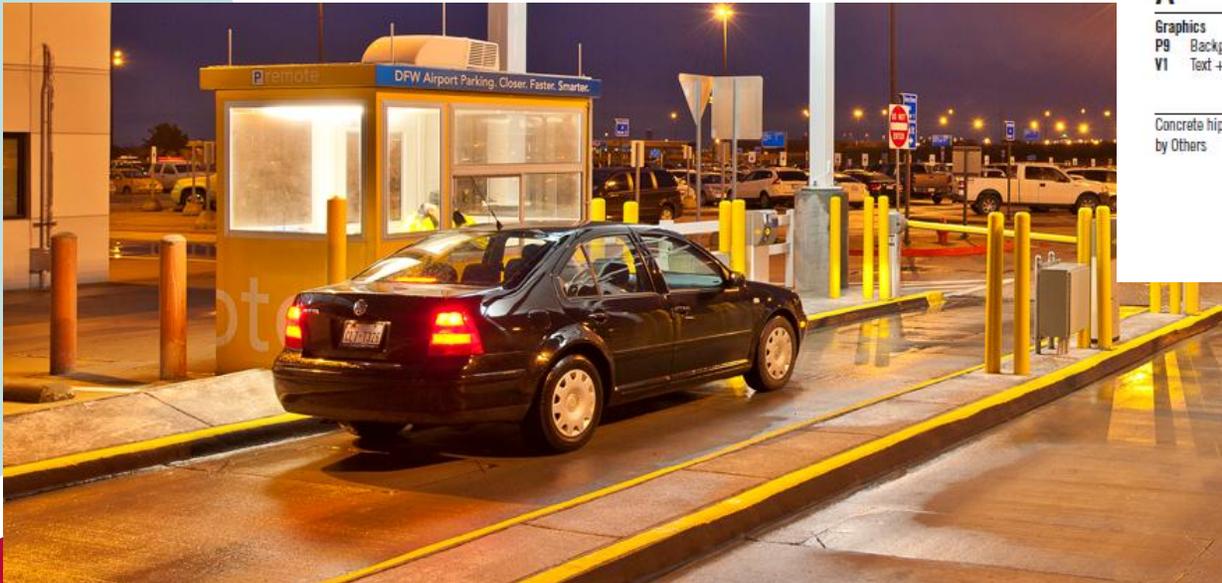- Structure/Durability
- Technology

Parking Technology Trends

Technology Trends

- Parking Access and Revenue Control Systems (PARCS)
- Cashierless and Gateless Systems
- License Plate Recognition (LPR) Systems
- Parking Guidance Systems (PGS)

Parking Guidance Systems

Count System

- Provides information on the number of stalls available in a given location
- Reduces time spent searching multiple levels for stalls

Illuminated Stall Identification System

- Increases efficiency of parking facility
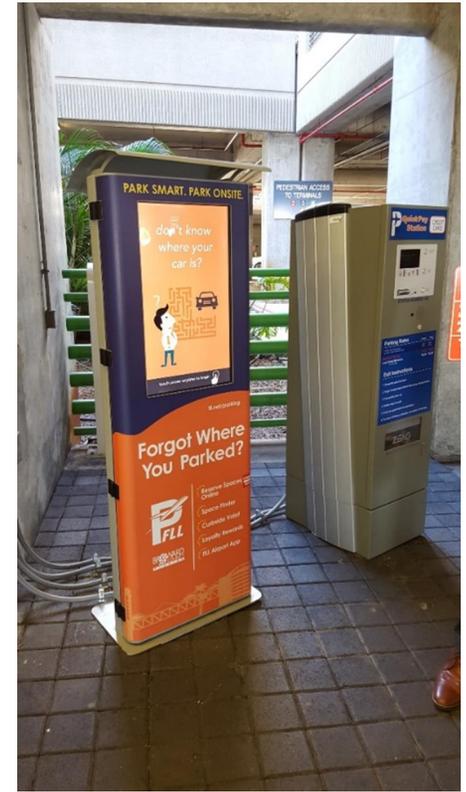- Reduces time spent searching floor plate or aisle for open stall

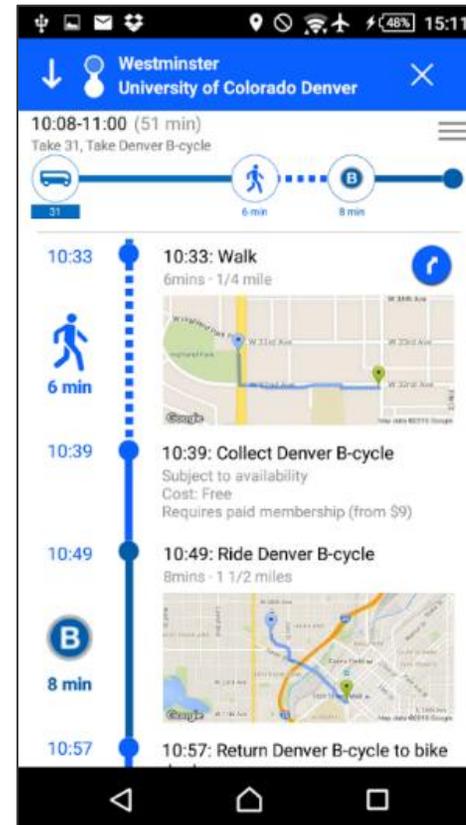# Parking Guidance Systems
- Disney Springs

Parking Guidance Systems
- FLL

The World Is Increasingly Connected

- Wayfinding guidance
- Self-parking garage robots
- Predictive algorithms
- "The Connected Traveler"
- Variable messaging signage
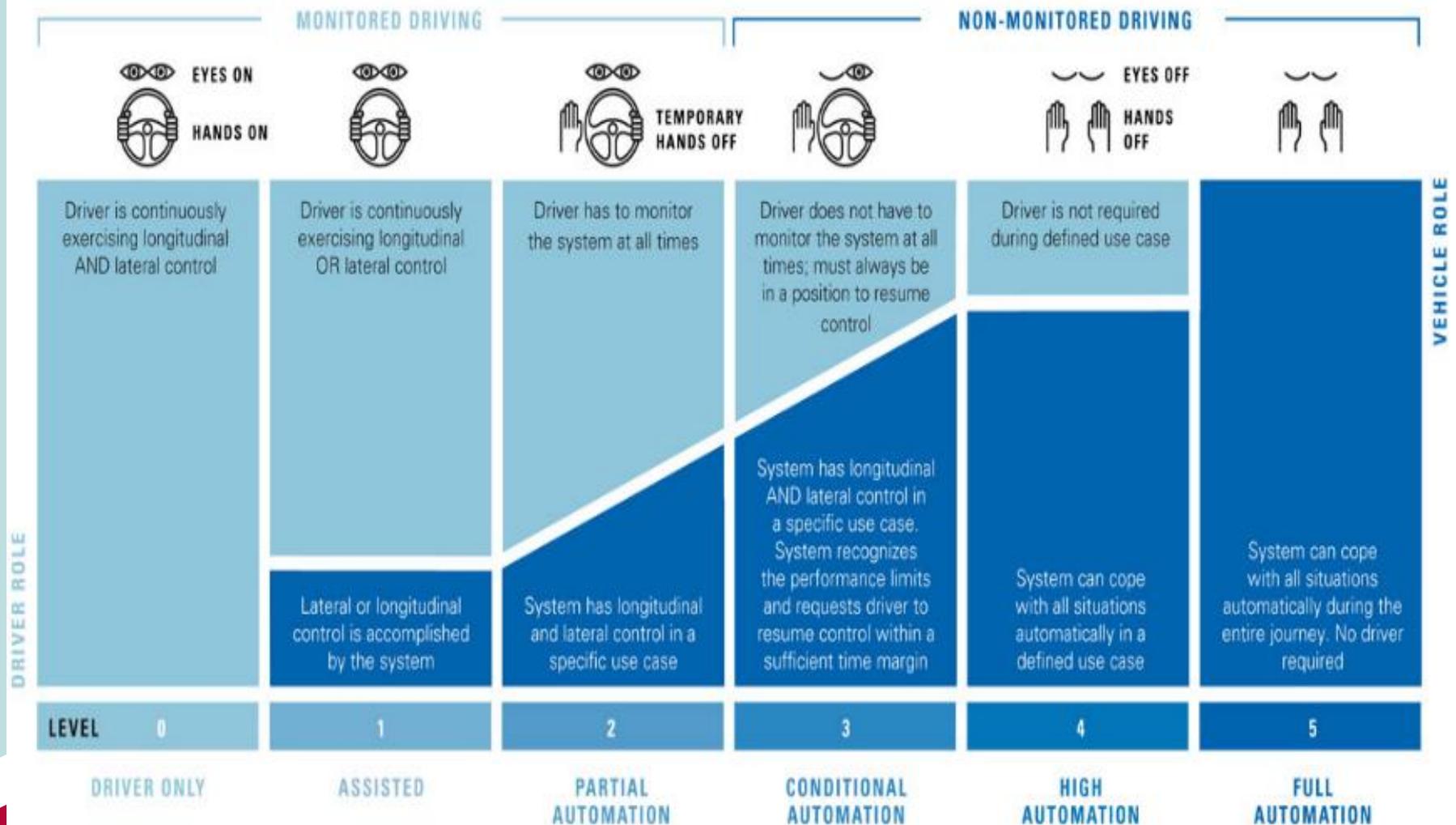- Smart meters
- Mobile app integration

What is the Connected Car?

A vehicle with the ability to

- Access the internet.
- "See" with sensors.
- Communicate with the roadway.
- Communicate with other vehicles.
- Interact with drivers and passengers.

Evolution of the Automated Car

Current Status of Automated Vehicles

- Tesla (Level 2)
- Uber is actively testing (Level 2)
- GM – Cadillac 2017 Super Cruise (Level
- Volvo – testing in Sweden (Level 3)
- Urban Autonomous – 2022 (Level 4)
- Fully Autonomous – 2025 Mercedes planned rollout
 (Level 4…5?)

Far away…but not far away…

Smartphone Based Communication

- Old approach: provide static information that informs the consumer

- New approach: provide multi-modal information that educates the consumer

Who's Going to Put it All Together

- The ultimate smartphone application will allow us to:
  - Search for destination
  - Find parking nearby
  - Pay for parking
  - Access information about our transaction
  - Add time
 - Manage before, during, and after experience
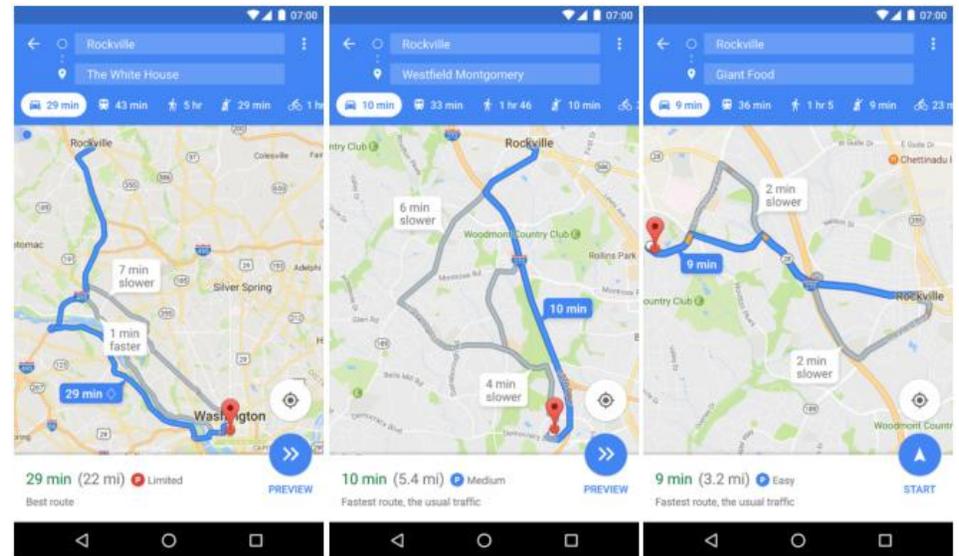
Designing for the Future

- What does the future hold?
  - Advanced use of Rideshare
  - Changing behaviors and demographics
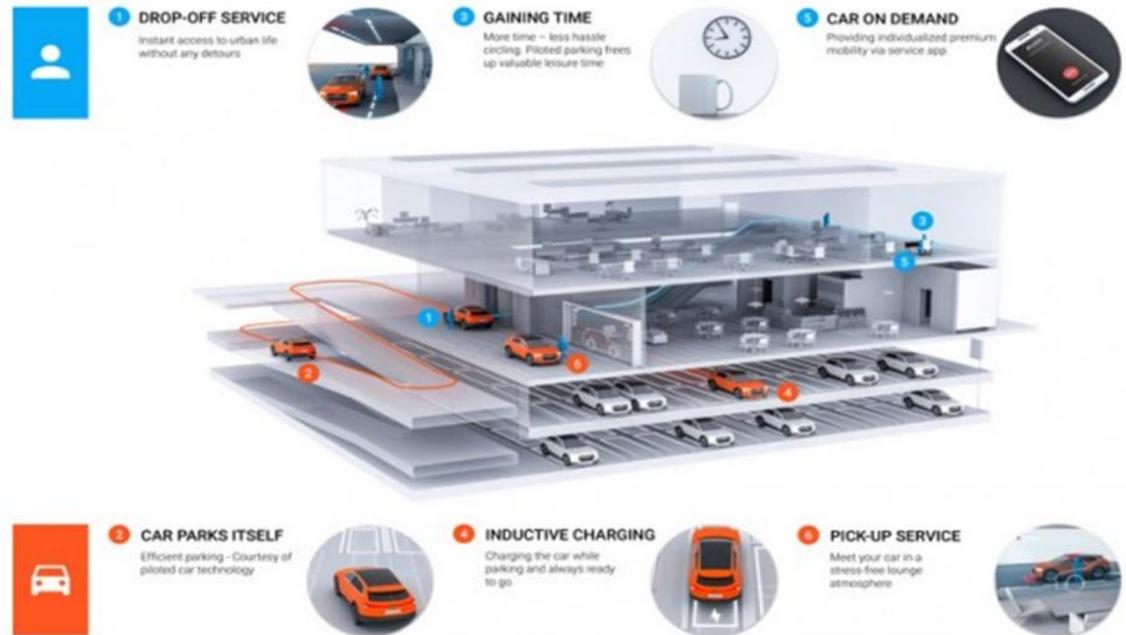 - Beginning rollout of autonomous vehicles

Designing for the Future

- How do we plan for a changing future?
    - Develop policy to integrate rideshare and promote a more coordinated usage
    - Partner parking and mobility to define a suite of options for patrons
    - Develop policy and framework to communicate your technology with the connected car
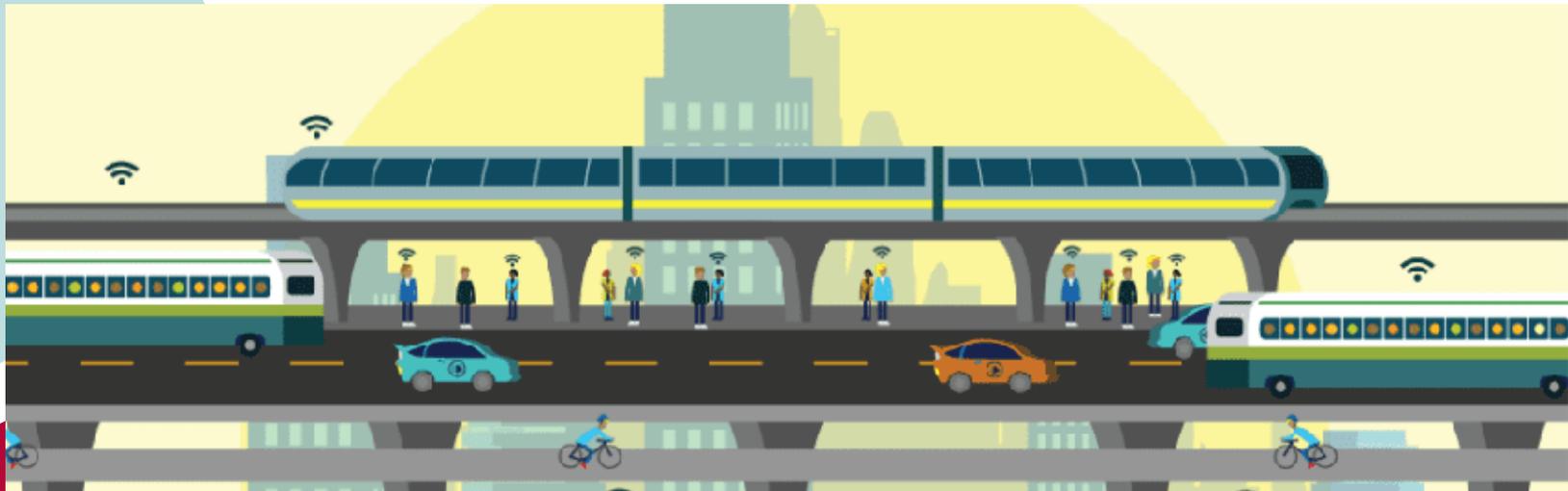
Designing for the Future

- ## What to do with all that parking?
  - Adaptive reuse of existing facilities
  - Redevelopment of surface parking
  - Reconfiguration of existing parking garages to meet the needs of a changing automobile
  - Creating a parking system that meets the changing uses of our transportation system

Thank you

Mark N. Santos, P.E.