

greengov<sup>SM</sup>  
SYMPOSIUM

“Beyond the Commute”



# Sustainable PARKING

Design and Management Strategies



Kimley-Horn  
and Associates, Inc.

Presented by: L. Dennis Burns, CAPP  
Green Gov Symposium, October, 2010  
Washington, DC



THE GEORGE  
WASHINGTON  
UNIVERSITY  
WASHINGTON, D.C.



# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Kimley-Horn and Associates, Inc.



### L. Dennis Burns, CAPP

- Senior Practice Builder/Regional Vice President
- Certified Administrator of Public Parking
- Board of Advisors
  - International Parking Institute
- Board of Directors
  - International Downtown Association







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Presentation Overview

### ■ GSA Urban Development/Good Neighbor Program

### ■ Sustainable Parking Planning, Design & Management

- Urban Parking Integration & Transit Oriented Dev. Design Principles
- Sustainable Parking Planning, Design and Management Strategies in Urban and Non-Urban Environments
  - Supply & Demand-Side Management Strategies
  - Integrated Access Management
  - Leveraging New Technologies



# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## GSA Urban Development / Good Neighbor Program

- New sustainable site selection policy under development
- Public space management challenges and successes - and potential partnerships
- Federal development plans in downtown environments – The GSA Good Neighbor Program

### ➤ Parkersburg, WV – Mini-Case Study





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Mr. David Feehan

President

**International Downtown Association**

## Ms. Betsy Jackson

President

**The Urban Agenda**

## Mr. Matt Kennell

Executive Director

**City Center Partnership, Inc.**

## Mr. Dennis Burns, CAPP

Regional Vice President

**Kimley-Horn and Associates, Inc.**

## Mr. Frank Giblin

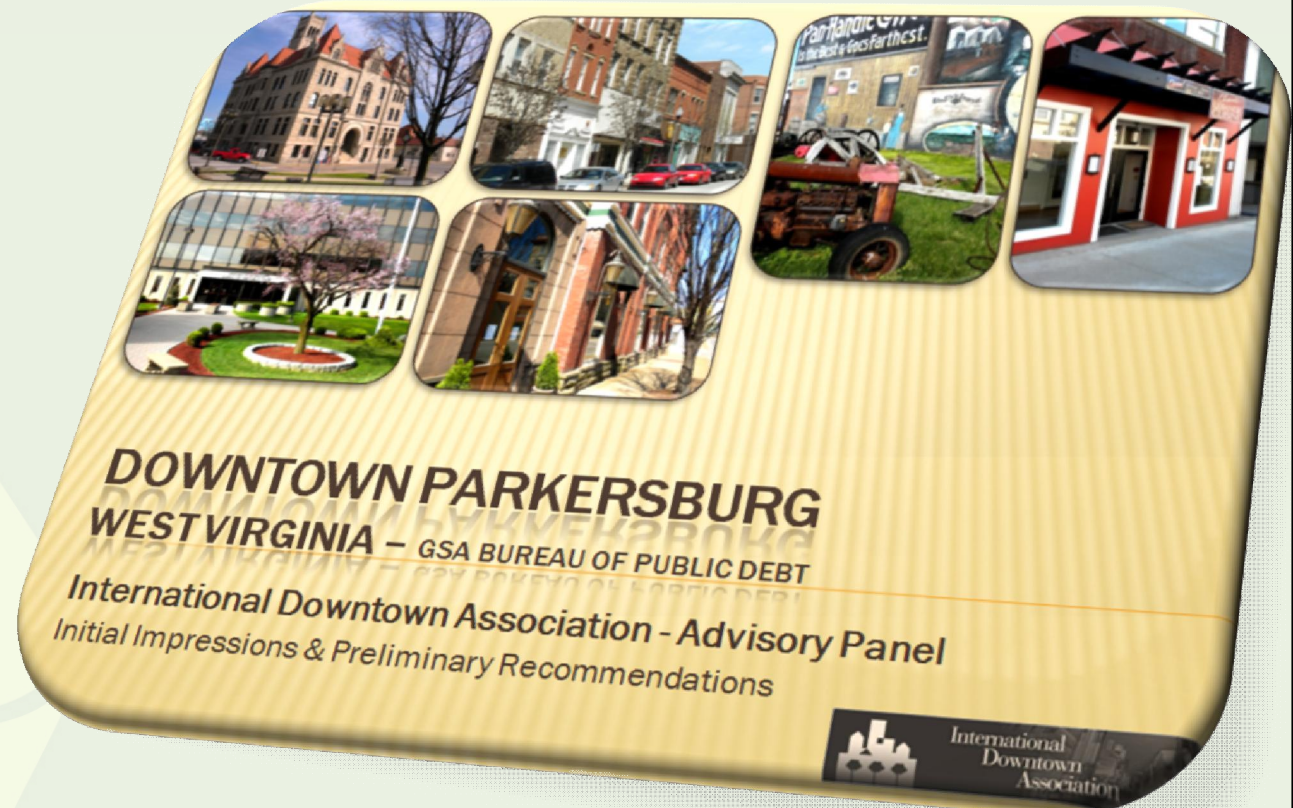
GSA Public Building Services

**U.S. GSA**

## Ms. Karen M. Beach

GSA Public Building Services

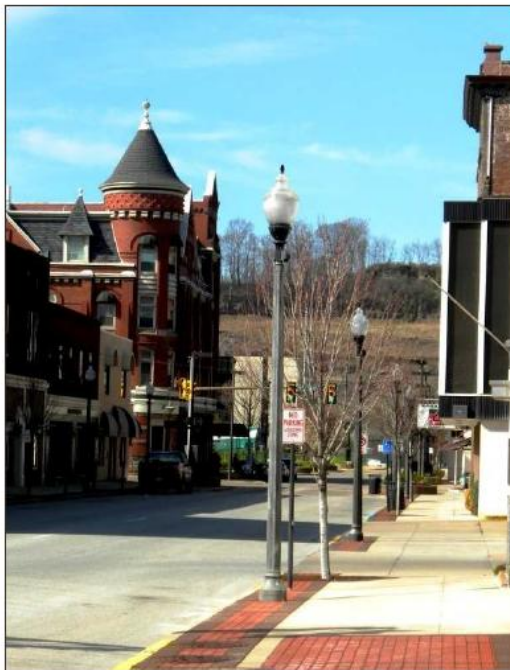
**U.S. GSA**





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES



International Downtown Association  
Advisory Panel for Downtown Parkersburg  
April 5-7, 2009

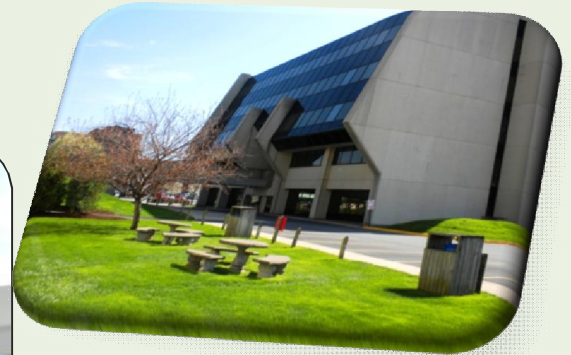
- The General Services Administration (GSA) is a federal agency that serves as the real estate developer and **property manager for more than 8,000 of the government's owned and leased properties.**
- GSA's Urban Development/Good Neighbor program **helps connect GSA projects to the revitalization efforts in the districts in which they operate.**
- In Parkersburg, West Virginia, the Program seeks ways for BPD's facility development and operations and the City's ongoing planning efforts to be mutually supportive.





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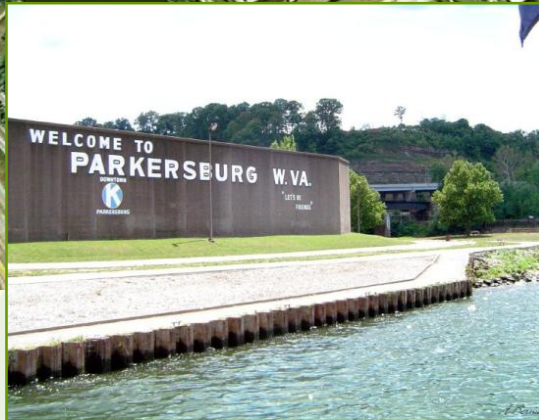
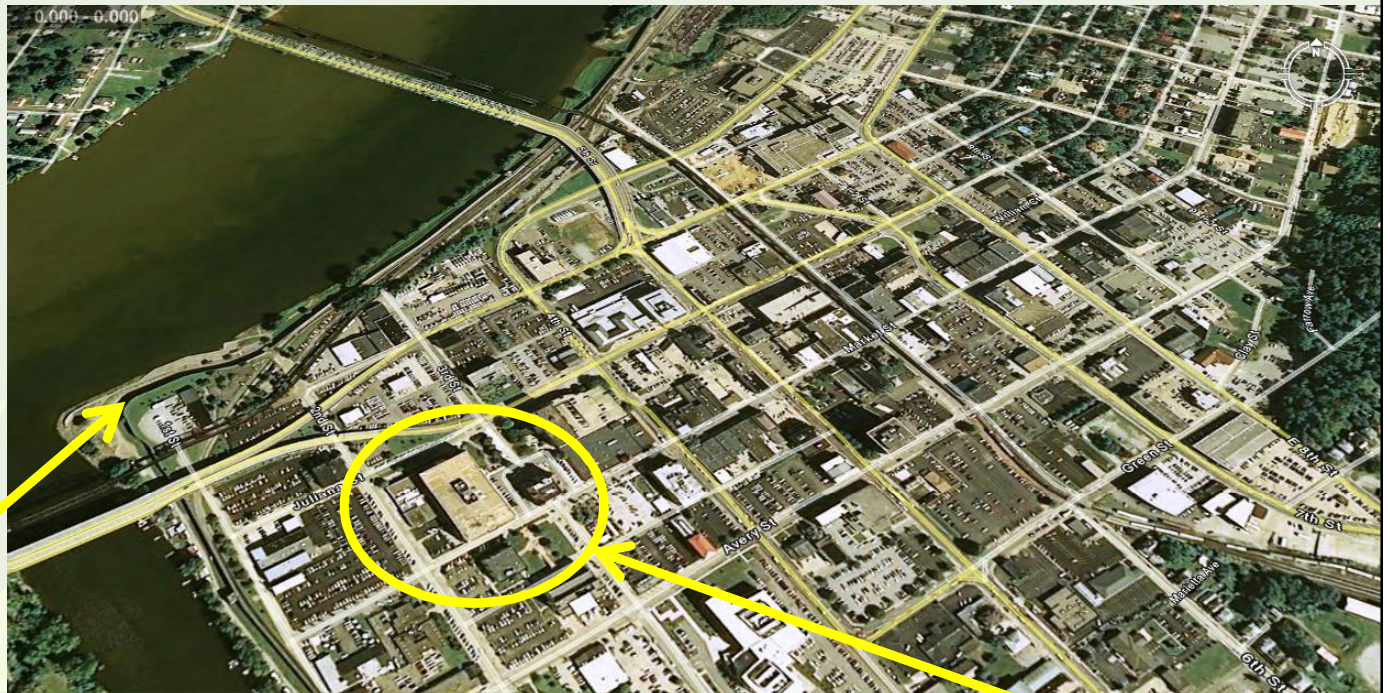




# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

Downtown  
Parkersburg, WV





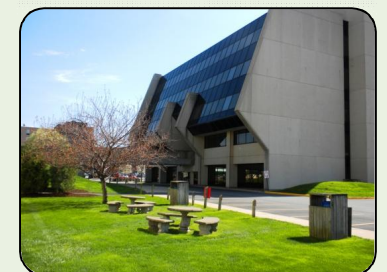


# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Challenges Downtown Parkersburg, WV

- ❑ Parking 'system' is not in place
- ❑ The pedestrian environment is not strong
- ❑ Downtown's connection to the waterfront is weak
- ❑ Transportation infrastructure needs improvement and management
- ❑ Beyond Blue Cross and BPD, there's not much new private sector investment
- ❑ Urban Clearance/Urban Renewal did its damage in downtown
- ❑ Downtown Parkersburg is not marketed as a community/regional/tourist amenity
- ❑ There is a lack of strategic thinking...and planning



International  
Downtown  
Association

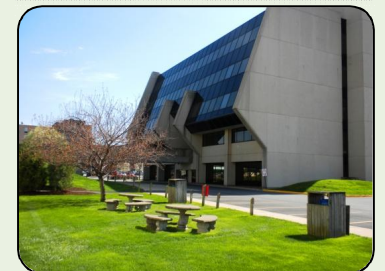


# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Opportunities Downtown Parkersburg, WV

- Using a new parking structure to link the downtown and a proposed new GSA campus
- Office centers provide opportunities for events, marketing and business development
- Historic architecture is the currency of mixed-use development
- Downtown's major employers should be promoting downtown's opportunities
- Point Park redevelopment is an asset that needs to be built upon
- Residential development has immediate potential
- Business-sector leadership needs to be tapped for strategic growth







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## ➤ Sustainable Parking Planning, Design & Management

- Urban Parking Integration & Transit Oriented Dev. Design Principles
- Sustainable Parking and Transportation Strategies in “Non-Urban” Environments
  - Supply & Demand -Side Management Strategies
  - Integrated Access Management
  - Leveraging New Technologies



# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Many Opportunities to Include LEED Green Features in Parking Design

- ❖ Sustainable site development
- ❖ Water savings
- ❖ Energy efficiency
- ❖ Materials and resources selection
- ❖ Indoor environmental quality
- ❖ Innovation & design process







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Sustainable Site Development

- There are a host of sustainable parking design features and management options that you are probably already familiar with:

- Green Roofs
- Pervious Pavements
- Rain Gardens & Bio-swales
- Photovoltaic Panels
- Advanced High Efficiency Lighting
- Reduced Parking Costs for Alt Fuel Vehicles
- Preferential Parking for Car & Vanpools







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Sustainable Site Development



Green roofs over underground parking







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Sustainable Site Development



### Green roofs

- Reduce heat island
- Reduced and filtered storm water run off
- Improved aesthetics
- Provide outdoor space



Simple Roof Top Plaza



Extensive Roof Top Park



# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Sustainable Site Development

### Alternative transportation

- Bike parking, changing rooms, and showers
- In the USA, we're more likely to see smaller bike storage facilities at the present time



Bike Storage Facility



Bike Rental Programs



Another new concept gaining traction is "Bike Concierge Programs" such as "Bike Station"<sup>16</sup>

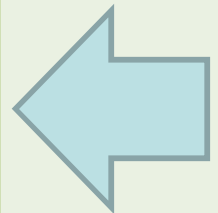




# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Sustainable Site Development



**Project Design and Visualization Tools**

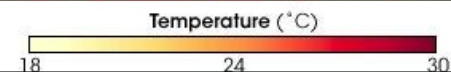
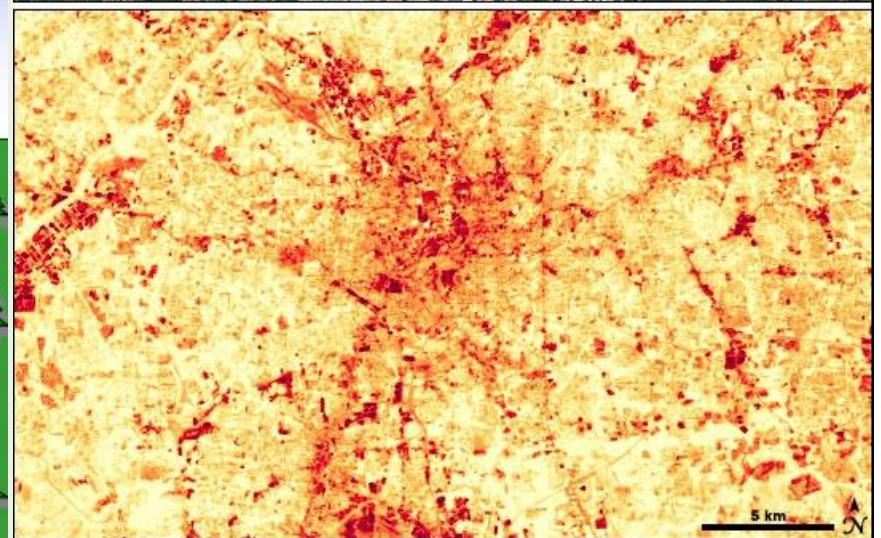
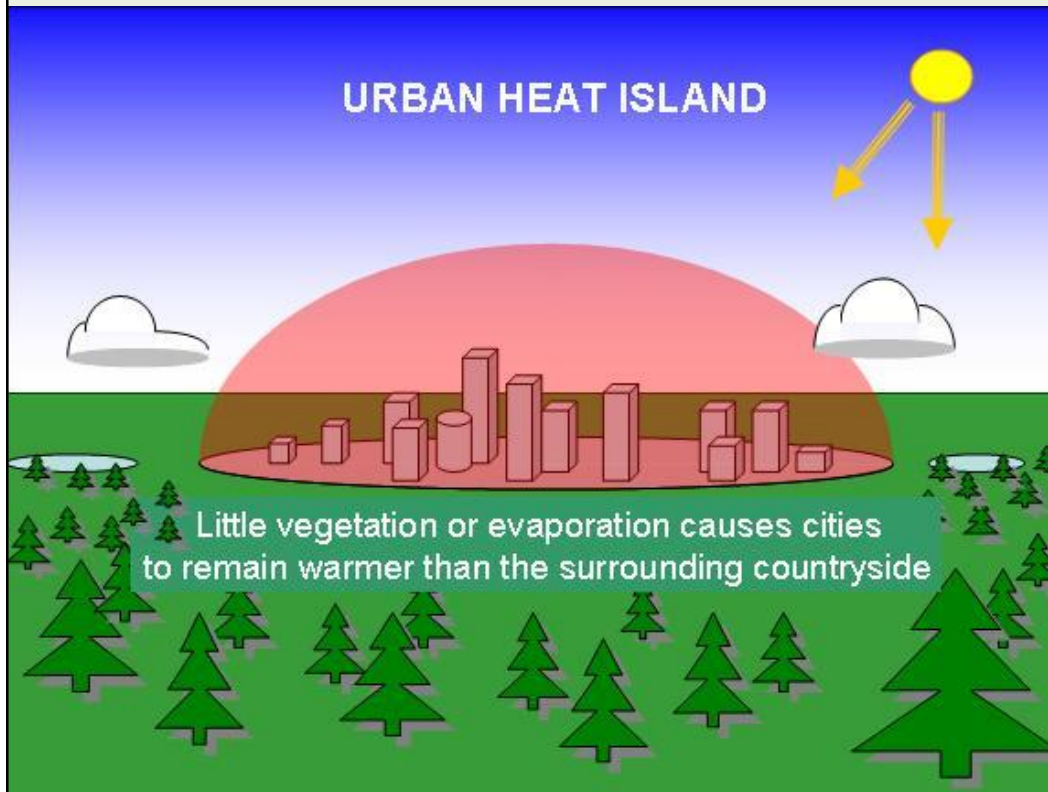




# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Heat Island Effect







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Heat Island Effect

### ■ Pervious concrete pavement

- Reduces runoff
- Naturally filters storm water





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Xeriscape

- Water Savings
  - Water efficient landscaping
- Benefits
  - Low water consumption
  - Low maintenance
  - Protects water quality
  - Increases natural beauty







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Lighten Up

- Painting or staining the interior of parking structures is one of the best ways to improve the perception of customer safety and facility cleanliness.
- Painting the underside of parking levels as well as vertical elements such as wall and columns increases lighting levels through improved reflectivity (approximately 15%) without increasing energy consumption.





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Energy Efficient

### ■ Optimize energy performance

- Fluorescent lighting – 45% savings compared to MH & HPS
- Induction lighting
- LED lighting
- Lighting control systems

### ■ Renewable energy 5% - 20%

- Photovoltaic solar panels
- Solar powered lights



LED Lighting Fixture





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Energy Efficiency – Renewable Energy



Solar Panels as Parking Space Canopies





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Energy Efficiency – Renewable Energy

- SYSTEM SPECIFICATIONS
  - Estimated Yearly Power Production
    - 110,000 kWh
  - System Configuration
    - Utility Grid Connected
    - Solar Modules – 360 KC167G
    - Batteries - None
  - Mount Structure
    - Custom steel carport shade canopy
  - Unique Feature
    - This system offsets the purchase of utility power during daytime hours for the City of Tucson. The uniquely integrated PV array acts not only as a power generator, but also as a shade structure on the top floor of a seven story garage.



Pennington Street Garage  
Tucson, Arizona

Photo: Kyocera Solar, Inc.





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Innovation and Design Process

- Parking guidance systems
- Automated parking
- Green facades
- Solar power
- Increased Facility “Design Life”
  - 75-100 year life





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Automated Parking

- Reduced emissions
- Reduced lighting
- Maximize open space



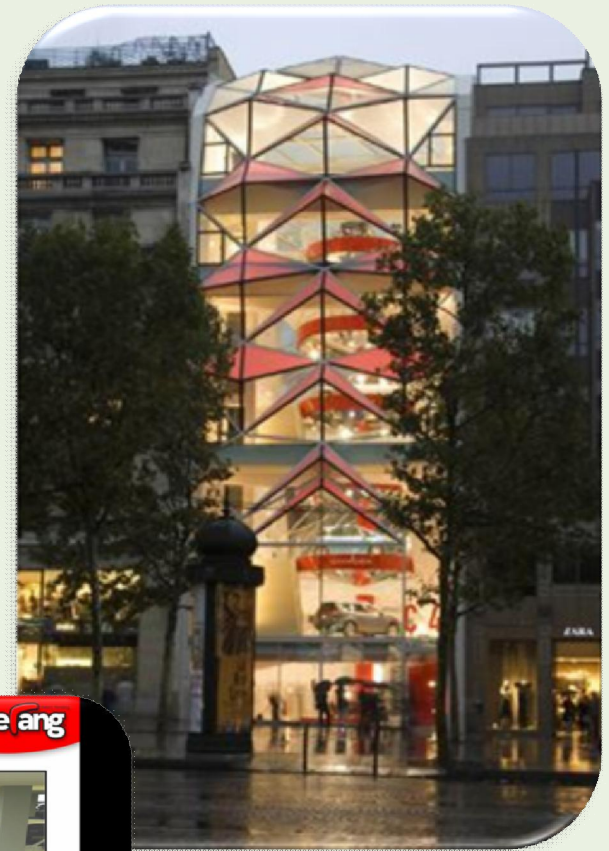
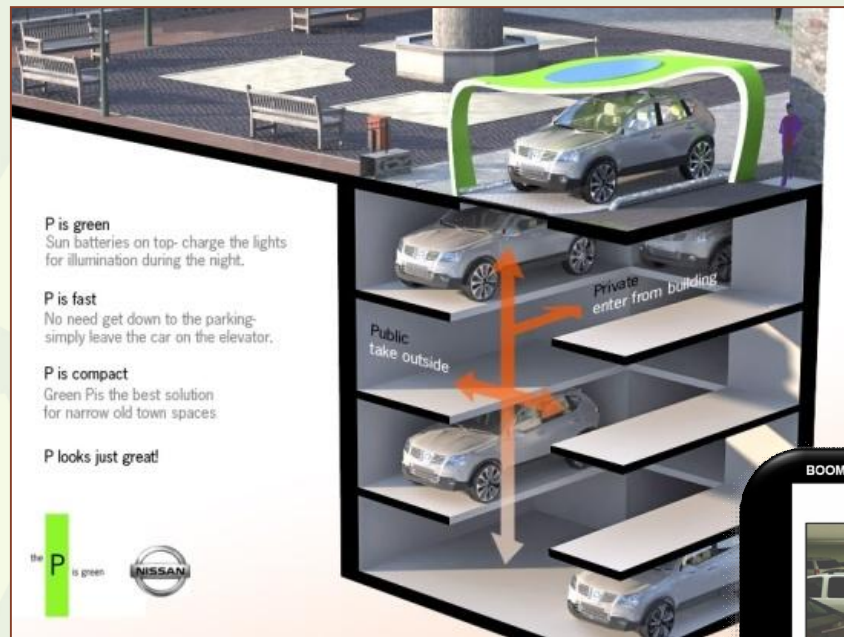




# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Automated Parking







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES



## Sustainable Parking Design



This is a parking garage!



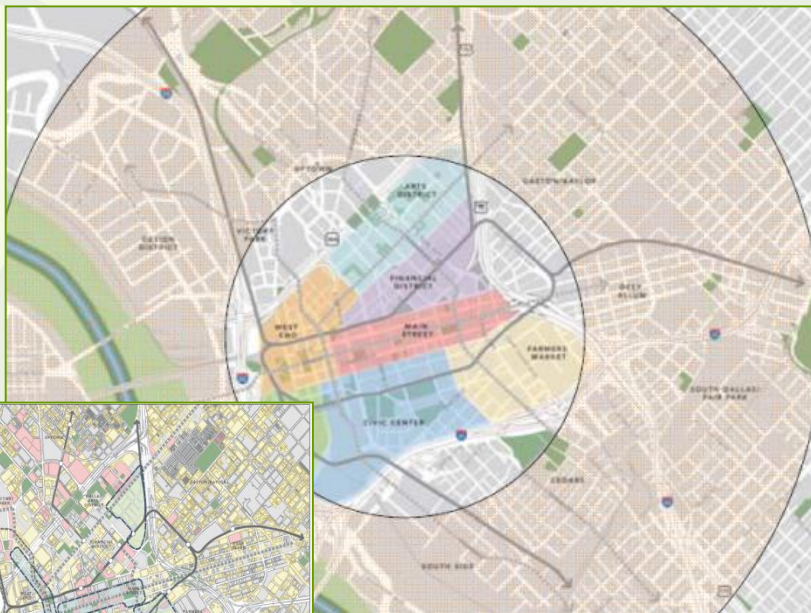


# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## “Parking Strategic Plans”

- Weaving Sustainability into All Aspects of a Community Parking and Transportation Plan



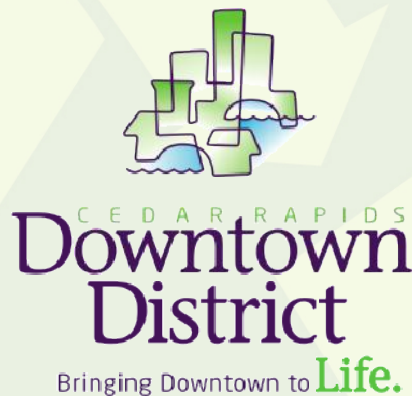


# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## “Parking Strategic Plans”

- Weaving Sustainability into All Aspects of a Community Parking and Transportation Plan



## Strategic Plan Guiding Principles







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Supply - Side Strategies

❖ Supply side strategies maximize the efficiency of existing and future parking resources.

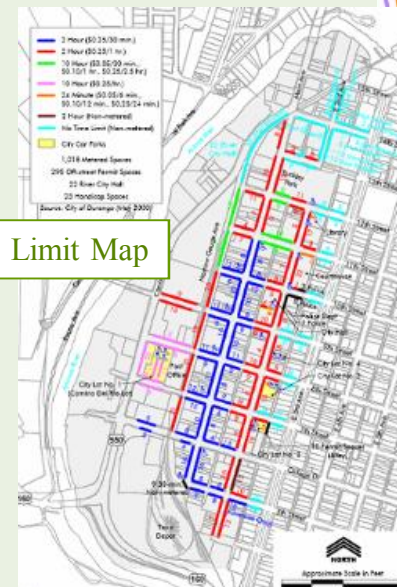
❖ Key Strategies:

- Know Your Resources
- Parking Regulations
- Flexible Parking Standards
- Parking Maximums
- Smart Growth
- Walking and Cycling Improvements
- Parking Facility Design
- Improved Parking Operations & Management

On-Street Utilization



On-Street Time Limit Map



Supply/Demand by Zone





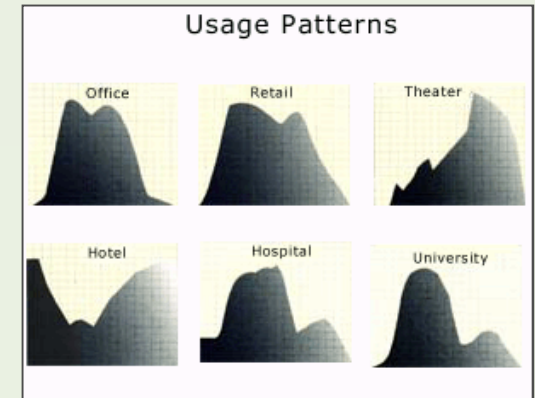
# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Supply - Side Strategies

### ❖ More Key Strategies:

- Shared Parking
- Overflow Parking Plans
- Improved User Information and Marketing
- Parking Pricing
- Improved Enforcement & Controls
- Improved Payment Methods
- “Unbundling” Parking
- Parking Management Organization/Coordination
- Guiding Principles
- Parking Environment Improvements







# Sustainable PARKING

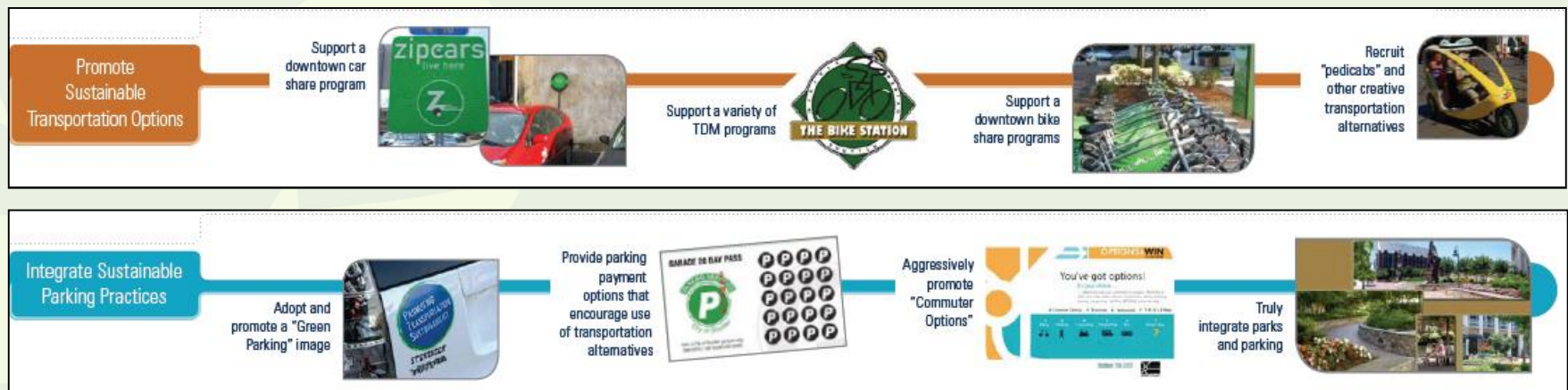
DESIGN AND MANAGEMENT STRATEGIES

## Parking Strategic Plans

### *Weave Sustainability Throughout the Parking Plan*

#### Action Items:

- Integrate parking decisions with ongoing transit and access enhancements
- Integrate smart TDM practices into parking planning decisions
- Implement a downtown car-share program for residents and workers





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Demand-Side Strategies

Improved Transport Options	Incentives to Shift Mode	Land Use Management	Policies and Programs
Alternative Work Schedules	Bicycle and Pedestrian Encouragement	Car-Free Districts	Access Management
Bicycle Improvements	Congestion Pricing	Compact Land Use	Campus Transport Management
Bike/Transit Integration	Distance-Based Pricing	Location Efficient Development	Data Collection and Surveys
Carsharing	Commuter Financial Incentives	New Urbanism	Commute Trip Reduction
Guaranteed Ride Home	Fuel Tax Increases	Smart Growth	Freight Transport Management
Security Improvements	High Occupant Vehicle (HOV) Priority	Transit Oriented Development (TOD)	Marketing Programs
Park & Ride	Pay-As-You-Drive Insurance	Street Reclaiming	School Trip Management
Pedestrian Improvements			Special Event Management
Ridesharing			Tourist Transport Management
Shuttle Services			Transport Market Reforms
Improved Taxi Service			
Telework			
Traffic Calming			
Transit Improvements			







# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Unbundling “Monthly Parking”

- **Convenient:** Valid in all 5 City of Boulder parking garages.
- **Affordable:** 20 days of parking for only \$200 (\$10/day).
- **Available:** No wait list!
- **Flexible:** Only pay for days you drive! Great option for anyone who works in downtown a few days a week, utilizes alternative commuting modes or who is on the wait list for a garage permit.

**Intent:** Options, options, options! Our intent is to offer more options. It was designed for long term parking (parking all day not leaving, maybe 8-10 hours) in our garages for people who do not have a long term permit.

**Purchase:** The purchaser pays \$200 and receives a plastic day pass.

**Usage:** The buyer takes a ticket at the entrance gate as a normal short term parker would and upon exit gives the entrance gate ticket and punch card to the booth attendant. The booth attendant punches the card, returns it to the customer and opens the gate for the customer to exit. The booth attendant uses a pre-programmed register key and runs the ticket through.





## Sustainability Quotes

- “Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has.”  
– **Margaret Mead**
- “A mind that is stretched by a new experience can never go back to its old dimensions.”  
– **Oliver Wendell Holmes**





# Sustainable PARKING

DESIGN AND MANAGEMENT STRATEGIES

## Thank You

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## Questions/Discussion



Kimley-Horn  
and Associates, Inc.