Managing Parking Facilities as Green Infrastructure

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Environmental issues…

Impact of construction and operation

- Urban land consumption
- Water runoff and pollution
- Urban heat island/surface albedo
- Lifecycle energy and GHG emissions of construction and operations

Impact on VMT and vehicle ownership

- Energy use
- Air pollution
- GHG emissions
- Noise

Green design and construction

Land utilization/design

- Reduced parking footprint (space size, layout efficiency , structures/underground)
- Multiple use of footprint – e.g., solar arrays
- Wrapped/integrated parking facilities
- Urban agriculture on structures

Material reuse/recycling

- Reuse of on-site materials
- Low impact/recycled materials
- Temporary structures; reconfigurable structures

LEED certified parking facility

Green systems and operations

Water	• Stormwater capture, treatment, and recharge • Permeable pavement • Low water use/drought tolerant landscaping
Energy	• Natural ventilation and lighting • Efficient mechanical systems and lighting • On-site generation: solar panels, wind, geothermal
Micro climate/reflectivity	• Landscaping (urban heat island) • Reflective pavement and shading structures (GHG)
Maintenance materials and practices	• Green maintenance materials • Maintenance that extends the life of the facility


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Greening the act of parking

Less cruising	• Real-time space availability/parking guidance systems • On-street pricing increases space availability and incentivizes use of off-street parking
Less queuing	•Real-time space availability/parking guidance systems •Barrier-free arrangements •Pay before exit
Greener vehicles	• Priority spaces for carpools, vanpools, low emissions vehicles, neighborhood electric vehicles, electric vehicle recharging, bicycles
Fewer parking events	• “Park once” and walk • Intelligent pricing structure that reduced moved vehicles

Hooray for green parking?

No

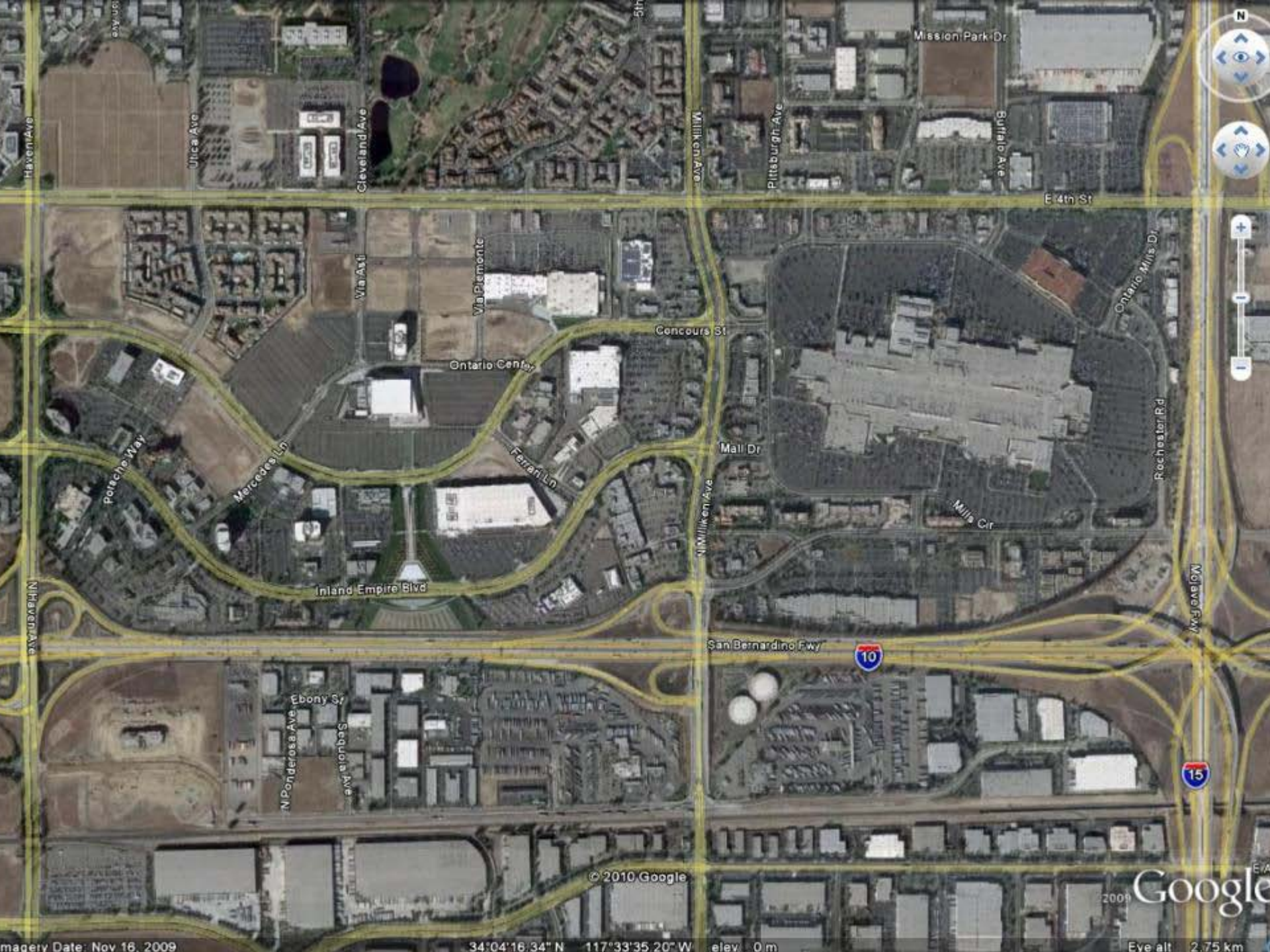
Green parking is an oxymoron…

- VMT and vehicle ownership impacts outweigh benefits of "green" facilities
- Green parking is greenwashing, a distraction from core issue of SOV dependency

Perhaps

A transportation facility "of last resort"….

- Other travel modes used to full potential
- Shared parking has been optimized
- Pricing is in effect


Mission Park Dr
Utica Ave
Cleveland Ave
Milliken Ave
Pittsburgh Ave
Buffalo Ave
E 4th St
Via Asti
Via Piemonte
Concours St
Ontario Mills Dr
Ontario Center
Porsche Way
Mercedes Ln
Ferrari Ln
Mall Dr
Rochester Rd
N Milliken Ave
Mills Cir
Inland Empire Blvd
N Haven Ave
Mojave Fwy
San Bernardino Fwy
10
Ebony St
N Ponderosa Ave
Sequoia Ave
15
© 2010 Google
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imagery Date: Nov 16, 2009
34°04'16.34" N 117°33'35.20" W elev 0 m
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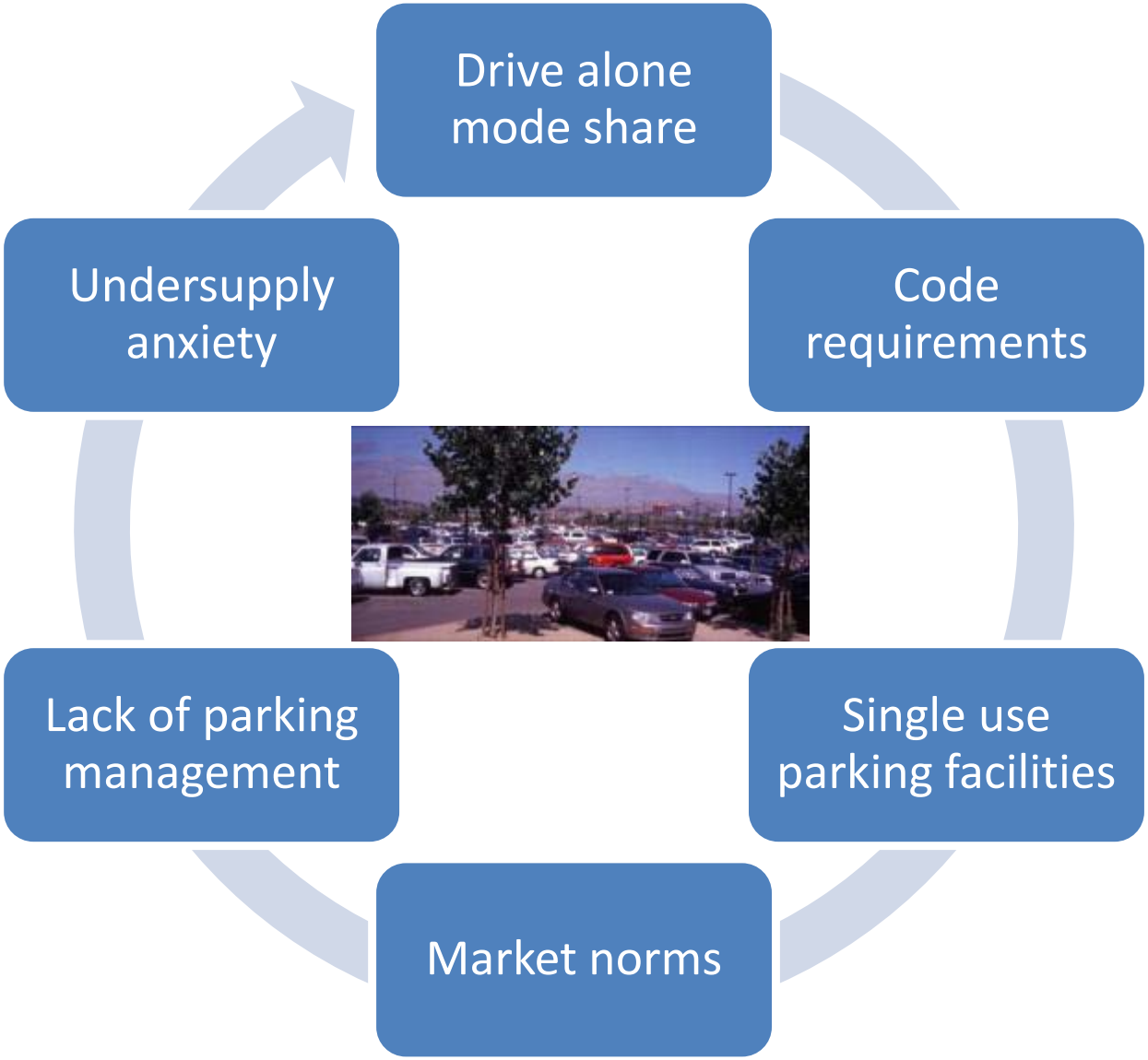
Why so much parking…



Parking is a significant land use

Number of spaces in the U.S.	• 730 million to 2 billion
Urban land area devoted to parking (footprint)	• 5% to 19%
CBD coverage (all parking area)	• 18% to 81%

Life cycle assessment of parking construction and operation

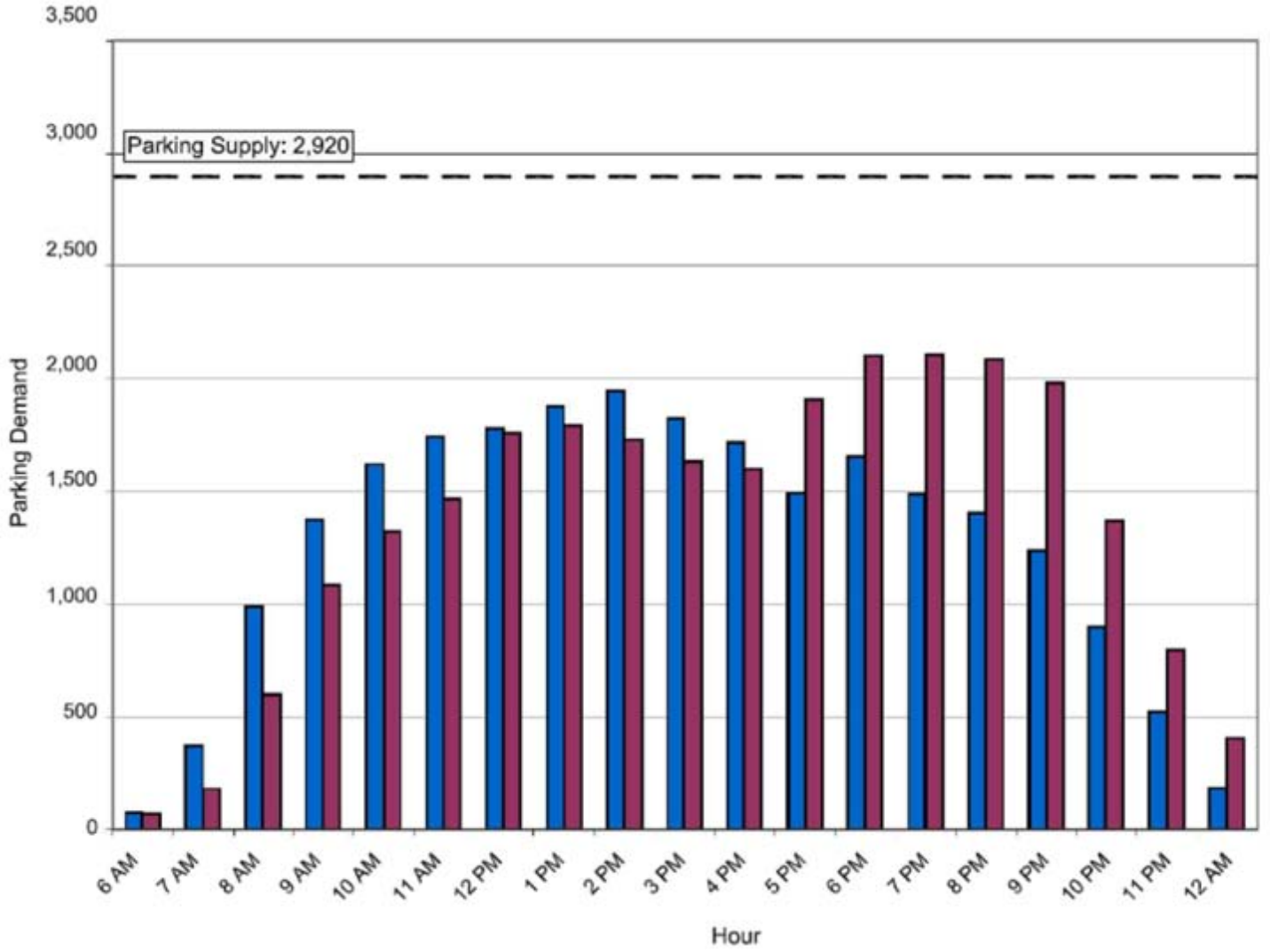
Categories of impact

- Energy
- Greenhouse gases – CO_2, CH_4, N_2O, etc.
- Air pollution - CO, SO_2, NO_X, PM10, etc.

Estimates of life cycle impacts, U.S. parking

- 690 – 1,800 PJ
- 63 – 150 Tg CO2e
- VOC – 490 – 1,900 Gg

Parking is oversupplied - commercial



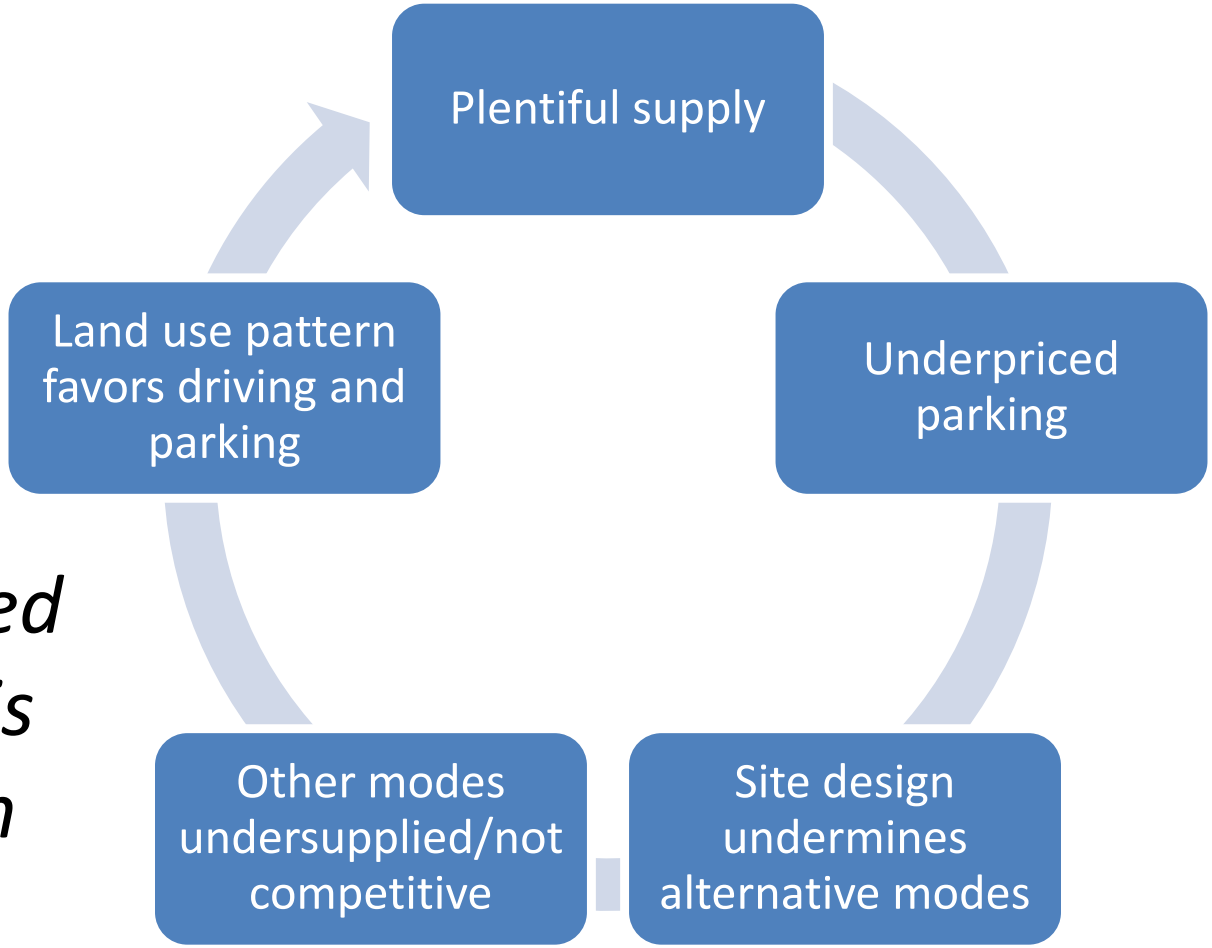
Uptown Whittier peak occupancy and supply

Parking is oversupplied - residential

Occupancy counts at 7 Inland Empire multi-family complexes…

Total # of Units	Supply				Demand
	Code Requirement		Actual Supply		
	Total Supply	Supply per unit	Total Supply	Supply per unit	Actual Demand
2,506	4,949	1.97	4,704	1.88	1.66

Existing demand levels inflated…



*Despite inflated demand – it is **still** less than supply*

Many places have enough parking now for the next 25 years, *right now*

"We will build no parking before its time"

Parking construction as the exception rather than the rule

Green parking reform, part 1

Use existing on- and off-street supply more efficiently

- Shared parking
- Price parking/unbundle parking costs
- Parking management and technology

Encourage travel by modes that do not require parking

- Denser, clustered land use
- Network of mixed land use zones
- Transit, walk, bike, TDM
- Road prioritization
- Road pricing

Green parking reform, part 2

Reduce household automobile ownership	• Housing in mixed use environments, linked to a network of mixed use clusters by transit • Unbundle parking • Temporary car rental
Reform minimum parking requirements	• Transition from demand based to deregulation • Consider maximums if market overbuilds • Allow in-lieu fees • District-based supply concept
Finance	• Fair allocation of capital and operating costs on a district basis • Revenue return to districts • Market-based test for new supply

A typical progression in policy

Initial steps…

- Simple parking management – time limits, neighborhood permit parking, shared parking
- On-street pricing in busiest commercial areas; return some revenues to district
- Lower minimums to average demand
- Education; identification of local “champions”; build management capacity

Advanced approaches…

- Private/public management partnerships, integrated with traffic management
- Market-based on-street pricing; revenue return
- Lowered/eliminated minimum parking requirements
- Targeted, market-justified, shared structures

The past…

He had many homes … his owner's house and workplace, at the mall, the bowling alley, the funeral parlor, the hair salon, the shooting range…

Transit agencies even made spaces for him!

The glory years…

He never had to search.

He never had to pay.

He never spent a night on the street.

His arrogance grew: he had needs. Shade but no dirty trees. Room to avoid door dings. Suburban style parking in the core of town.

His strategy …

He preyed on the fears of planners, engineers, developers, retailers, and employers:

ANARCHY!

HOMELESS CARS!

CARS ON THE STREET!

CARS ON YOUR FRONT LAWN!

The fall from grace…

The dirty secrets: traffic, energy, greenhouse gas emissions, urban heat islands, bad urban design, high development costs, low densities, unfairness for those without cars.

Spiteful responses

Portland-style this,
Portland-style that!

Parking maximums!

Parking bans!

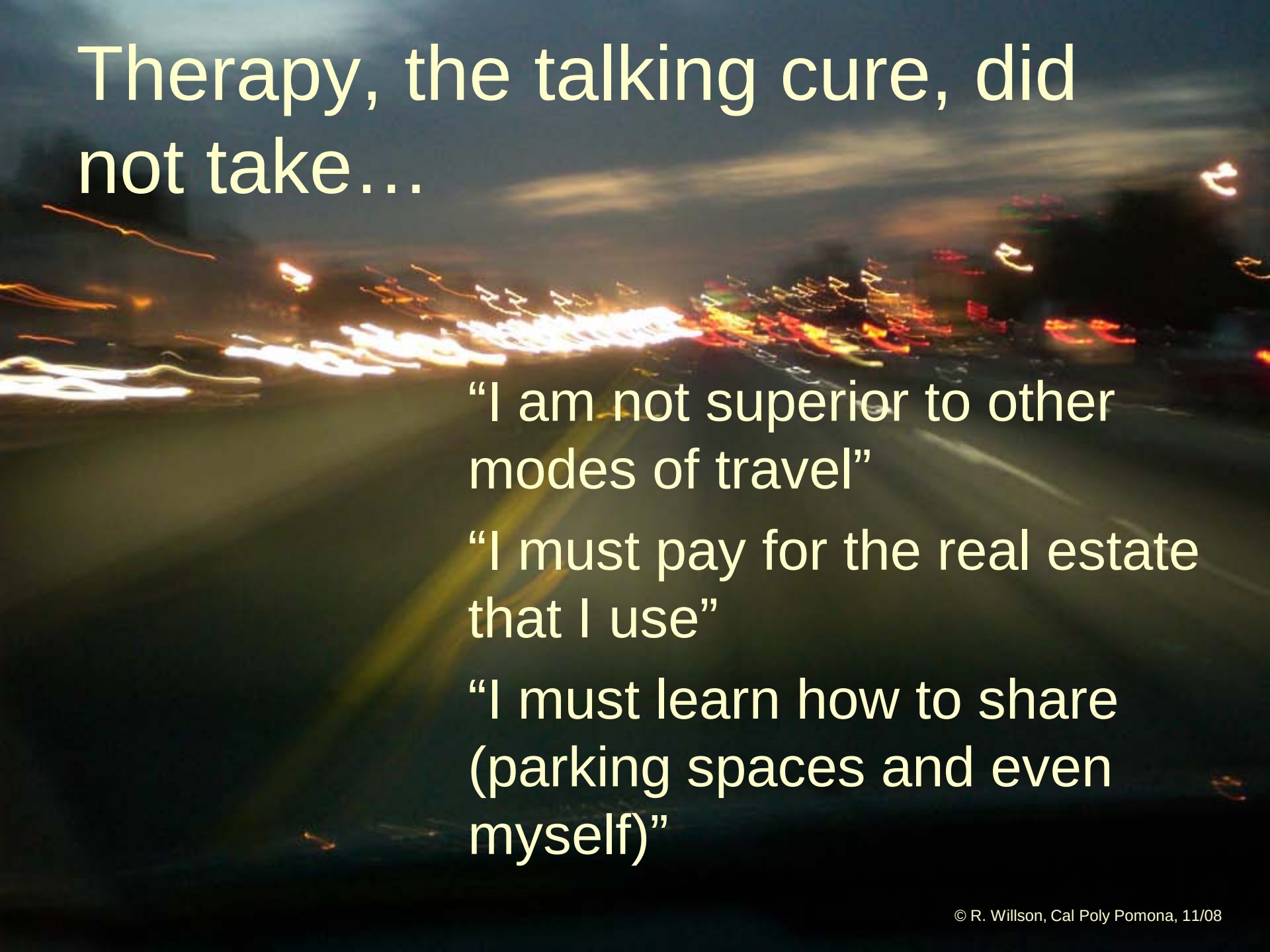
Parking charges!

Parking cash out!

Shared parking!

The deepest cut of all: parking spaces hijacked for parks…

Therapy, the talking cure, did not take…



- “I am not superior to other modes of travel”
- “I must pay for the real estate that I use”
- “I must learn how to share (parking spaces and even myself)”

Goodbye…