UTAH TRANSIT AUTHORITY

The Greening Affect of Transit

John Inglish

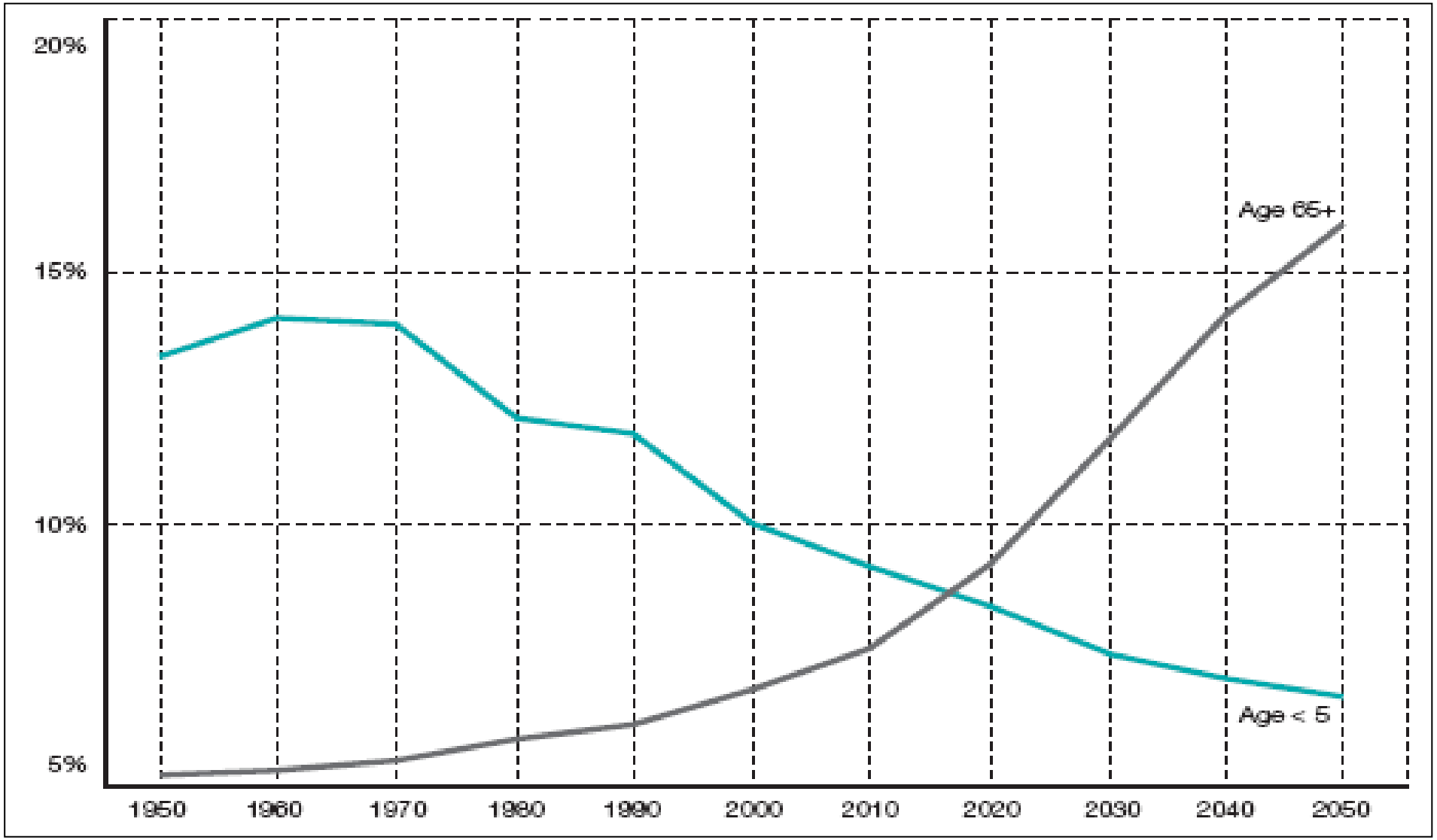
CEO

Utah Transit Authority

The Greening Affect of Transit

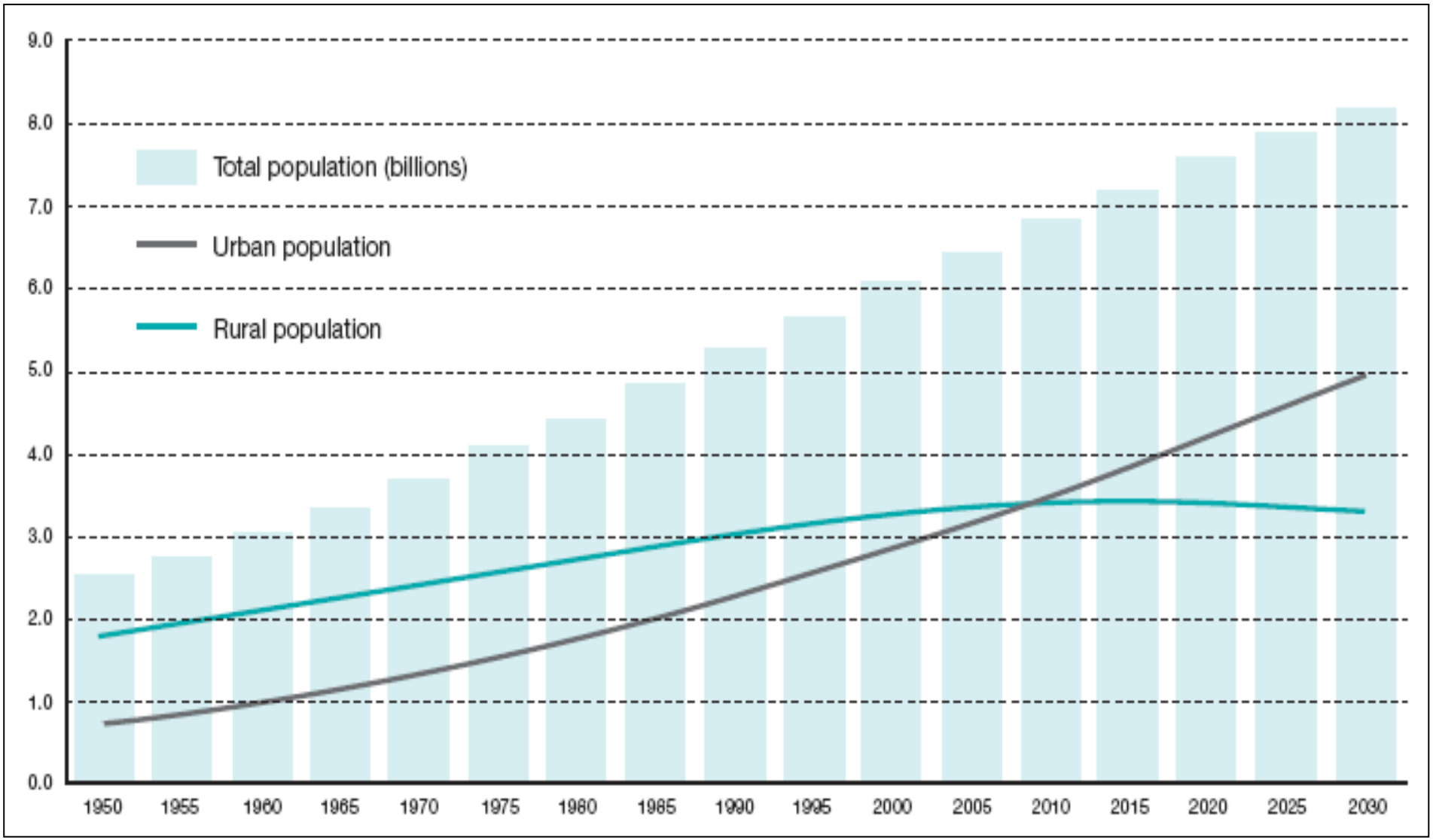
- Sustainability impacts of expanding transit
- Land use issues
- Transit usage levels
- New technology and energy sources
- Active transportation

Megatrend: Aging



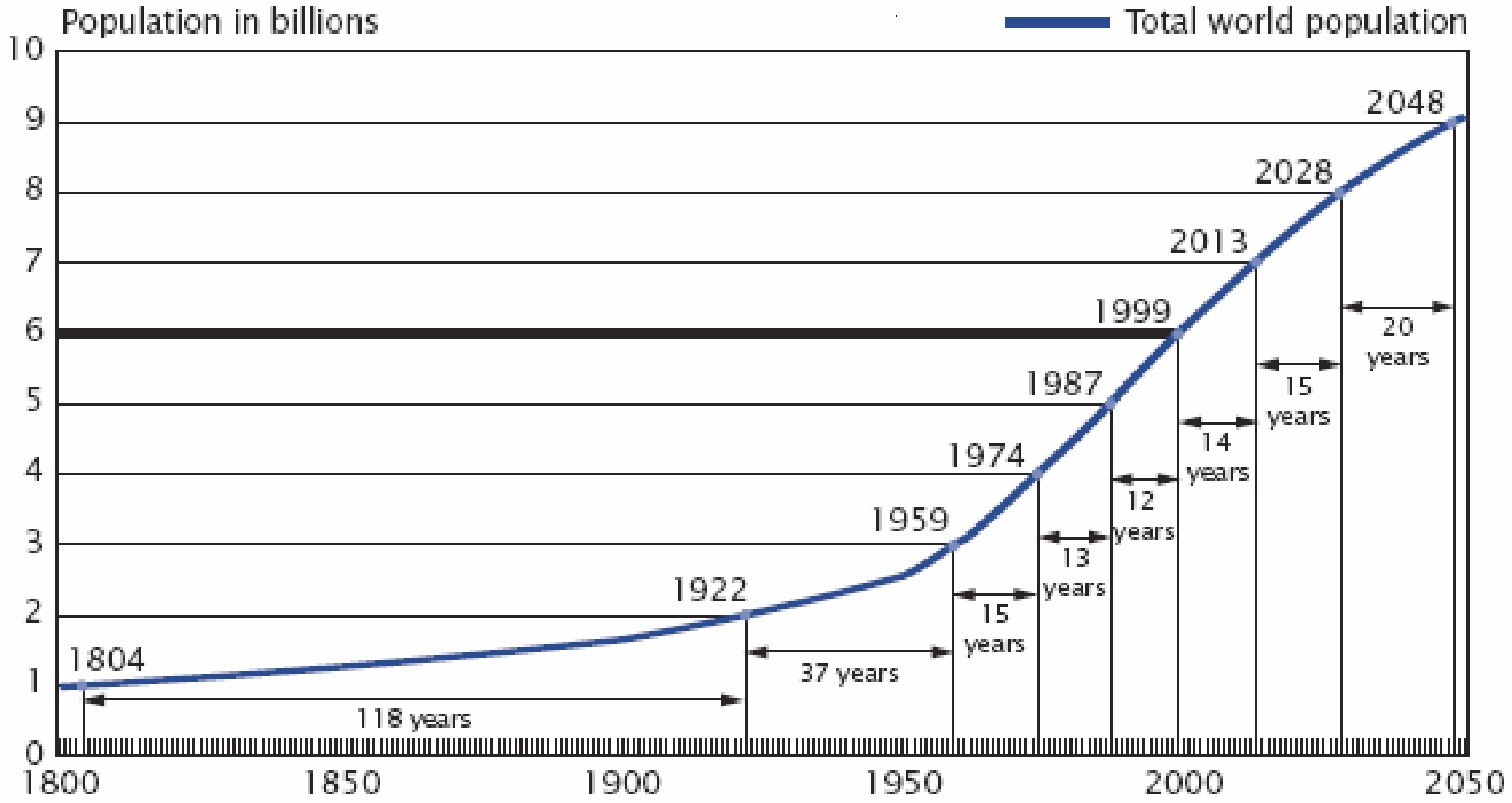
Source: UN Population Division

Megatrend: Urbanization



Source: UN Population Division

Populations increase but the planet doesn't
How many people? How quickly?.....



Source: United Nations, *World Population Prospects: The 1994 Revision*; U.S. Census Bureau, International Programs Center, International Data Base and unpublished tables.

Impact of public transportation on the cost of travel and energy demand

Cities	Density (inhab/ha)	% walking + cycling + PT	Journey cost (% of GDP)	Energy (Mj/inhab)
Houston	9	5 %	14.1 %	86,000
Sydney	19	25 %	11.0 %	30,000
London	59	51 %	7.1 %	14,500
Paris	48	56 %	6.7 %	15,500
Munich	56	60 %	5.8 %	17,500
Tokyo	88	68 %	5.0 %	11,500
Hong Kong	320	82 %	5.0 %	6,500

Albuquerque: downtown map

Source: MIT

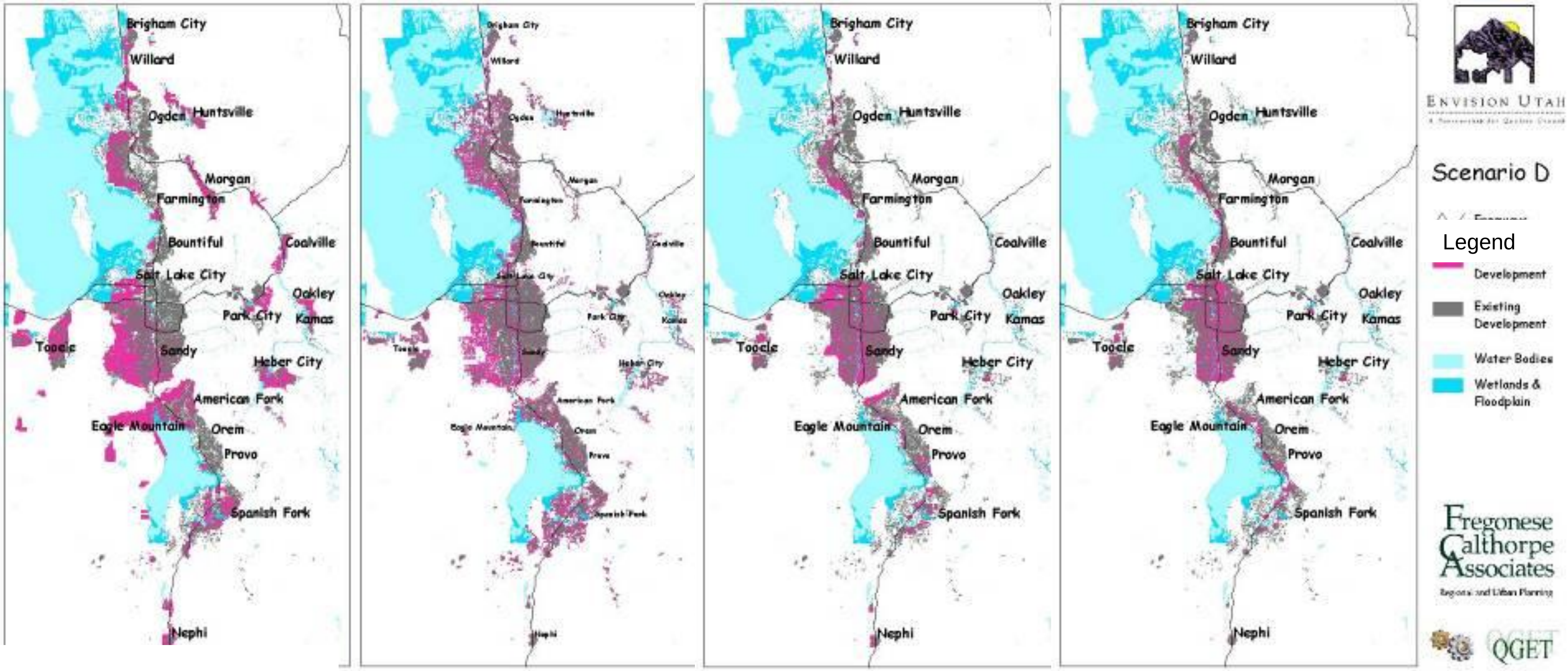
Salt Lake City, Utah

Our Sustainability Challenges

- Adding a million residents by 2030
- Urbanizing 87% more land by 2020
- Needing new water sources by 2010
- Risking increases in air pollution
- Worsening crowding and congestion
- Increasing costs for businesses and families
- Rising infrastructure needs

Land use issues

Envision Utah – Four Options

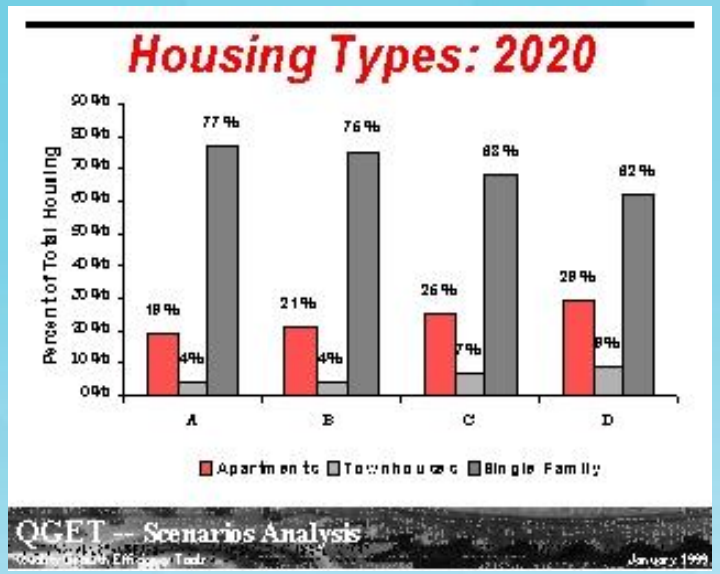


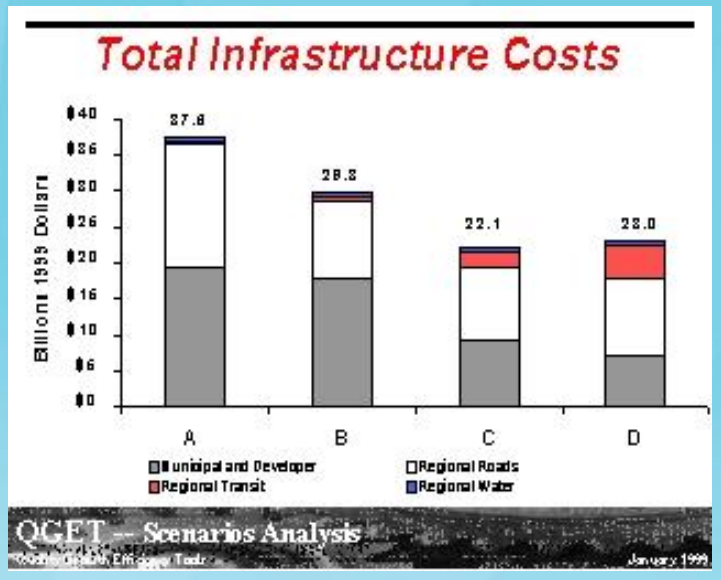
Scenario A:
Continuation of Recent Trends

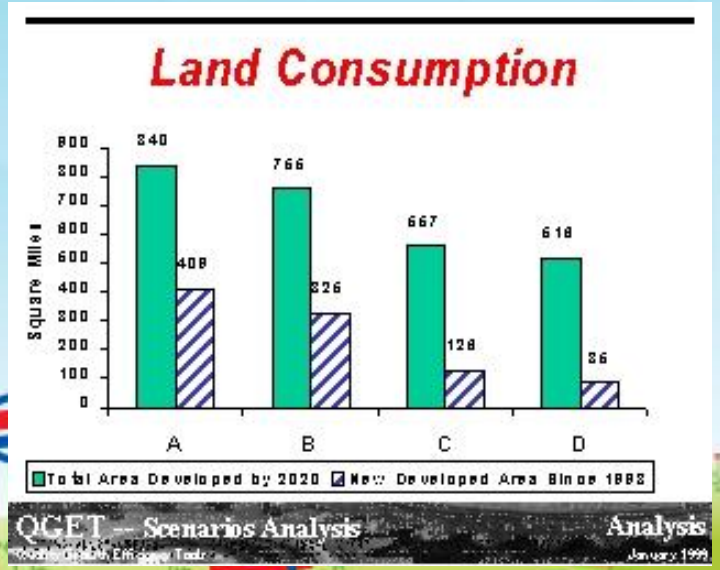
Scenario C:
Growth on new land focused into walkable, transit-oriented communities

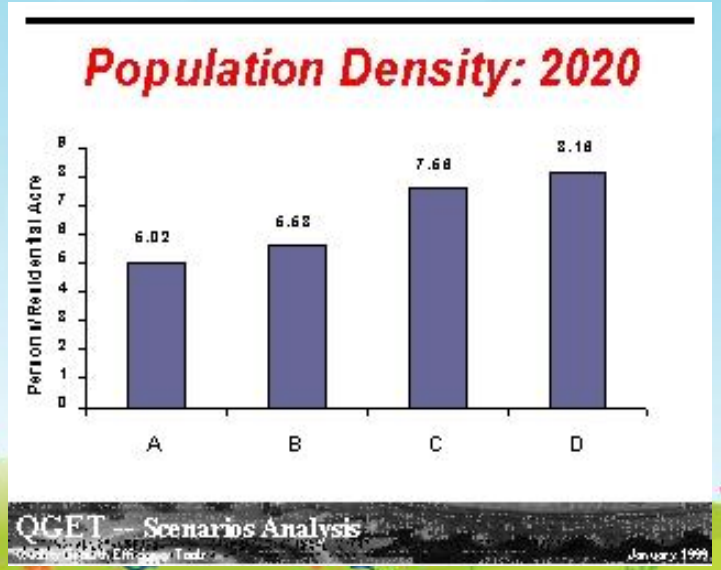
Scenario D:
Significant increase in densities
Extensive infill and redevelopment

Envision Utah

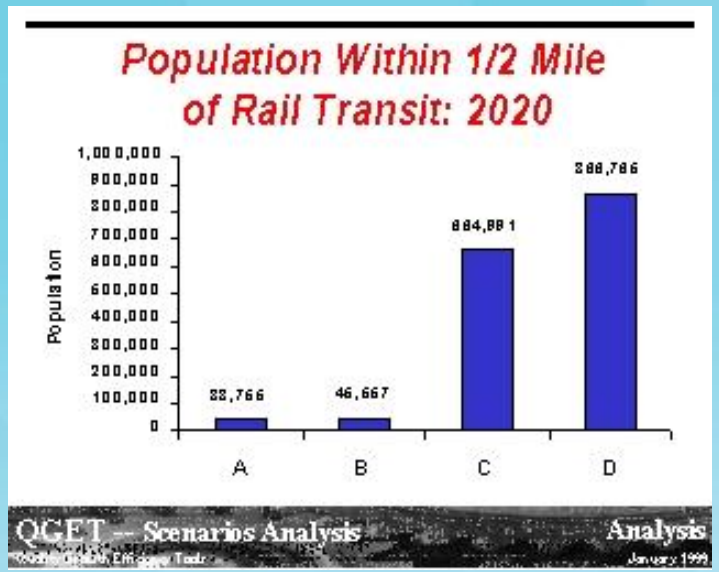


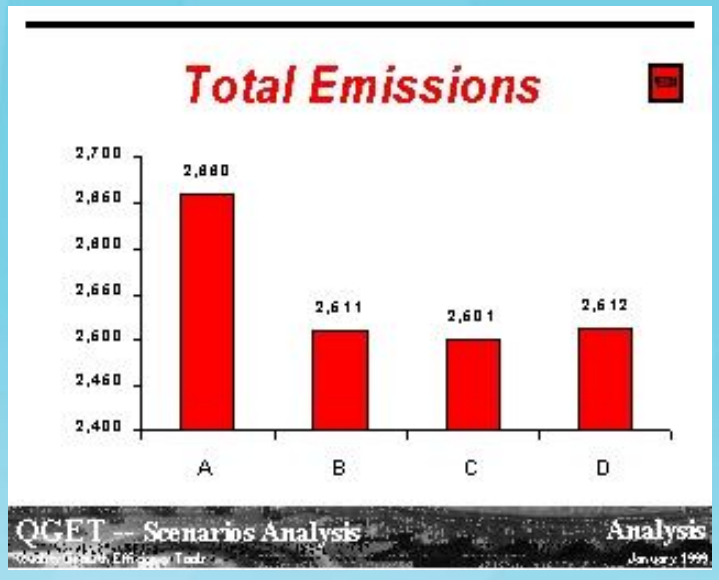


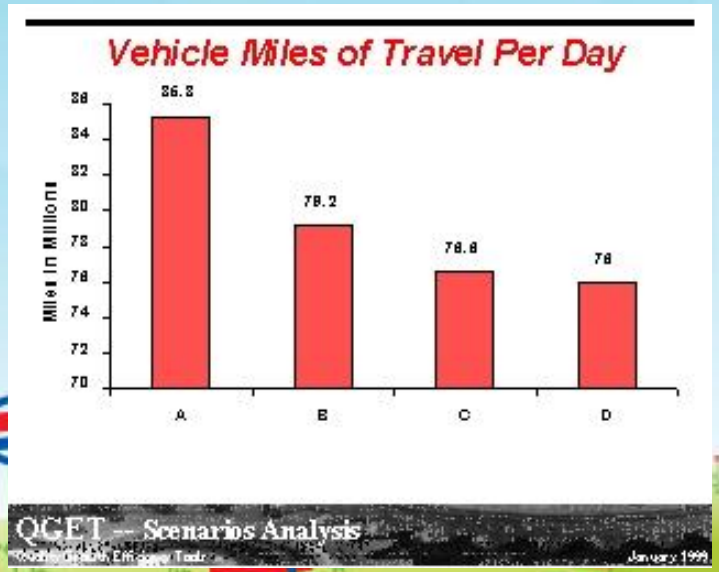


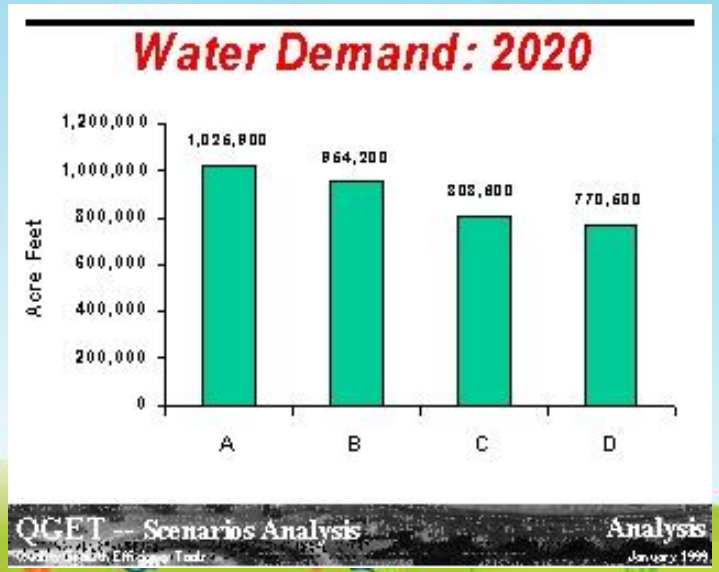


Envision Utah

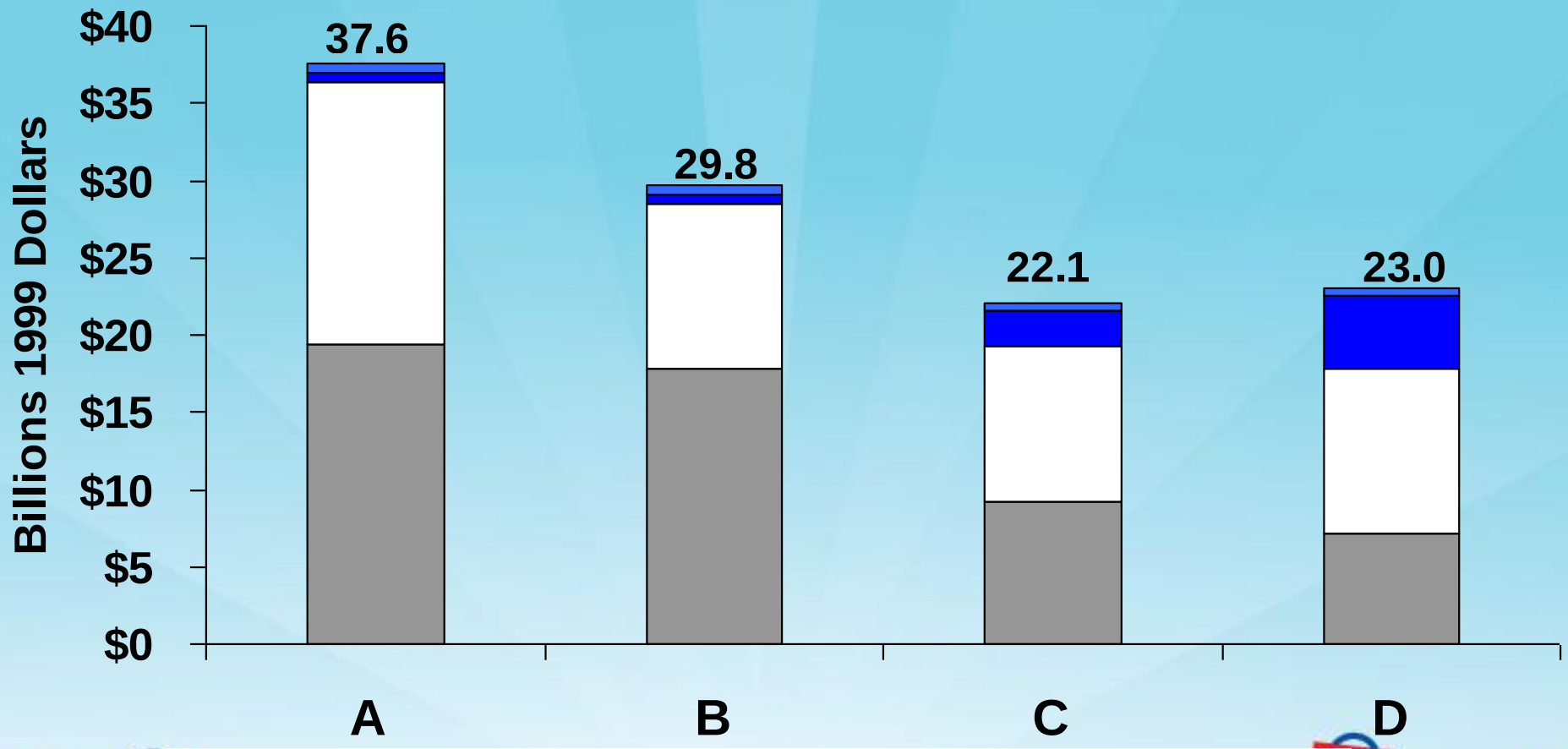






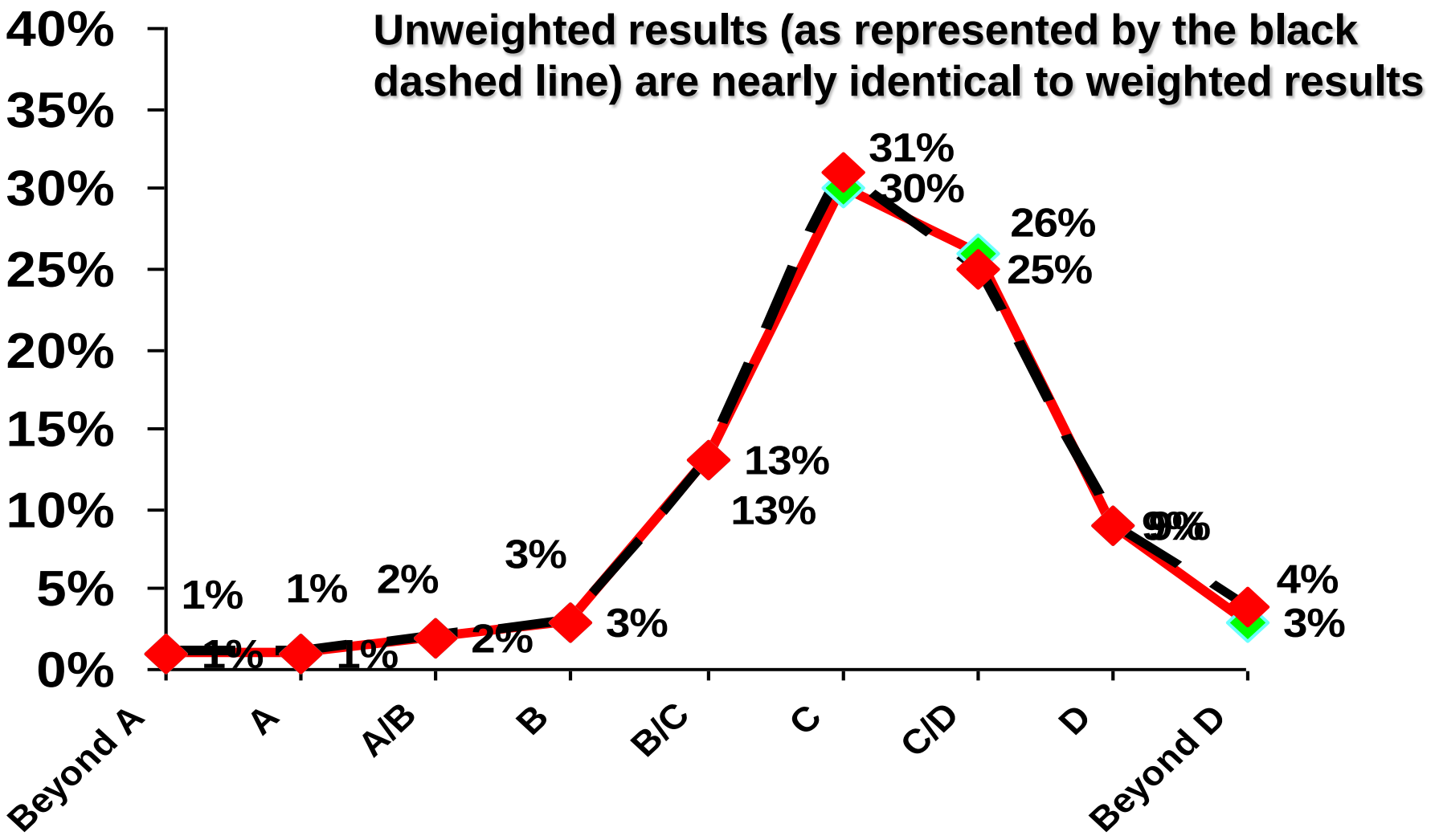


Total Infrastructure Costs



Choosing a Scenario

(Weighted vs. Unweighted Results)



The 3% Strategy

Targeted Land-Use Changes

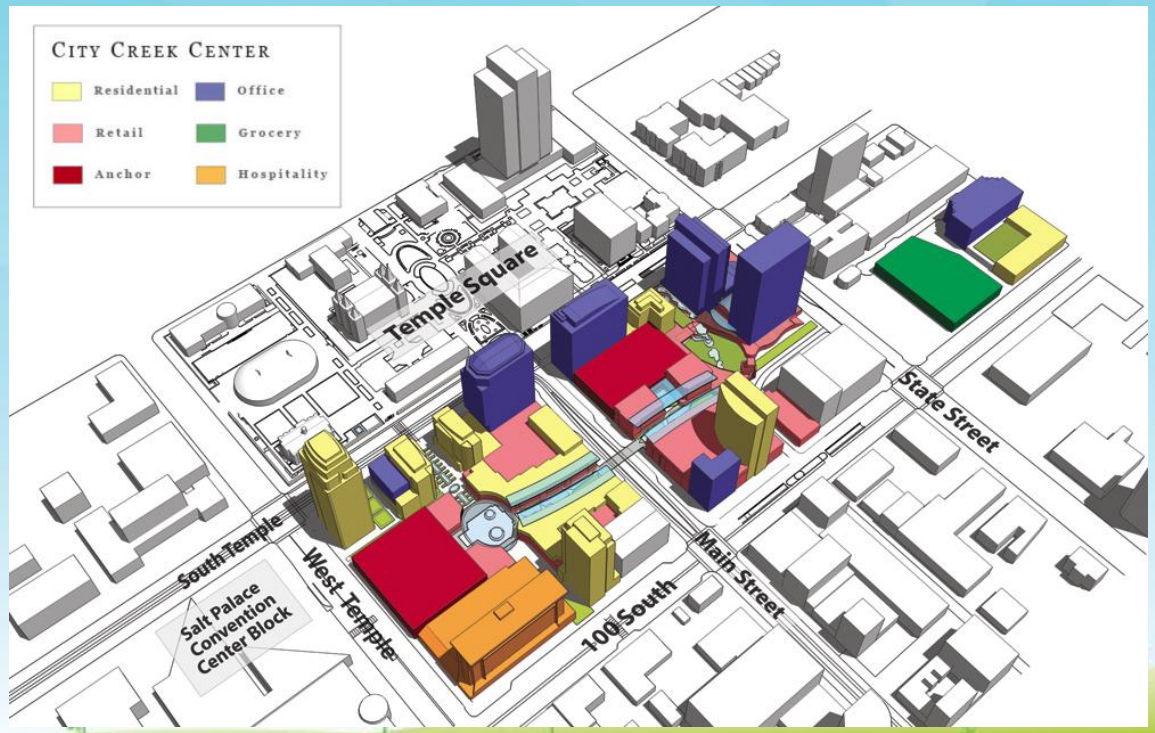
If we allow one-third of our future homes, jobs and stores to go on three percent of our region's developable land, linked by a world-class transportation system, we will...

Big Quality-of-Life Benefits

- Improve air quality,
- Save billions of dollars,
- Reduce traffic congestion,
- Preserve our key open spaces,
- Use less water,
- Create vibrant communities and gathering places, and
- Respond to market demand for more choices for living, working, commuting, shopping and playing.

Transit Facilitates Compact Land Use

- Transit Oriented Development
  - Salt Lake's City Creek Development



Pedestrian Bridge over Main Street

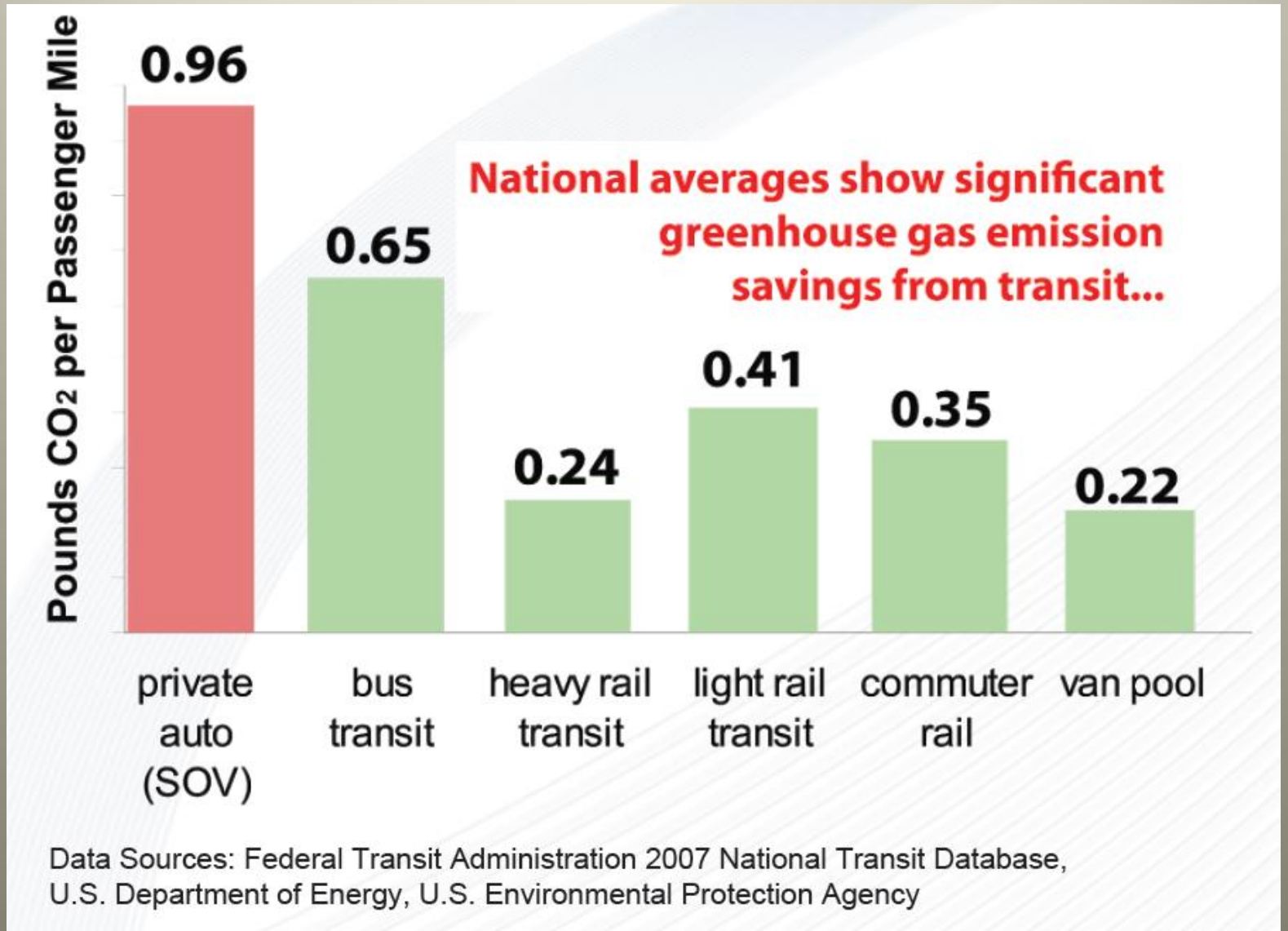
What we’re trying to avoid

Western U.S. Investment in Transit (in billions)

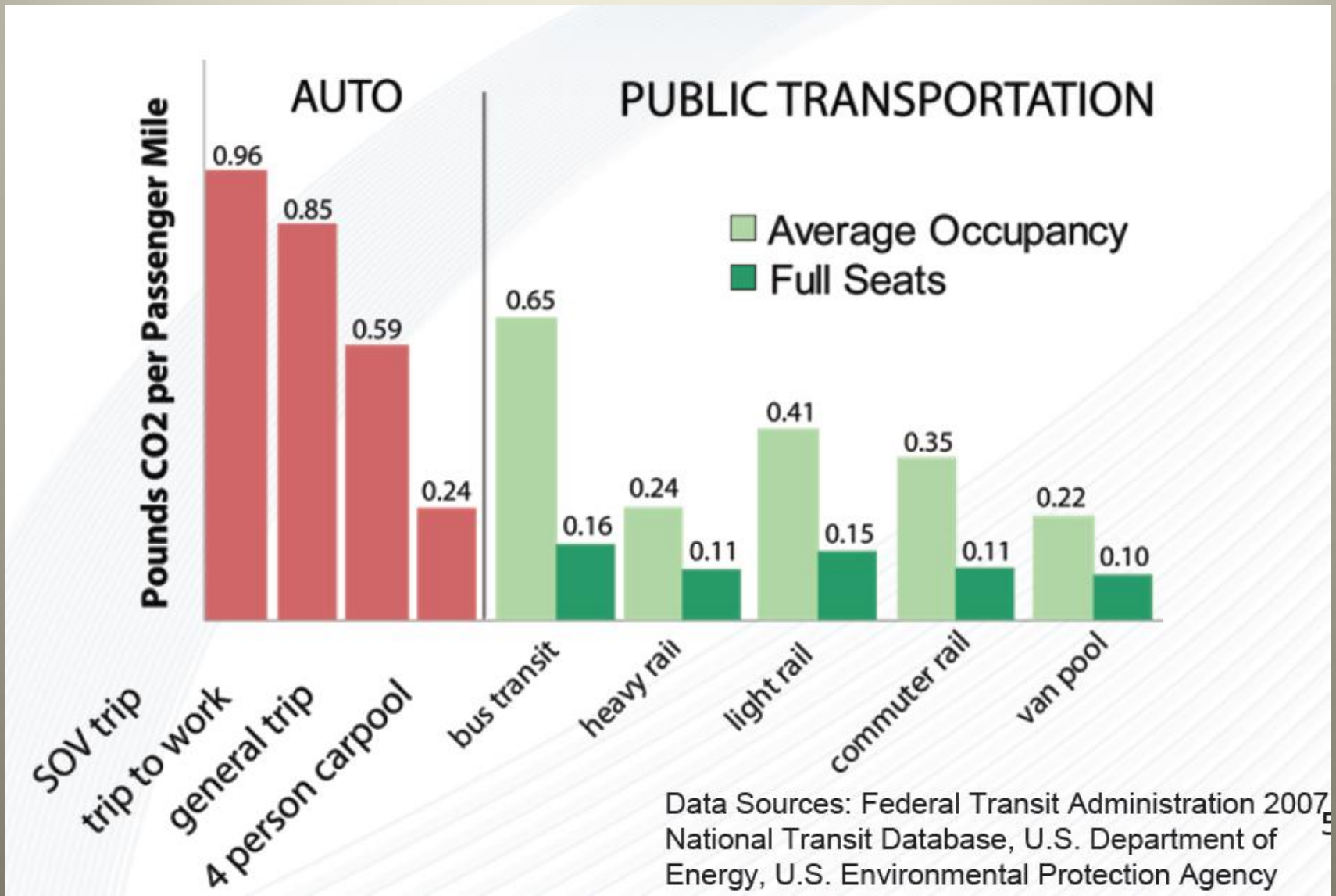
City/Agency	Past 10 Years	Current	Next 10 Years	TOTAL
Denver	$1.50	$4.70	$7.50	**$13.70**
Portland	$3.10	$1.55	$2.80	**$7.45**
Phoenix	$1.40	$0.00	$7.50	**$8.90**
Houston	$0.30	$2.40	$1.50	**$4.20**
Atlanta	$0.30	$0.05	$15.00	**$15.35**
Las Vegas	$0.85	$0.90	$0.25	**$2.00**
Minneapolis	$1.00	$2.00	$6.50	**$9.50**
San Francisco	$4.50	$4.20	$5.10	**$13.80**
Dallas	$2.00	$3.60	$2.50	**$8.10**
Los Angeles	$4.30	$4.40	$6.70	**$15.40**
San Diego	$2.00	$0.00	$4.00	**$6.00**
Seattle	$5.00	$5.00	$15.00	**$25.00**
Albuquerque	$0.42	$0.00	$0.03	**$0.45**
Austin	$0.40	$0.00	$0.60	**$1.00**
Charlotte	$0.46	$1.90	$3.00	**$5.36**
TOTALS	**$27.53**	**$30.70**	**$77.98**	**$136.21**

Transit usage levels

CO_2 Emissions per Passenger Mile

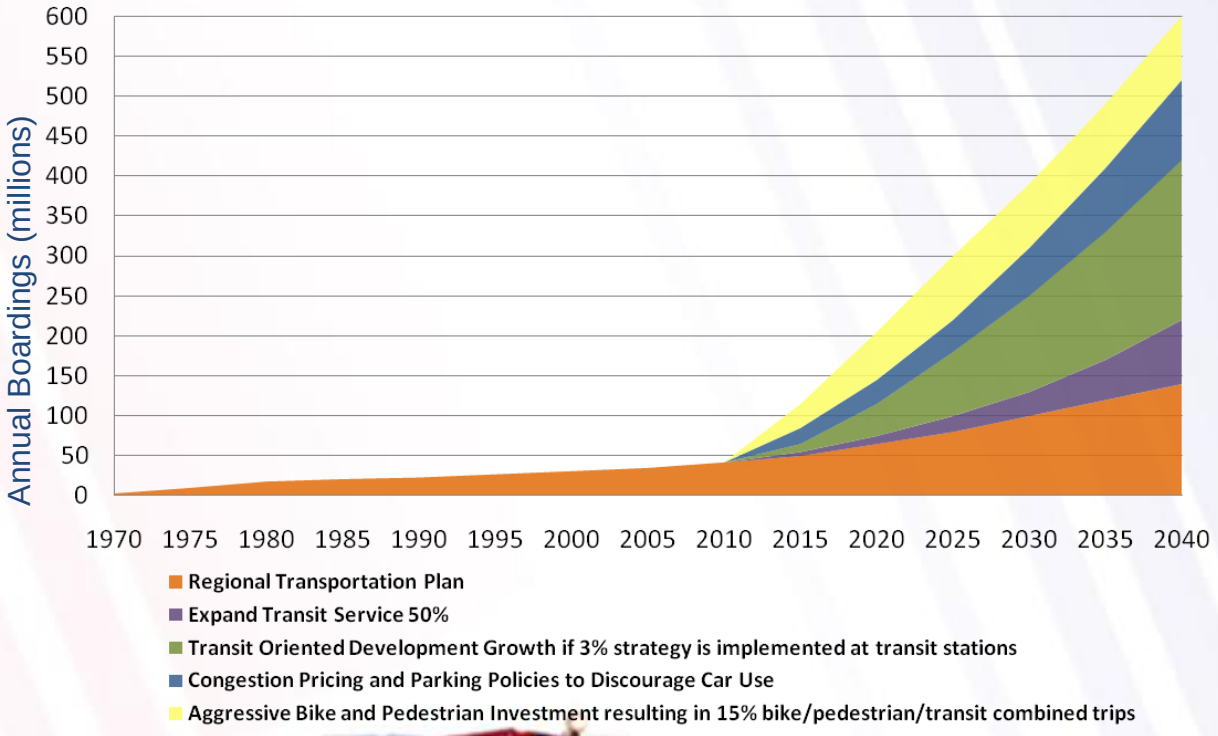


Number of Transit Riders Greatly Impacts Emissions

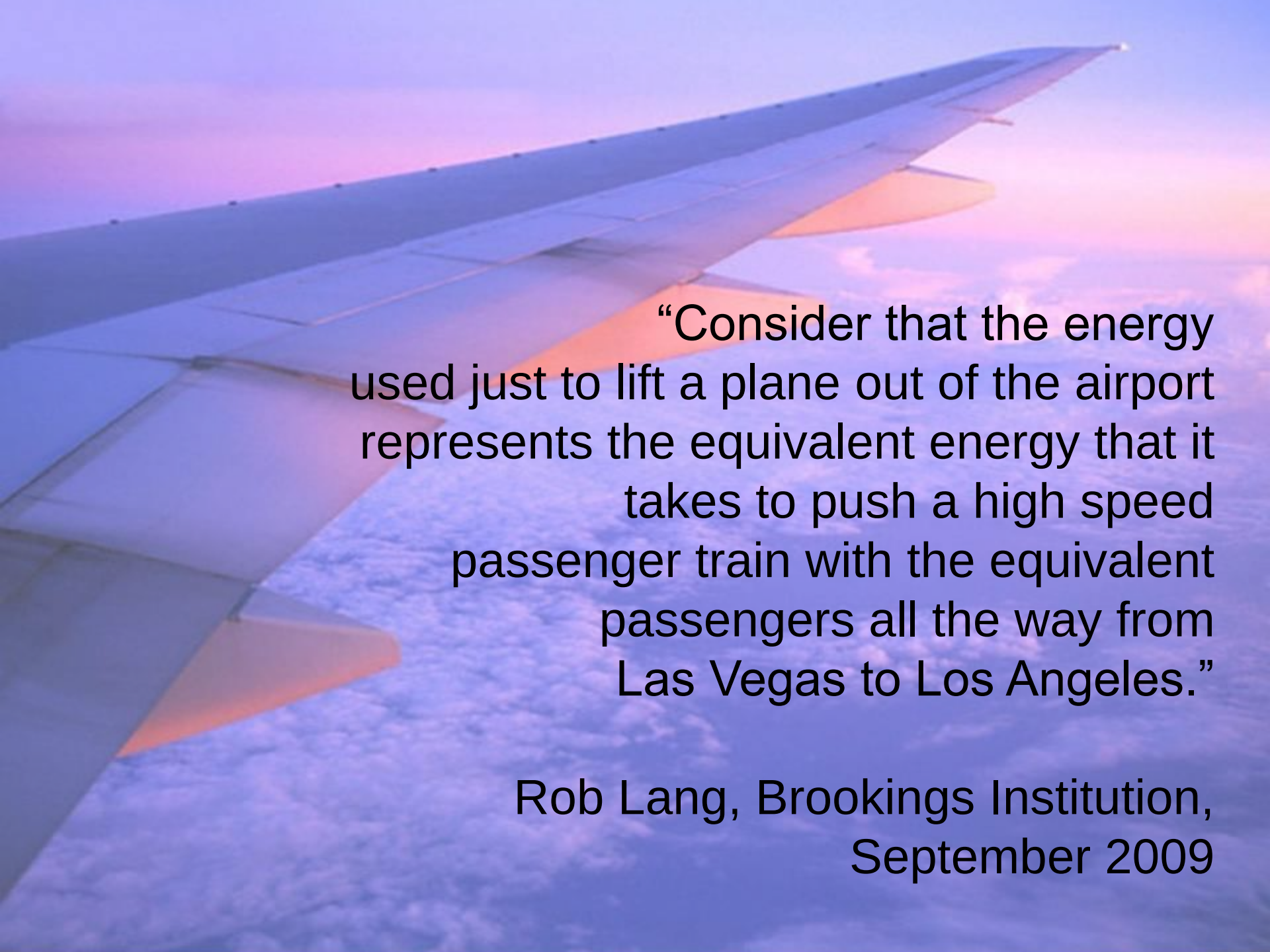


Data Sources: Federal Transit Administration 2007 National Transit Database, U.S. Department of Energy, U.S. Environmental Protection Agency

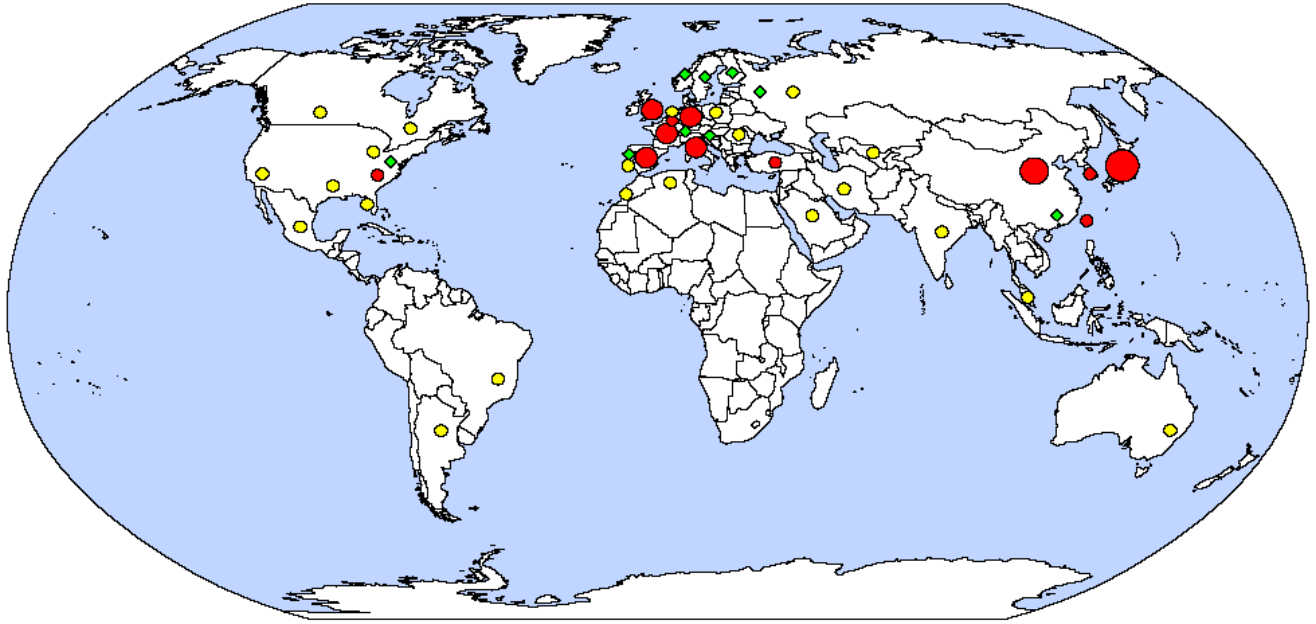
The Potential of Transit in Utah



UTA


“Consider that the energy used just to lift a plane out of the airport represents the equivalent energy that it takes to push a high speed passenger train with the equivalent passengers all the way from Las Vegas to Los Angeles.”
Rob Lang, Brookings Institution, September 2009

High speed systems around the world



V ≥ 155 mph in operation

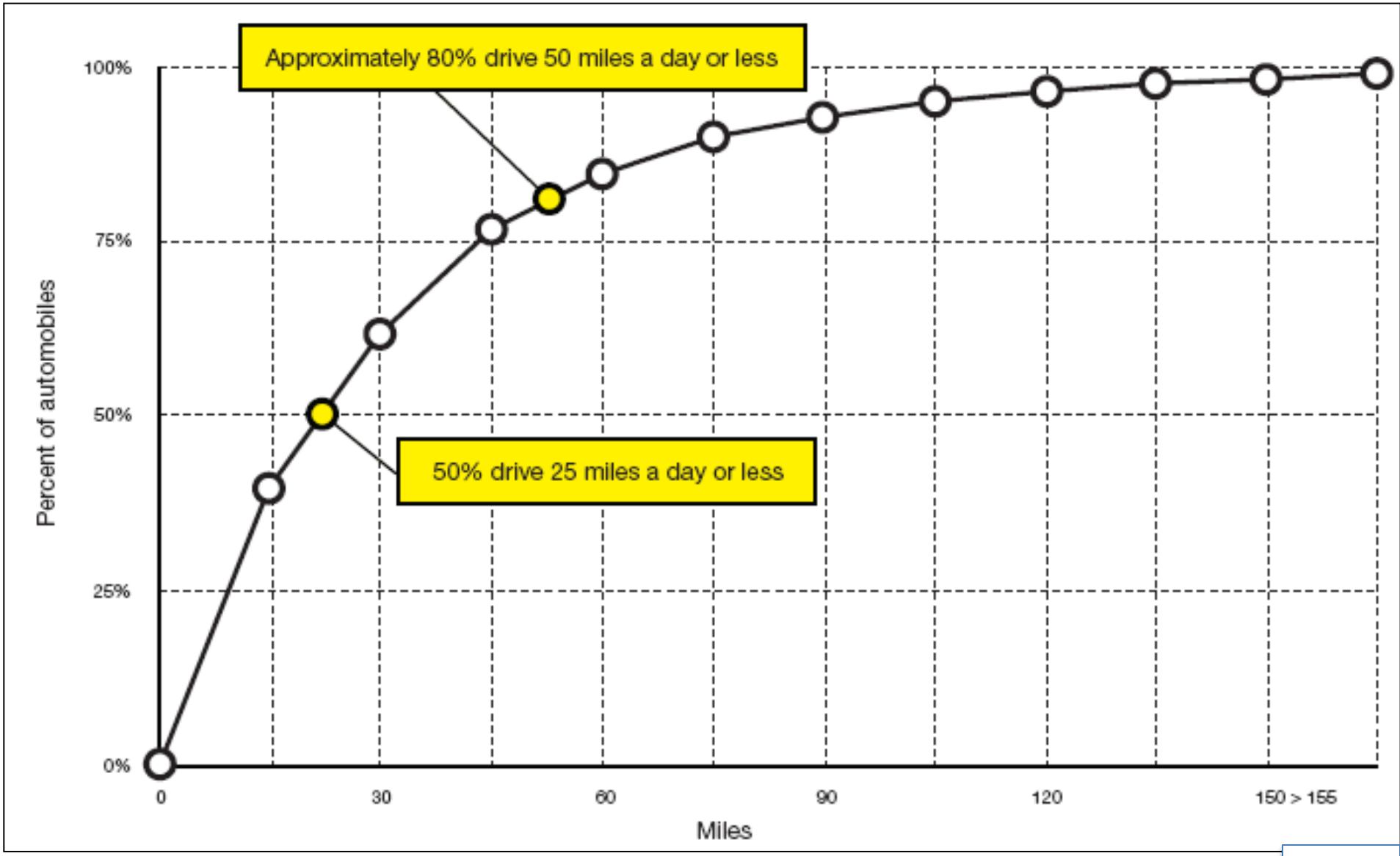
V ≤ 125 mph in operation

Planned High Speed Rail

VISION *for* HIGH-SPEED RAIL *in* AMERICA

New Trends in Technology

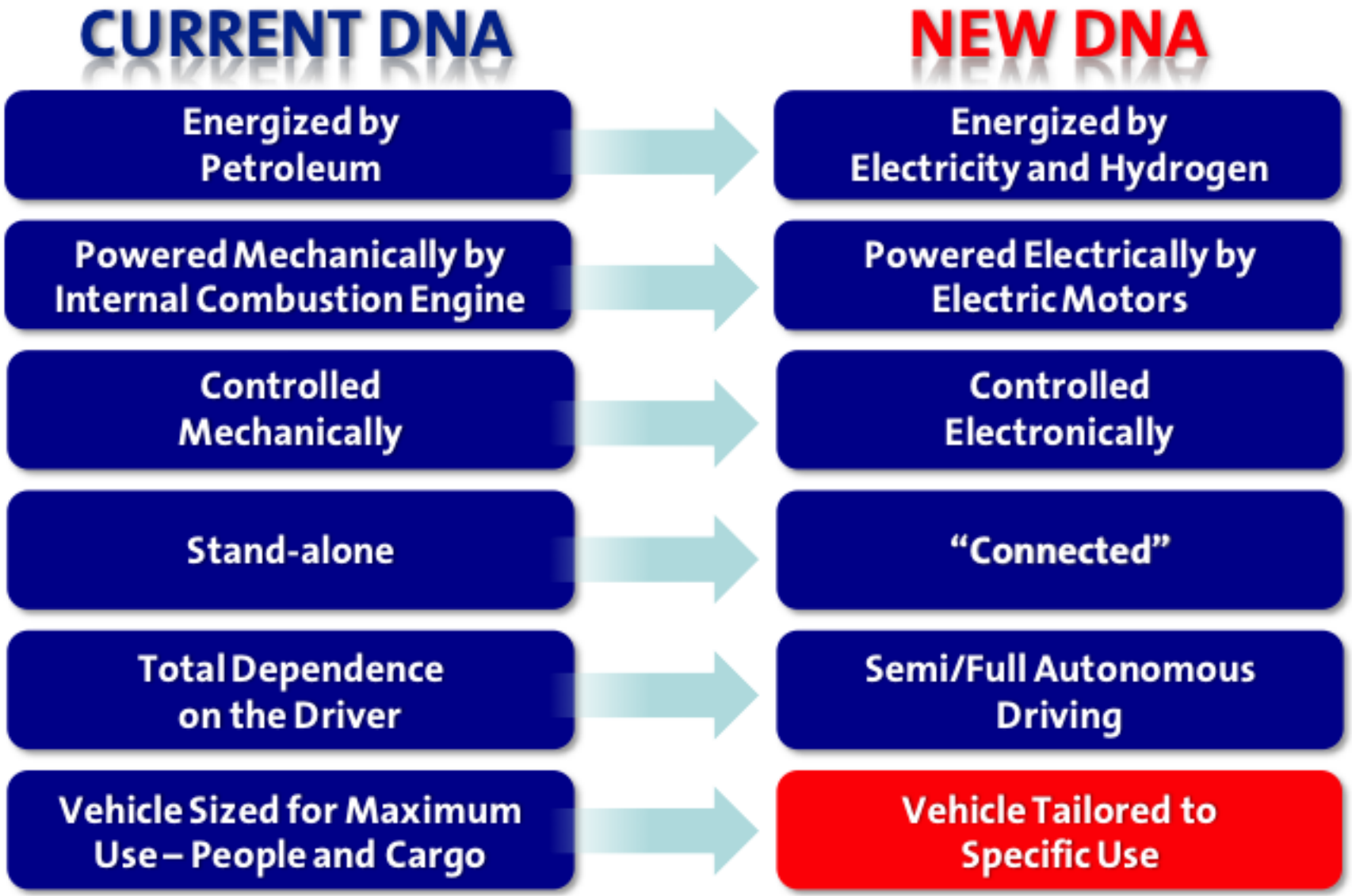
Driving Distance per day



By courtesy of GM

Source: NHTS

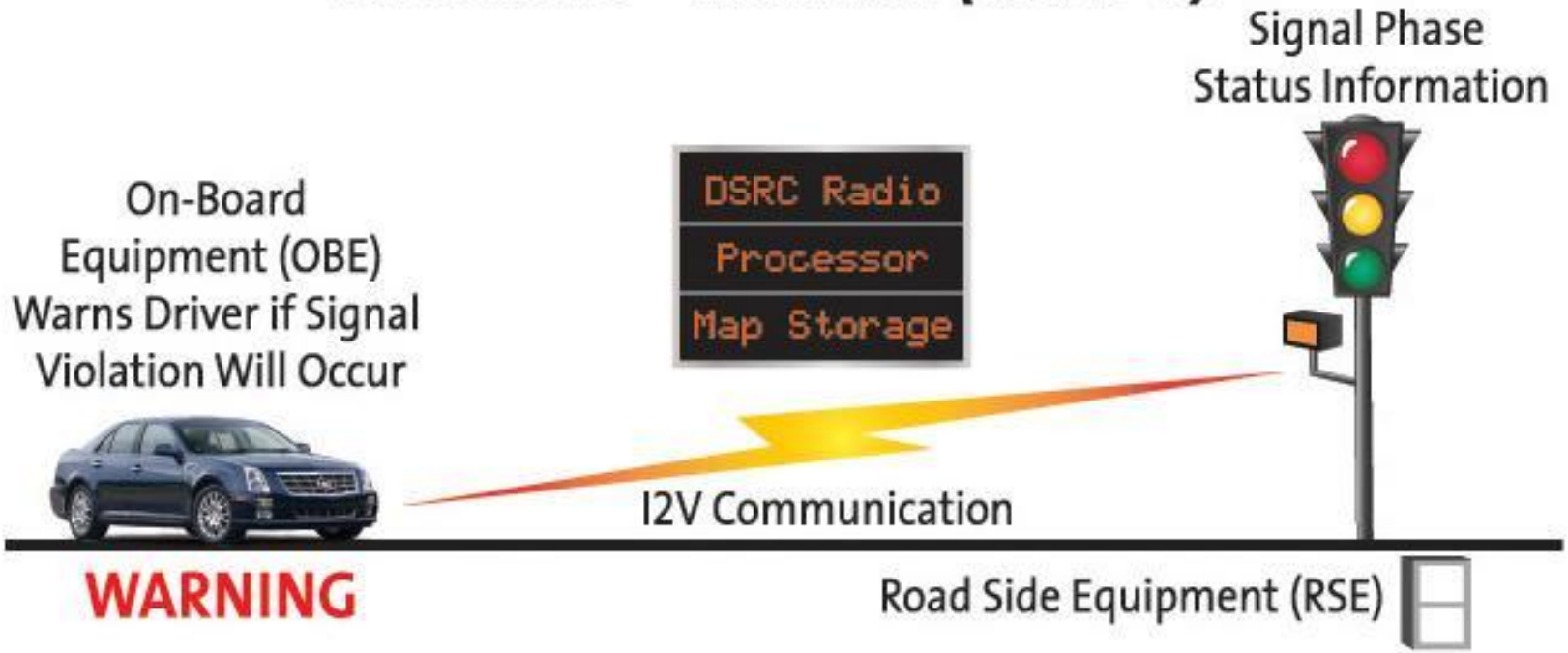
New Automotive DNA

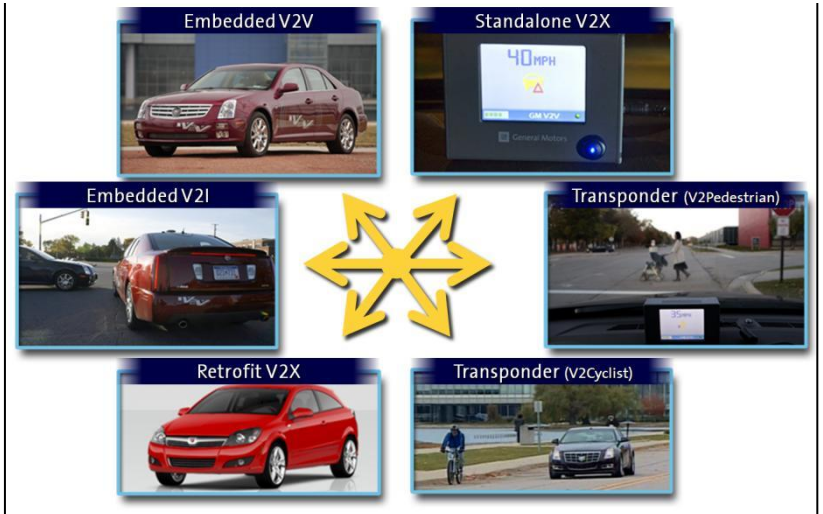


By courtesy of GM

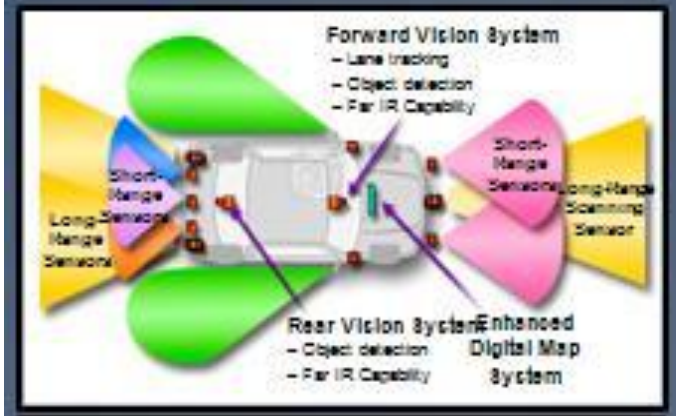
Wireless Communications Infrastructure

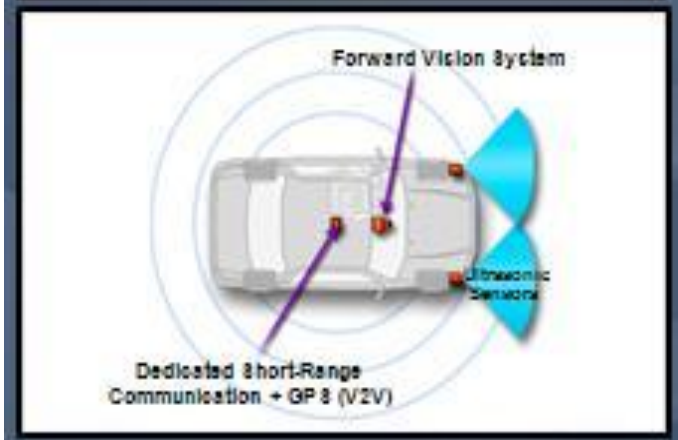
Cooperative Intersection Collision Avoidance – Violation (CICAS-V)





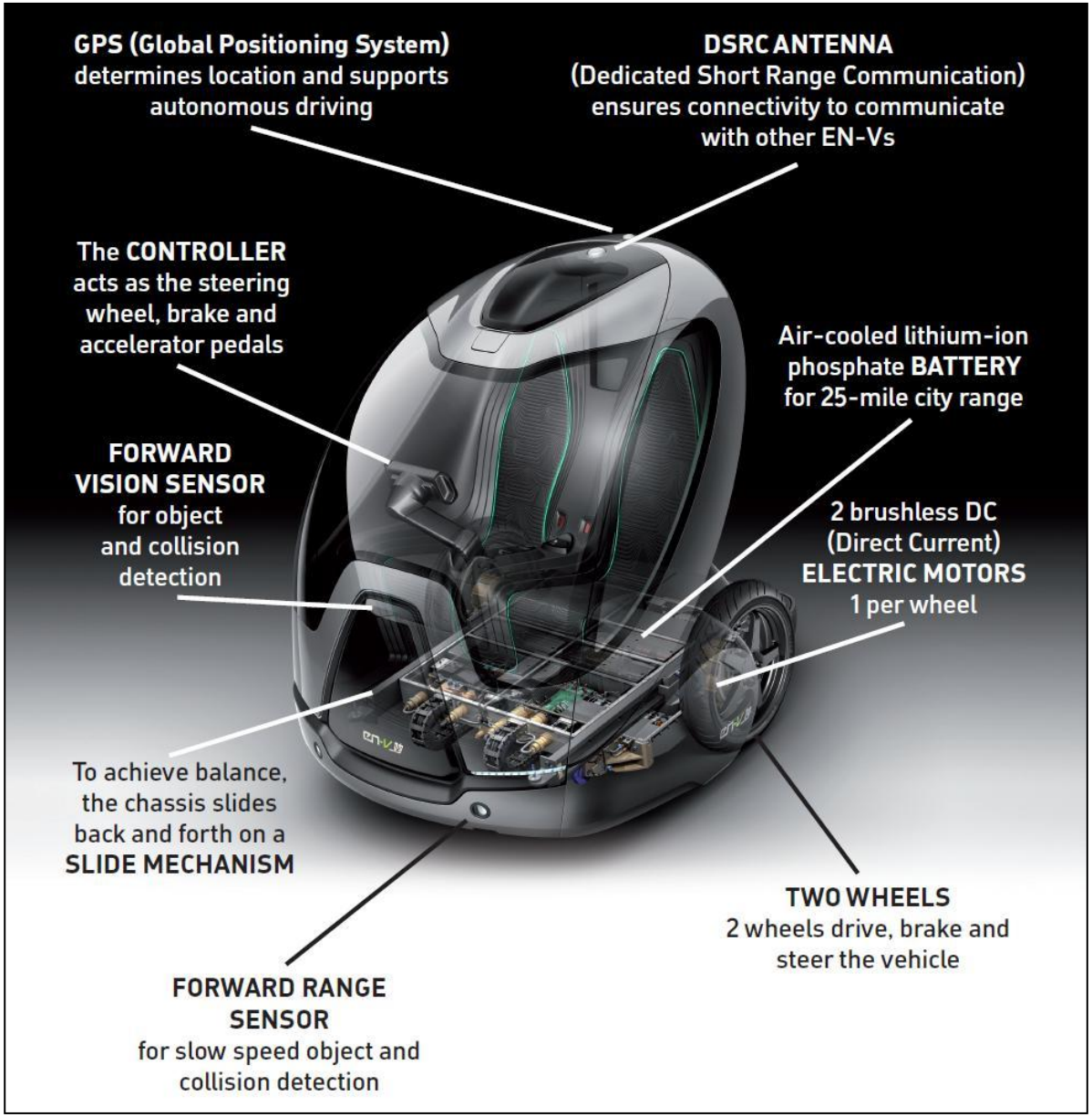
Autonomous Approach and Features





- **Automated parking/retrieval using smartphone**
- **Vehicle platooning between EN-Vs**
- **Collision Avoidance with other EN-Vs and with people**

EN-V: Components & Features

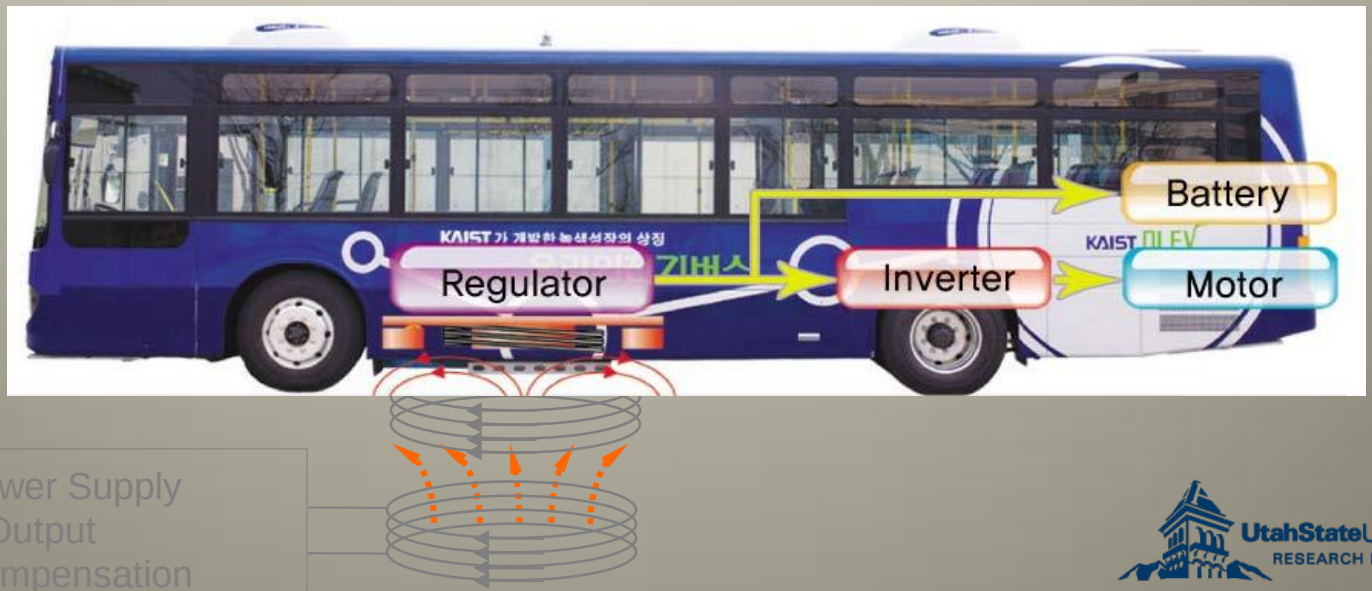


Solution: Inductive Power Transfer

IPT safely transfers electric power through road materials, snow, air gaps

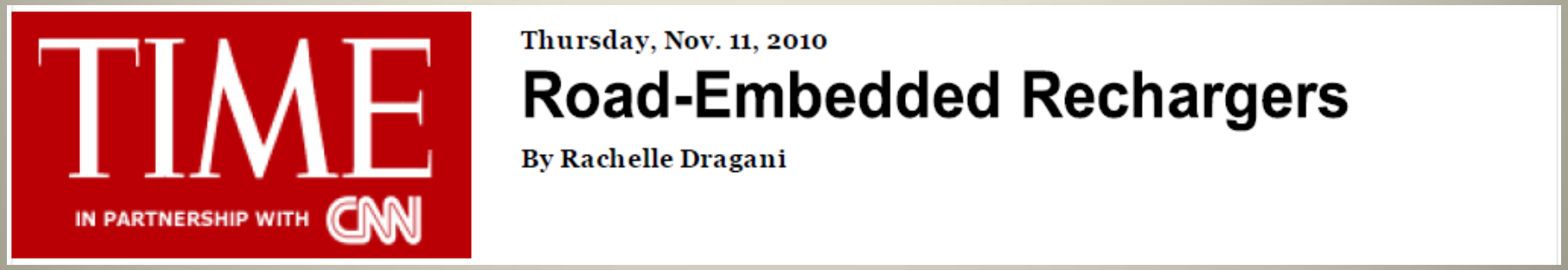
Recent technology developments:

- Increased power transmission: 1-100 kW
- Increased distance: 2”-12” air gap crossed
- Increased efficiency: 80-95% energy efficient



The Technology

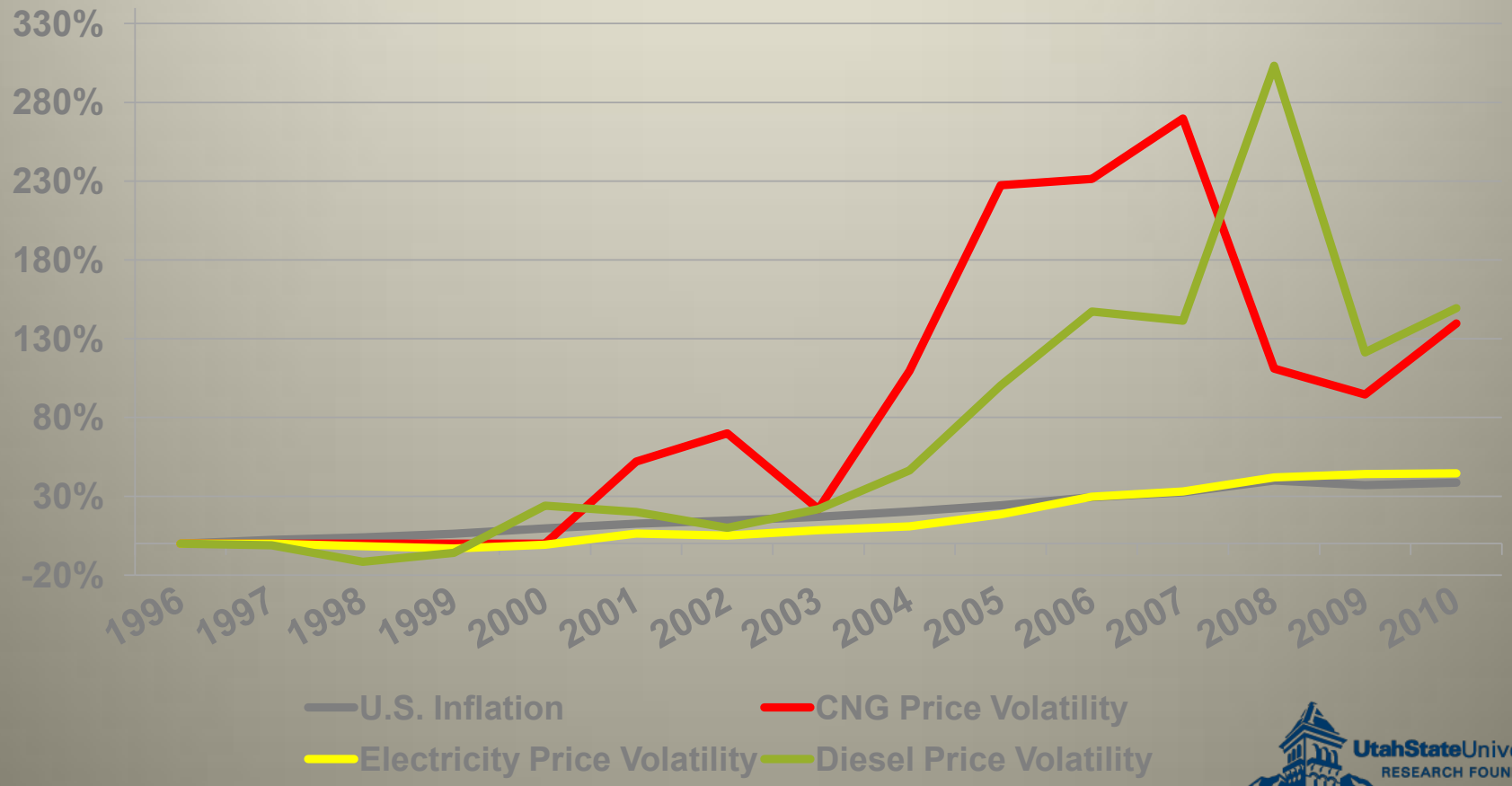
The 50 Best Inventions of 2010



- Less expensive than diesel, CNG, or hybrid buses
- Zero tailpipe emissions
- Multi-vehicle use capability
- Can scale to meet demand

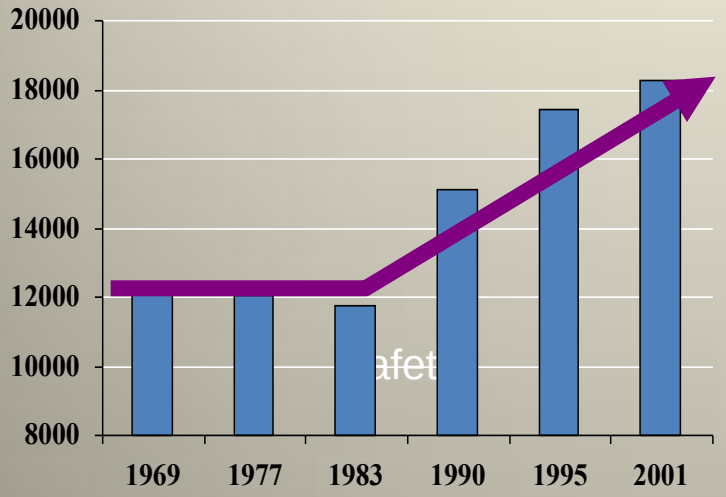
Problem: Liquid Fuel Volatility

- Diesel and CNG have had disruptive price increases and swings
- Electricity prices increase at a slow, steady, predictable rate



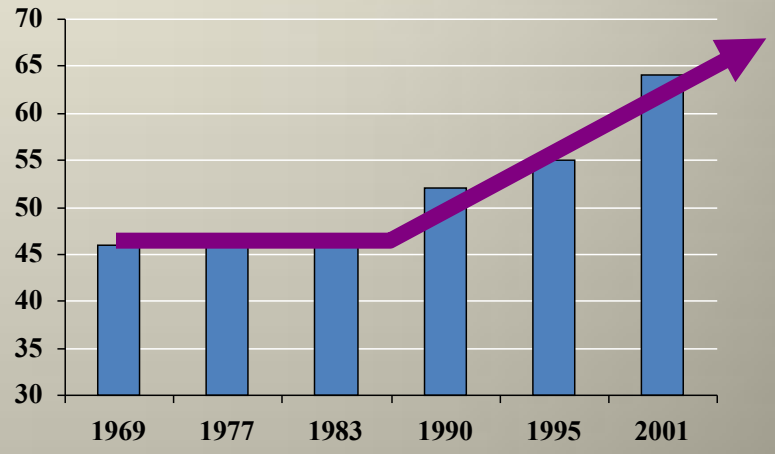
Active Transportation

A Co benefits approach e.g.Transport and Health - **Growth in VMT in the US vs Growth in "Obesity"**



Growth trend for annual household vehicle miles of travel

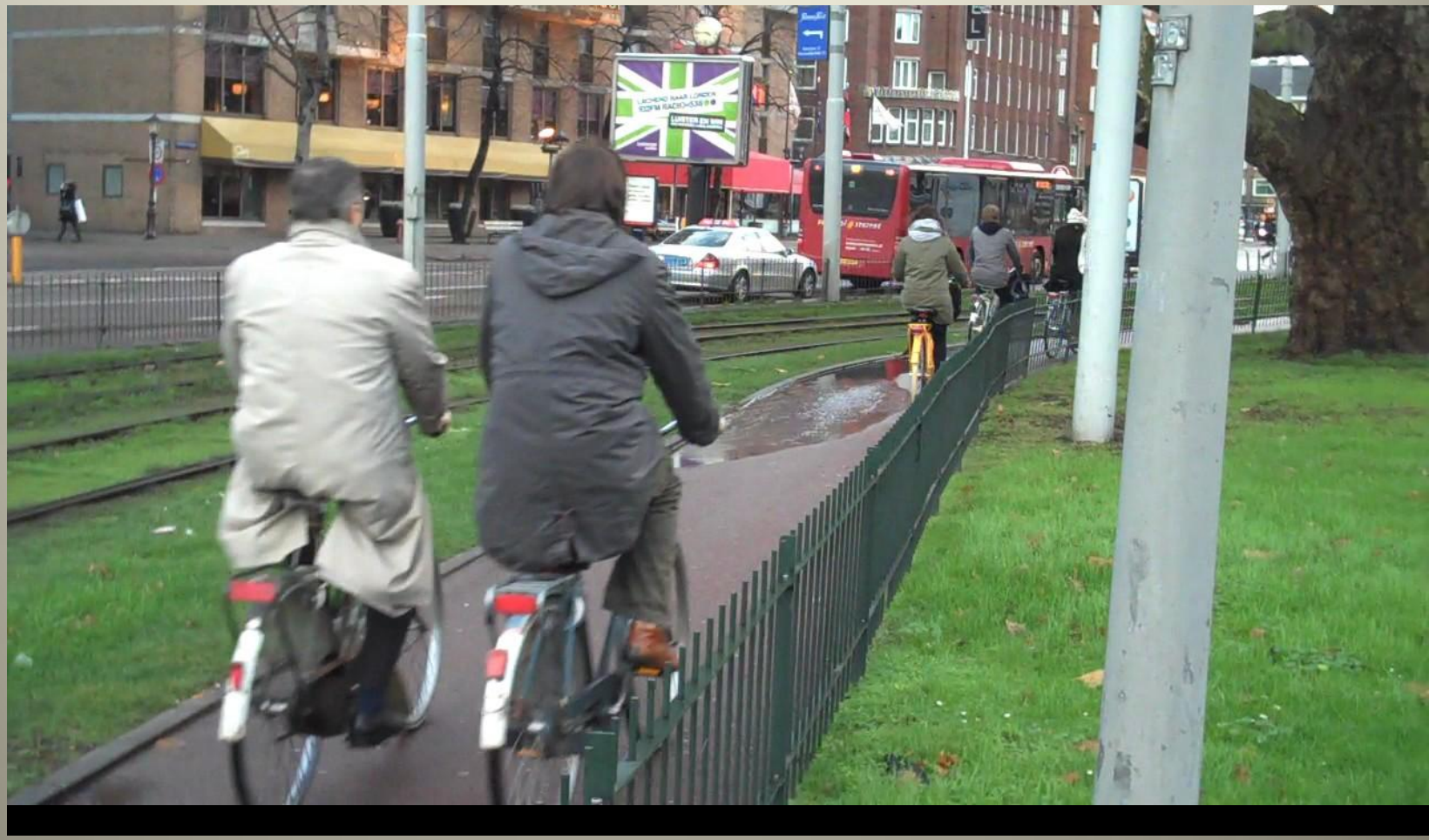
(50% overall growth)



Growth trend for percent of Americans 'overweight'

(40% overall growth)

Source: M. Coogan



Active Transportation Initiative

- a comprehensive network of pedestrian and bicycle pathways connecting every residence and business to transit.
- enabled by dedicated funding mechanisms and operational management.
- eases integration with other modes

Commuting and Routine Trip Making

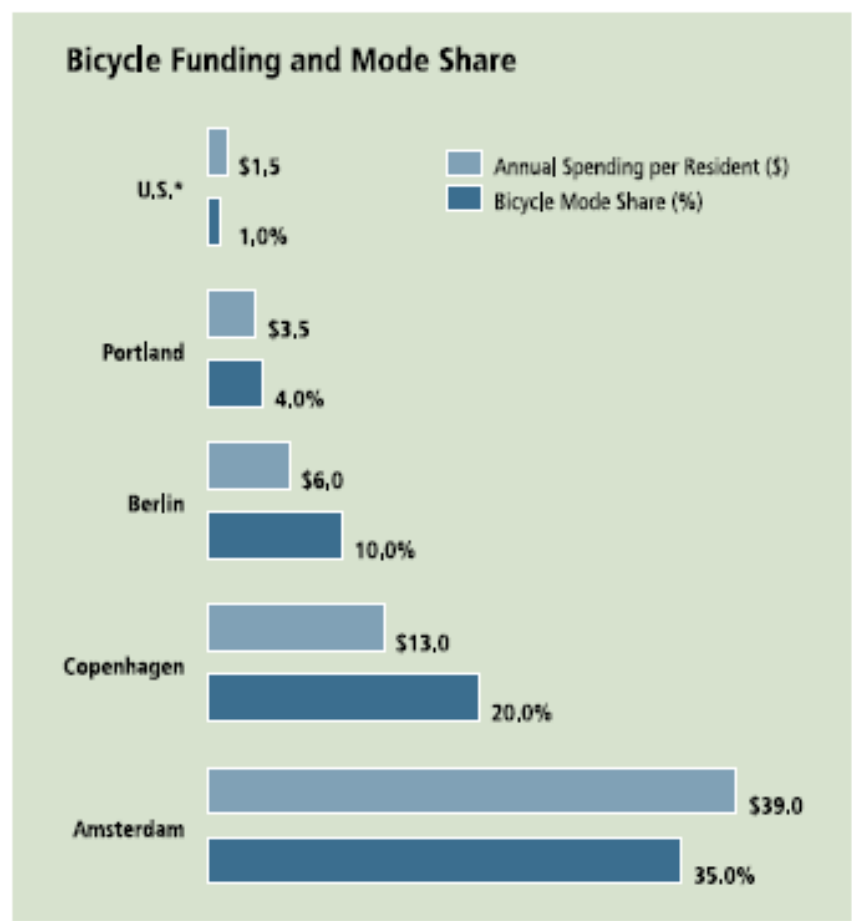
- Nationally, 25% of walking trips take place on roads without sidewalks
- 95% of bike trips take place without bike lanes
- In metropolitan areas 50% of all trips are < 3miles; 28% < 1 mile
- 65% of trips one mile or less taken by automobile

Source: *Wasatch Front Regional Council Regional Transportation Plan: 2007-2030*, p.176

Percent of Trips by Each Mode, All Purposes

Country	Automobile	Transit	Bicycle	Walk/Other
United States	89	2	1	7
Canada	78	10	2	12
Denmark	42	14	20	24
Great Britain	65	14	4	17
France	56	13	5	25
Germany	49	16	12	23
Netherlands	45	7	28	20
Sweden	46	11	10	33
Switzerland	46	20	9	26

Source: Paul Krugman, New York Times, May 10, 2008



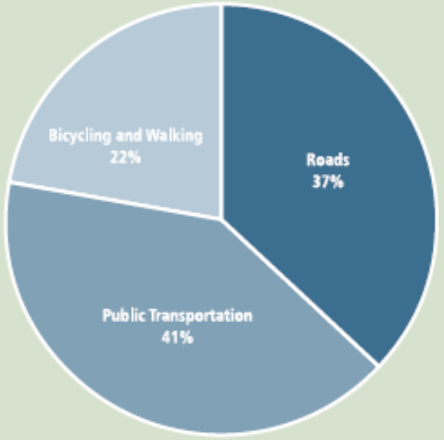
Comparison of annual per capita spending for bicycling and bicycle mode share between the U.S., Portland, Ore., and three European cities.[1, 25]

*Spending data for the U.S. are for bicycling and walking combined.[74]

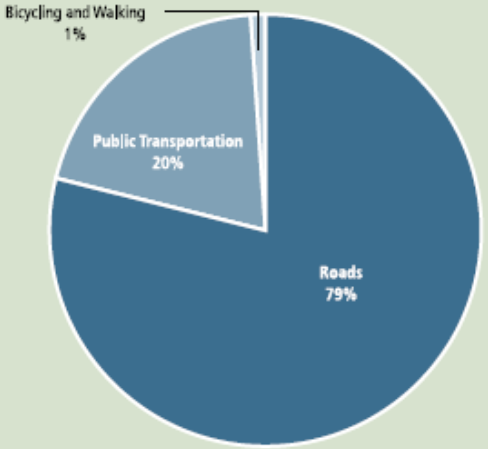
How Americans Would Allocate Transportation Funding

Eighty-one percent support "allocation of tax dollars toward the expansion and improvement of public transportation, sidewalks, and bike paths in your community." (Margin of error ± 3 percent)

How Respondents Would Allocate Transportation Funding



How Transportation Funding is Currently Allocated



National transportation poll commissioned by Transportation for America, designed by Collective Strength, and fielded by Harris Interactive from December 1–19, 2007.

Why

Salt Lake City, Utah