

Measuring Sustainability: Project Houston

A Discussion of Research Findings

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Sustainable Development



Categories											Total
	FOF - British Citi	Boston	Ontario	Minneapolis	Hamilton	Seattle	Tuscor	Bay Area Alliance	NRDC - Smarter Citi	Fraser Basin	
Educational Achievement & Performance	X	X	X	X	X	X	X	X	X	X	16
Community Engagement	X	X	X	X	X	X	X	X	X	X	15
Employment/Unemployment	X	X	X	X	X	X	X	X	X	X	15
Land Use	X	X	X	X	X	X	X	X	X	X	15
Water Conservation	X	X	X	X	X	X	X	X	X	X	15
Affordable Housing	X	X	X	X	X	X	X	X	X	X	14
Crime	X	X	X	X	X	X	X	X	X	X	14
Air Quality - PM	X	X	X	X	X	X	X	X	X	X	13
Cost of Living	X	X	X	X	X	X	X	X	X	X	13
Health Care: Access	X	X	X	X	X	X	X	X	X	X	13
Homelessness/Poverty	X	X	X	X	X	X	X	X	X	X	13
Waste Production	X	X	X	X	X	X	X	X	X	X	13
Commuting	X	X	X	X	X	X	X	X	X	X	12
Ecological Footprint	X	X	X	X	X	X	X	X	X	X	12
Income Distribution	X	X	X	X	X	X	X	X	X	X	12
Public Transportation	X	X	X	X	X	X	X	X	X	X	12
Air Quality - Ozone	X	X	X	X	X	X	X	X	X	X	11
Ecological Health	X	X	X	X	X	X	X	X	X	X	11
Green Space	X	X	X	X	X	X	X	X	X	X	11
Recreation Area	X	X	X	X	X	X	X	X	X	X	11
Air Quality - Toxics	X	X	X	X	X	X	X	X	X	X	10
Bicycling/Walking	X	X	X	X	X	X	X	X	X	X	10
Childhood Health	X	X	X	X	X	X	X	X	X	X	10
Demographics	X	X	X	X	X	X	X	X	X	X	10
Economic Diversification	X	X	X	X	X	X	X	X	X	X	10
Health Care: Affordability	X	X	X	X	X	X	X	X	X	X	10
Obesity/Weight	X	X	X	X	X	X	X	X	X	X	10
Educational Accessibility	X	X	X	X	X	X	X	X	X	X	9
Entrepreneurship & Innovation	X	X	X	X	X	X	X	X	X	X	9
Public Health - Asthma, HIV, etc.	X	X	X	X	X	X	X	X	X	X	9
Recycling	X	X	X			X	X	X		X	9
Traffic Congestion	X	X	X	X	X	X	X	X	X	X	9
Water Supply	X	X	X	X	X	X	X	X	X	X	9
Access to Food	X	X	X	X	X	X	X	X	X	X	8
Alternative Energy	X	X	X			X	X	X		X	8
Population	X		X	X	X	X	X	X	X	X	8
Resource Conservation		X	X	X		X	X	X	X	X	8
Safety		X	X	X	X	X	X	X	X	X	8
Climate Change	X	X	X			X	X	X		X	7
Green Building	X	X	X	X	X	X	X	X	X	X	7
Green Economy	X	X	X	X	X	X	X	X	X	X	7
Historic & Cultural Resources					X	X	X	X	X	X	7
Labor Force			X	X	X	X	X	X	X	X	7
Local Food	X	X	X			X	X	X	X	X	7

Concept of Metrics

- Numerical Indicators Where Appropriate or Available
- Geographic Representation of Patterns

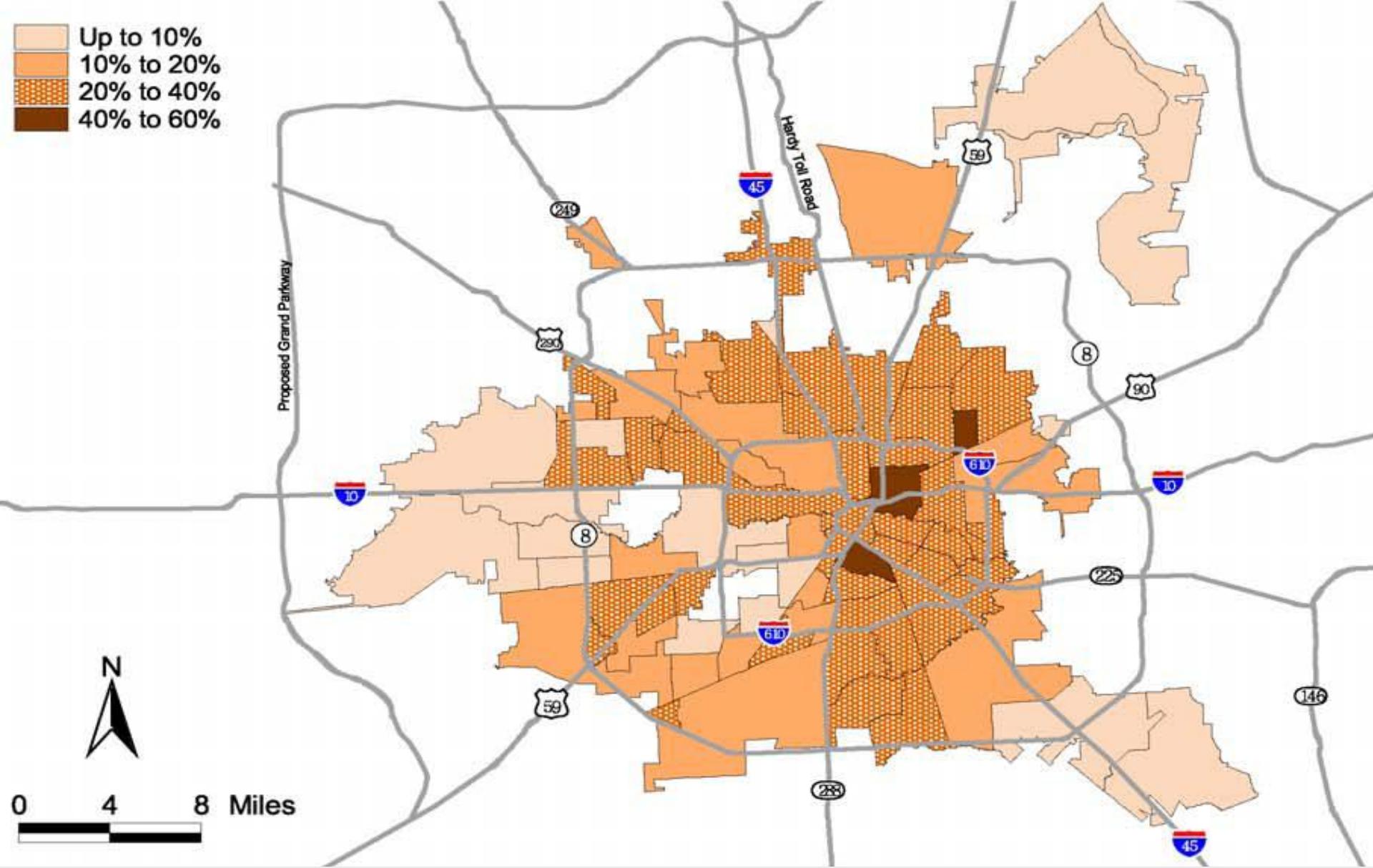
Poverty

Metric: Per Cent of Population
Below Poverty Level (Est. 2009)

City of Houston – 20.6%
Harris County – 20.5%

Source: Houston Galveston Area Council

Percentage of Population Below Poverty Level: 2000



Income Disparity

- Center on Budget and Policy Priorities and Economic Policy Institute, Washington D.C. Jan, 2006 Study
- income disparity in Texas greater than any other state
- Per Cent Income Increase Nationally

Upper 5% = 62%

Upper 20% = 44%

Lowest 40% = 11%

Air Quality

Metric – Ozone, PM2.5 and Benzene Levels

Ozone – severe non-attainment

8 hour high – 97 ug/m³ (std = 75)

PM2.5 – attainment

2009 highest yearly avg – 14.4 ug/m³ (std – 15)

Benzene – attaining ESLs

2010 highest monitor – 1.39 ppb (ESL = 1.4)

City of Houston Percentage Black (NH) &
Hispanic Population Within City Council
Districts Estimated - 2009

Legend

Major Roads

Percentage Black
Non Hispanic & Hispanic
Population



Environmental Justice Issues

Education

Metric: High School Dropout Rate
2009 Harris County

Overall – 35%

Anglo – 13%

African American – 39%

Hispanic – 46%

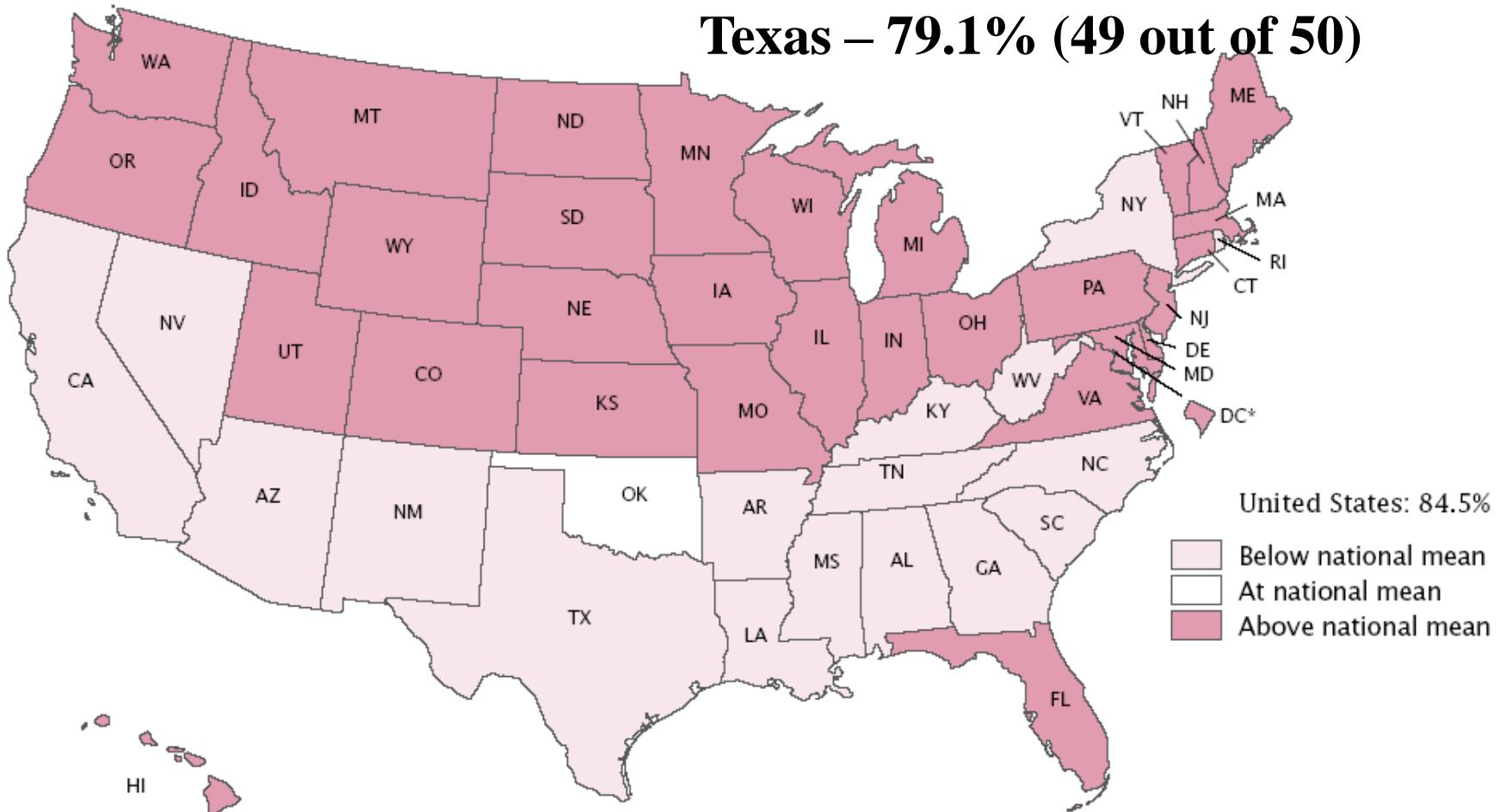
Source: Intercultural Development Research
Association

Figure 2.

Percent of People Aged 25 and Over Who Have Completed High School or More Education Relative to the National Mean by State: 2007

U.S – 84.5%

Texas – 79.1% (49 out of 50)



Source: U.S. Census Bureau, American Community Survey, 2007.

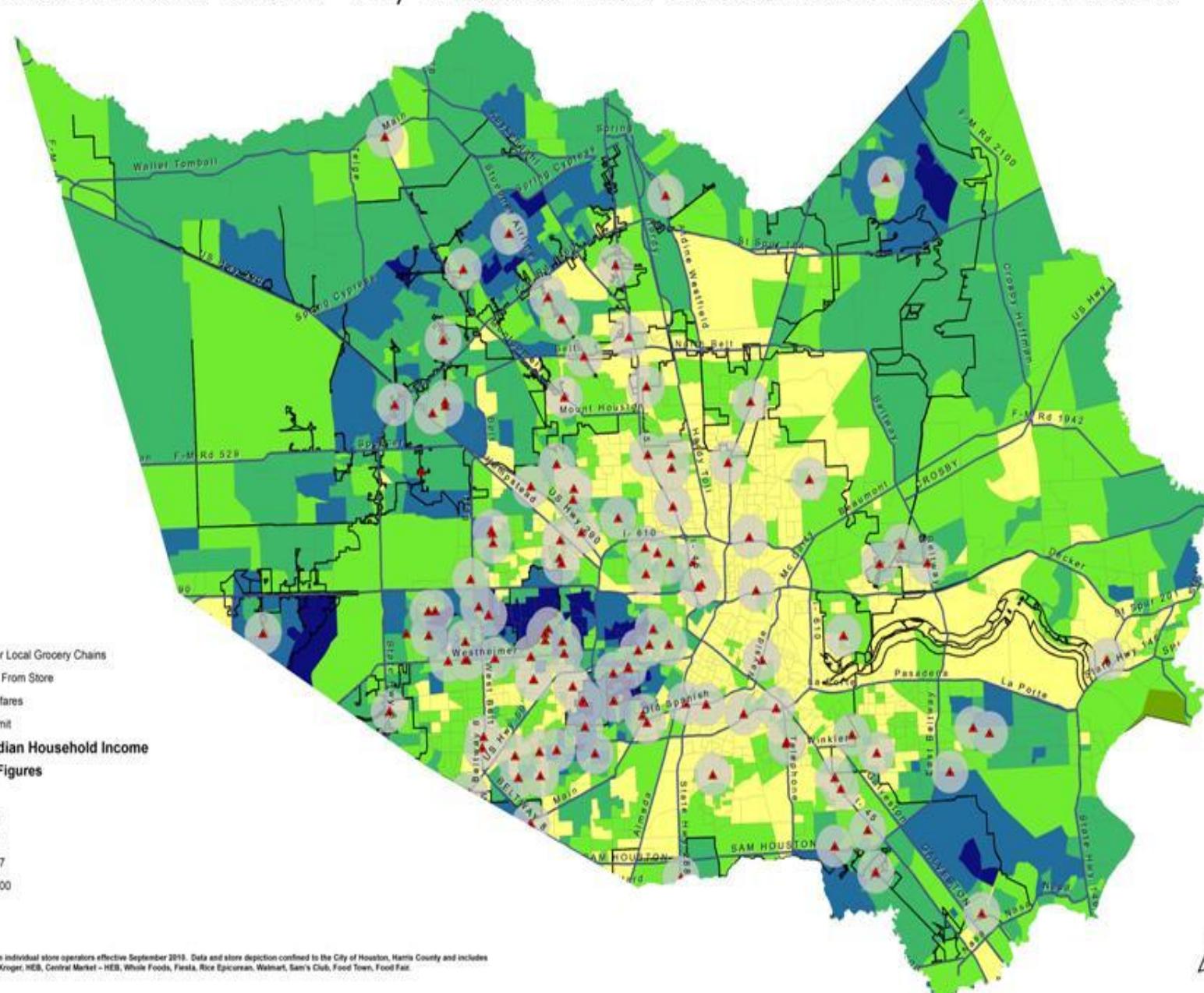
Food Supply – Local Food

Metric – Food Deserts and Urban
Gardens

61% of Low Income Area of City of
Houston = Food Desert = 143 square
miles = 22% of City of Houston

Number of Community Gardens –
Houston Sugarland Area = 125

Potential Urban Food Deserts - City of Houston 2000 Census Median Household Income



0 3 6 12 18 24 Miles

Cost of Living/Housing Cost

Metrics:

ACCRA cost of living index – 8% below national average

Avg % income spent on housing – 22%

% population spending >30% on housing – 34%

Cost of gasoline 5/2011 - \$3.99 per gallon

1/2012 - \$3.29

Land Use

Metric: Density (persons per sq. mile) Est. 2010

City of Houston –

2.26 million persons – 640 sq. miles
3,492 persons per sq. mile

City of Houston ETJ

1,347,697 persons – 1815 square miles
743 persons per square mile

Population Estimates 2010
Within City of Houston ETJ
Unincorporated Area
Approx.: 1,347,697 People

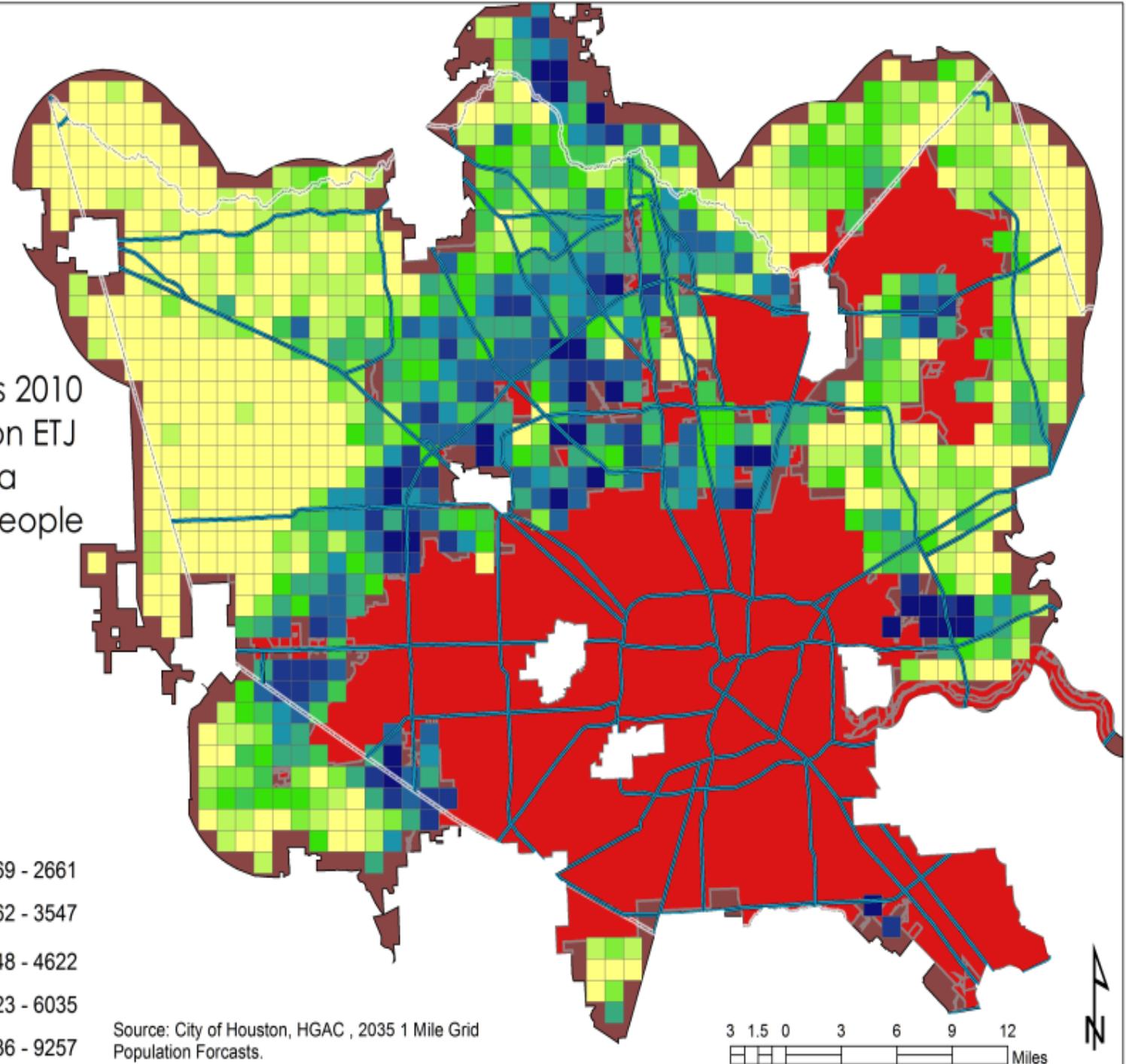
Legend

- Major Roads
- Harris County
- Houston City Limit
- ETJ

1 Mile Square Grid 2010 Population Projections

0 - 130	1869 - 2661
131 - 378	2662 - 3547
379 - 734	3548 - 4622
735 - 1237	4623 - 6035
1238 - 1868	6036 - 9257

Source: City of Houston, HGAC , 2035 1 Mile Grid
Population Forcasts.



Land Use Comparison

New York – 27,000 persons per sq. mile

Chicago – 12, 600 persons per sq. mile

Los Angeles – 8,200 person per sq. mile

City of Houston – 3,492 persons per sq. mile

San Diego – 1,612 persons per sq. mile

Dallas – 1.427 persons per sq. mile

City of Houston ETJ - 743 persons per square mile

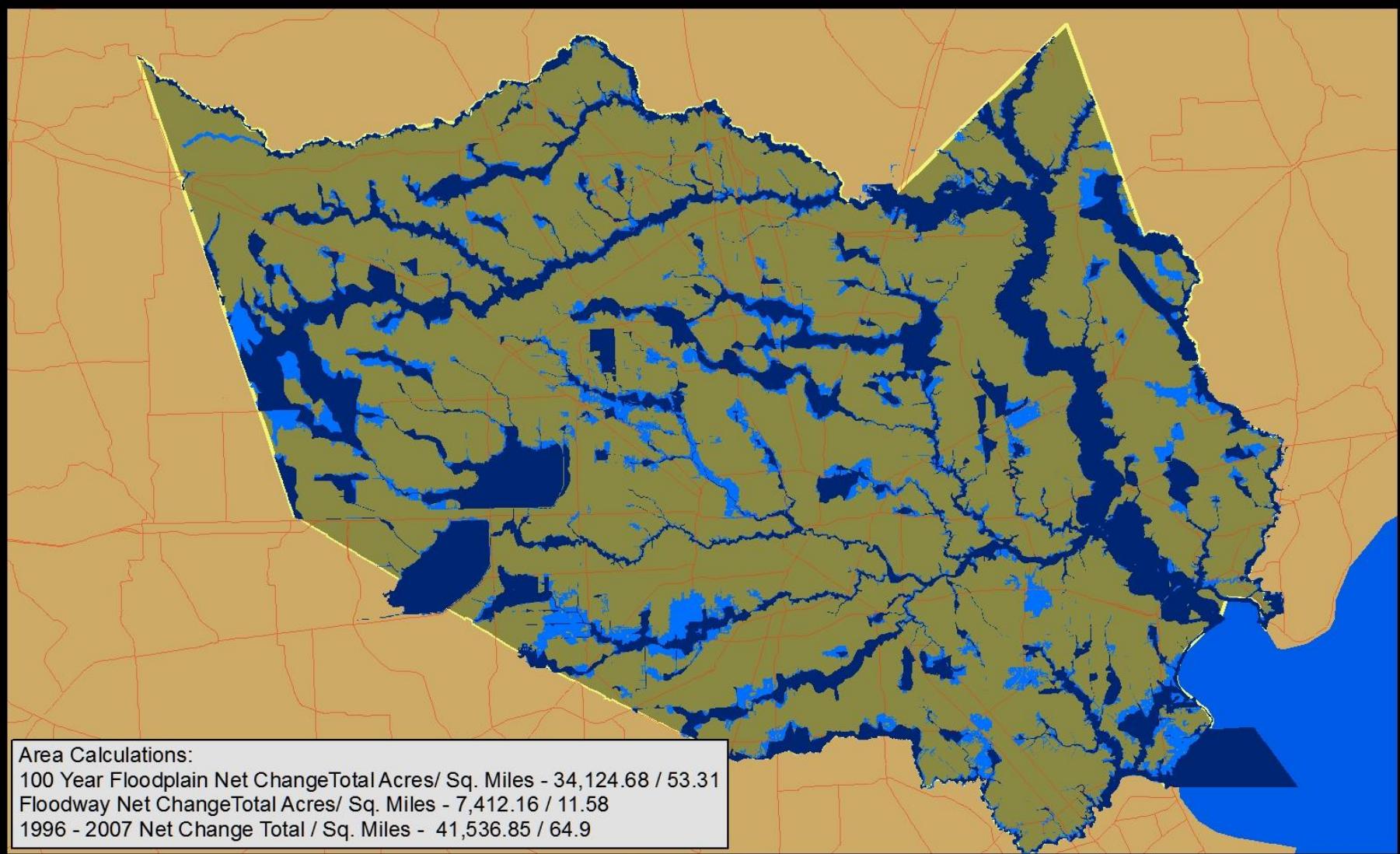
Flooding

Metrics:

Flood Damages as % of GDP for Houston
area – 3%

Increase in flood plain area Harris County
1996-2007 – 34,125 acres

Net Area Change 1996 - 2007 100 Year Floodplain & Floodway



Area Calculations:

100 Year Floodplain Net Change Total Acres/ Sq. Miles - 34,124.68 / 53.31

Floodway Net Change Total Acres/ Sq. Miles - 7,412.16 / 11.58

1996 - 2007 Net Change Total / Sq. Miles - 41,536.85 / 64.9

Legend

2007 Floodway &
100 Year Zn.
1996 Floodway &
100 Year Zn.

Major Roads
Harris
Open water



Source: FEMA, HCFCD, 2007.

B. Carlile for James Blackburn

Date: 01_05_2010

Standard Economic Metrics

- Growth in GDP
- Commercial Leasing
- Home Sales
- Building permits issued
- New housing starts
- Unemployment

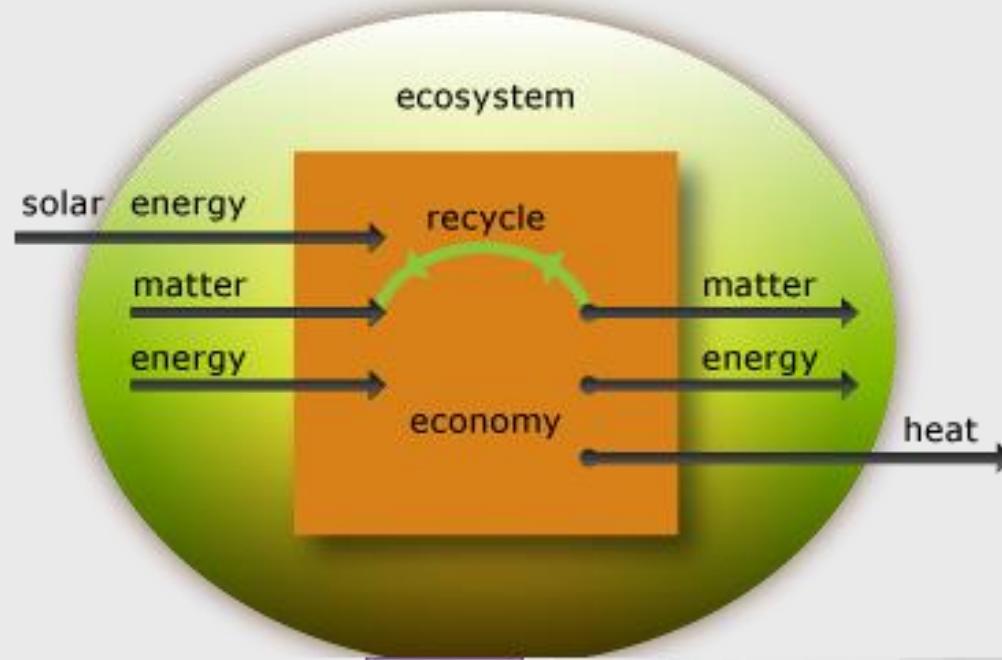
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**DO NOT MEASURE THE ECONOMIC SYSTEM
DESCRIBED IN DEFINITION –**

the production, distribution, and consumption of goods and services that meets the needs of today without compromising the needs of future generations

Economic Success Is Minimization of Energy and Water Use In Society



Energy Efficiency

Metric – Gross Area Product (GAP) per
capita/Residential Energy Consumption per capita
- 8.9×10^{-4}

City of Houston Leadership Projects
IMPORTANT

Recycling

Metric:

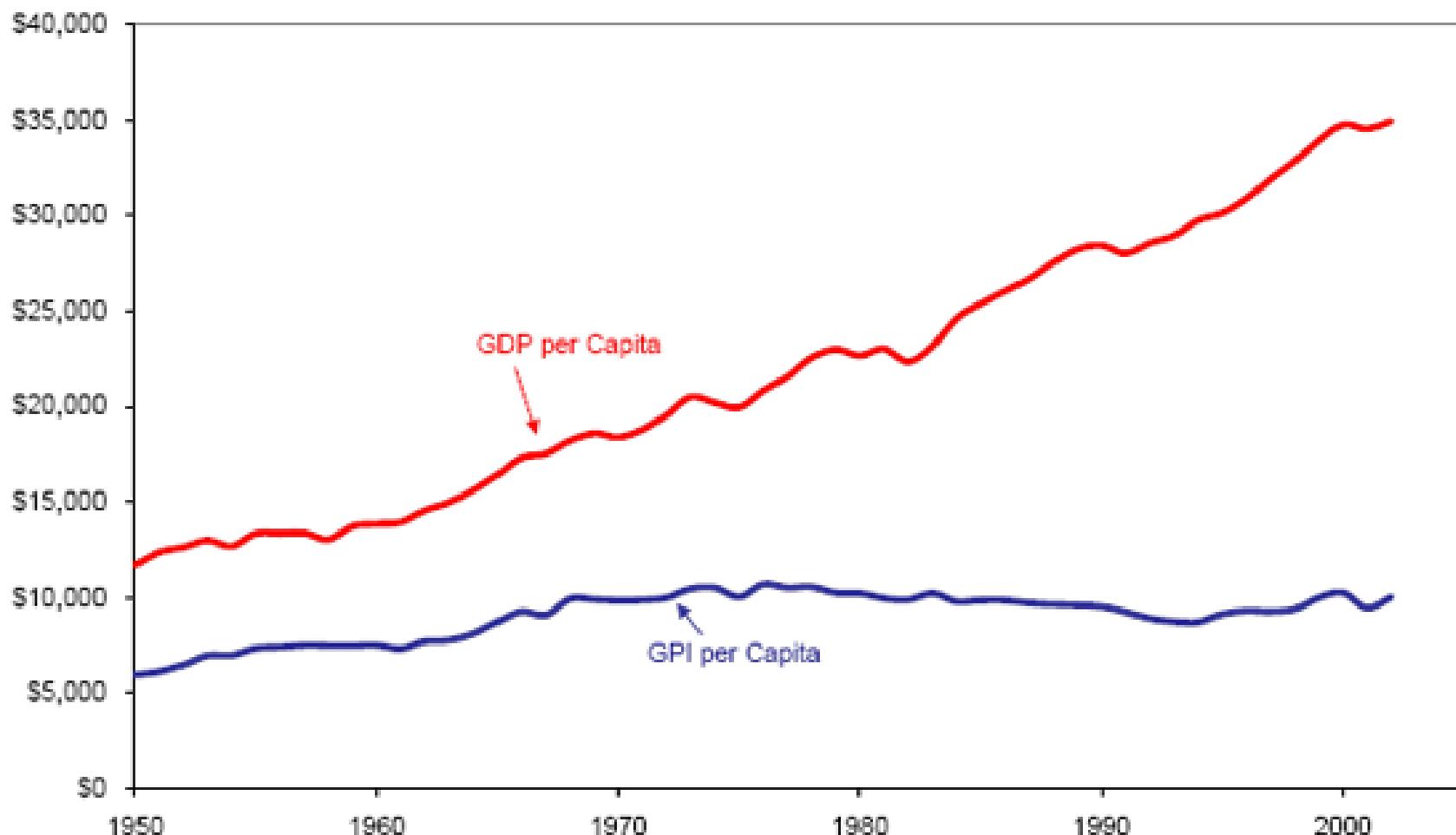
% waste diverted for recycling in City of
Houston –

2.6% (2003)

26% (unofficial, 2010)

Much Room For Improvement

Genuine Progress Indicator versus Gross Domestic Product, 1950-2002 (per capita \$2,000)



Source: Redefining Progress, Genuine Progress Indicator, 1950-2002, (2004 Update)

http://www.redefiningprogress.org/news/pubs/2004/gpi_march2004update.pdf

Hurricane Ike - \$30 billion in Damage = Positive GDP



Loss of Natural Capital

Metric: Per Cent (acreage) Loss By Category For 8 County Region

Big Thicket – 25%

Coastal Marsh – 14%

Columbia Bottomlands – 21%

Piney Woods – 31%

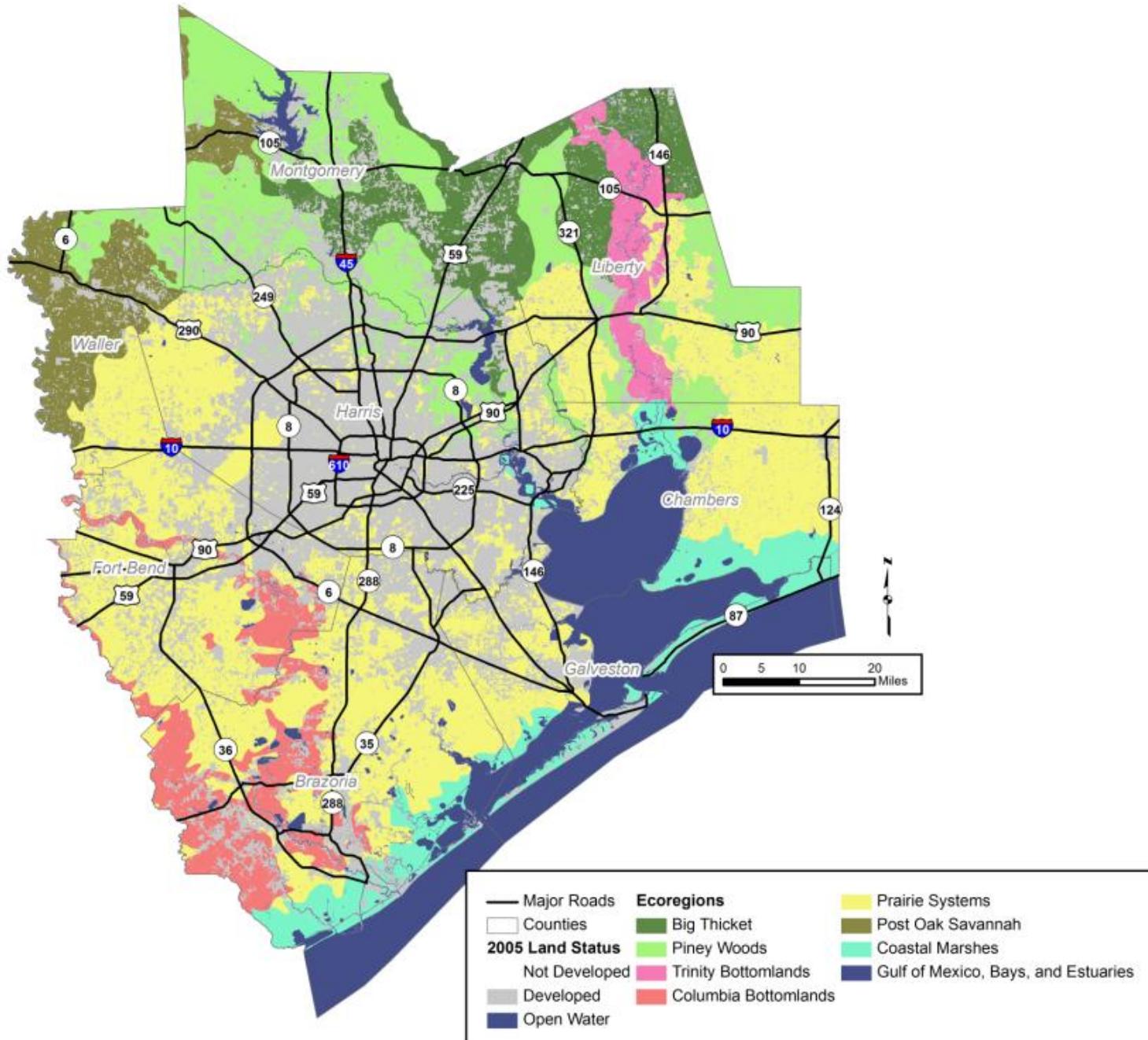
Post Oak Savannah – 16%

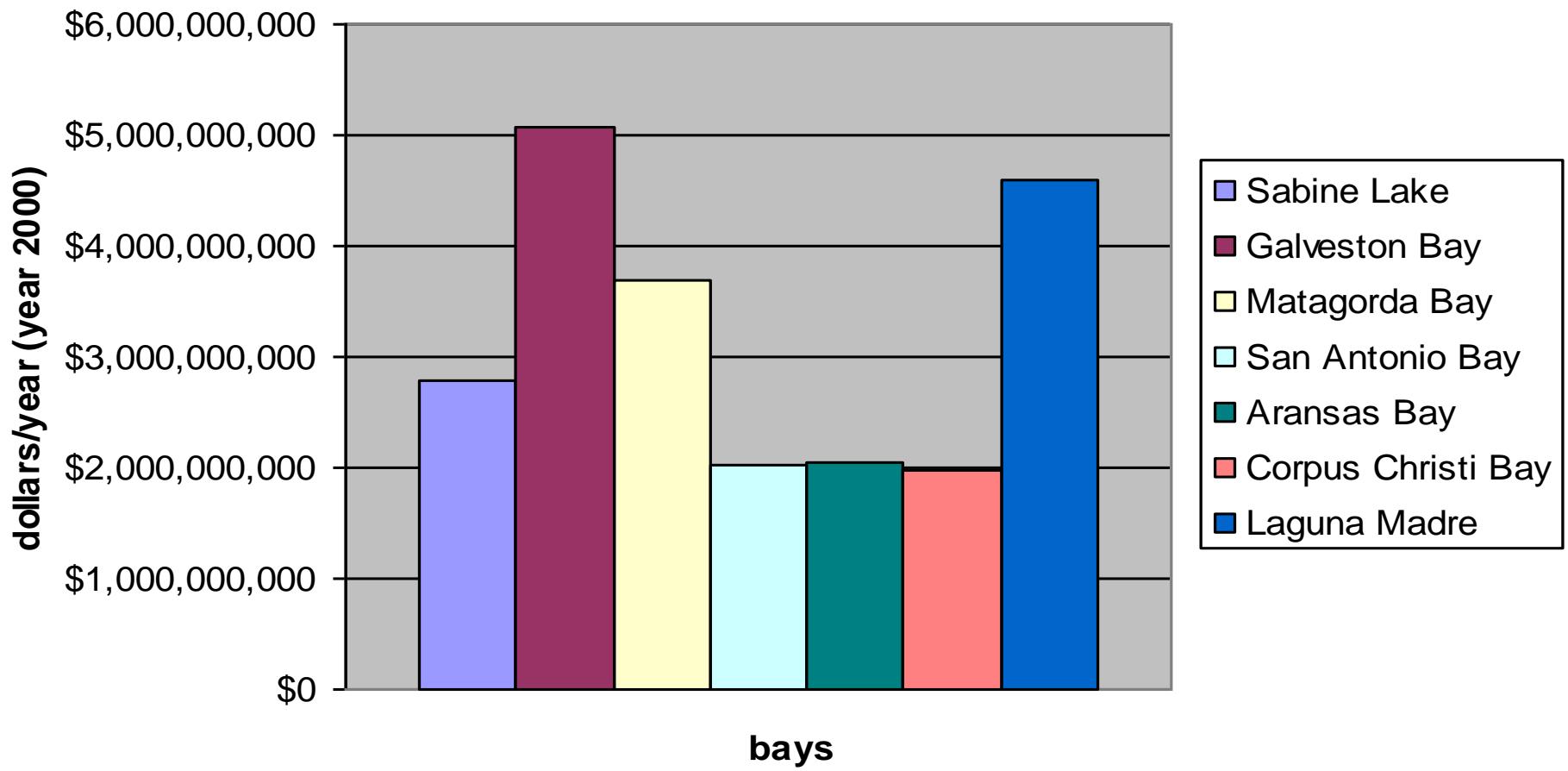
Coastal Prairie – 40%

Trinity Bottomlands – 11%



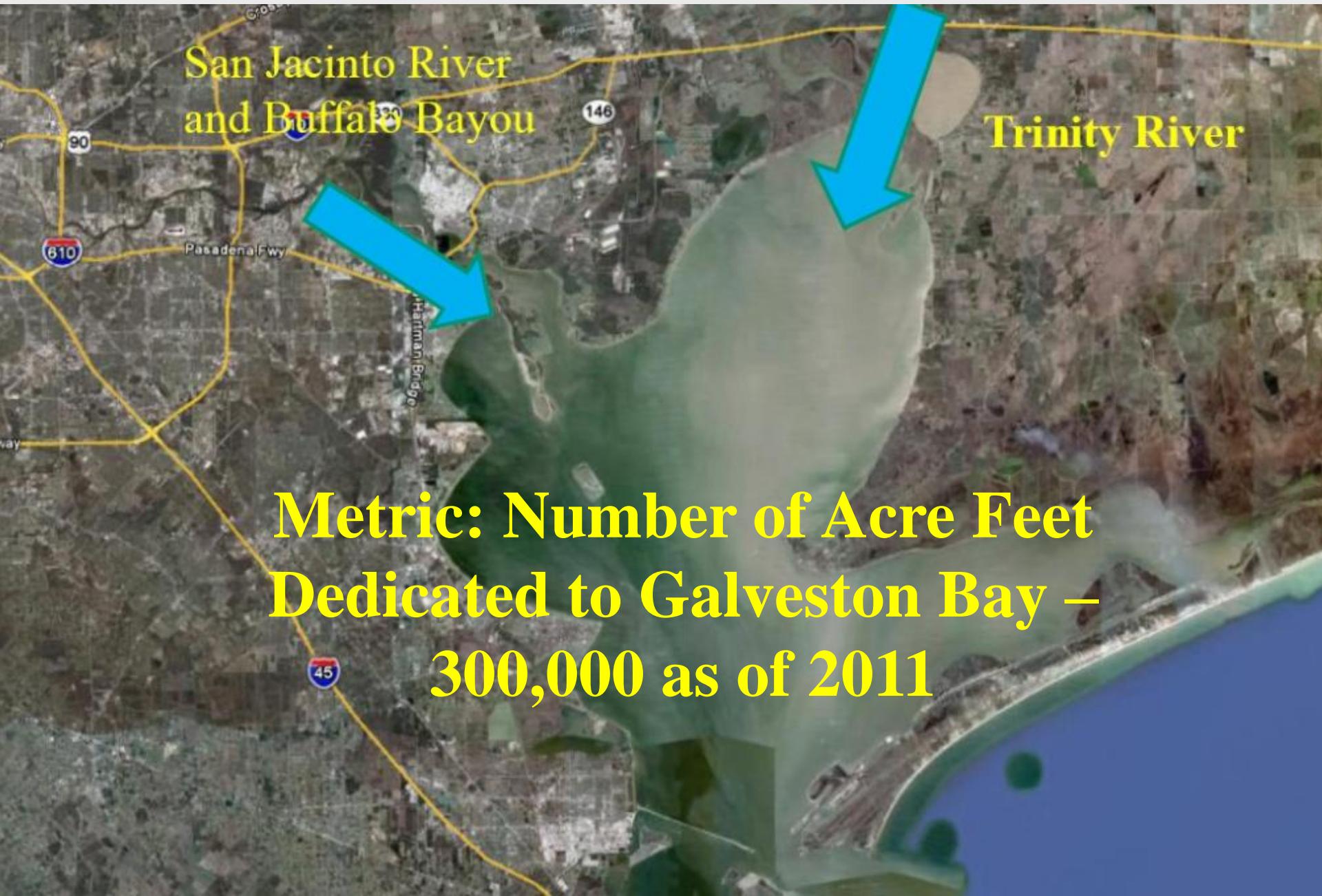
**HOUSTON
WILDERNESS**
It's Our Nature





COSTANZA'S VALUE OF TEXAS COASTAL BAYS AND ESTUARIES

Freshwater Inflow To Galveston Bay



Local Debt Structure

- No acceptable metric determined – ideally debt per capita but not sure about reliability of debt reporting
- Concerns about integration of city retirement funds and TIRZ obligations
- Concerns about all county obligations plus MUD debt

Sustainability

- Painting With a Different Brush
- Key is maintenance into the future
- Key is willingness to innovate and change
- Concepts Applicable to Corporations, Cities, Regions and Nations