



SPACE COAST TPO / Brevard County TIGER III – Benefit Cost Analysis St. Johns Heritage Parkway

Advisory Committee

December 2011



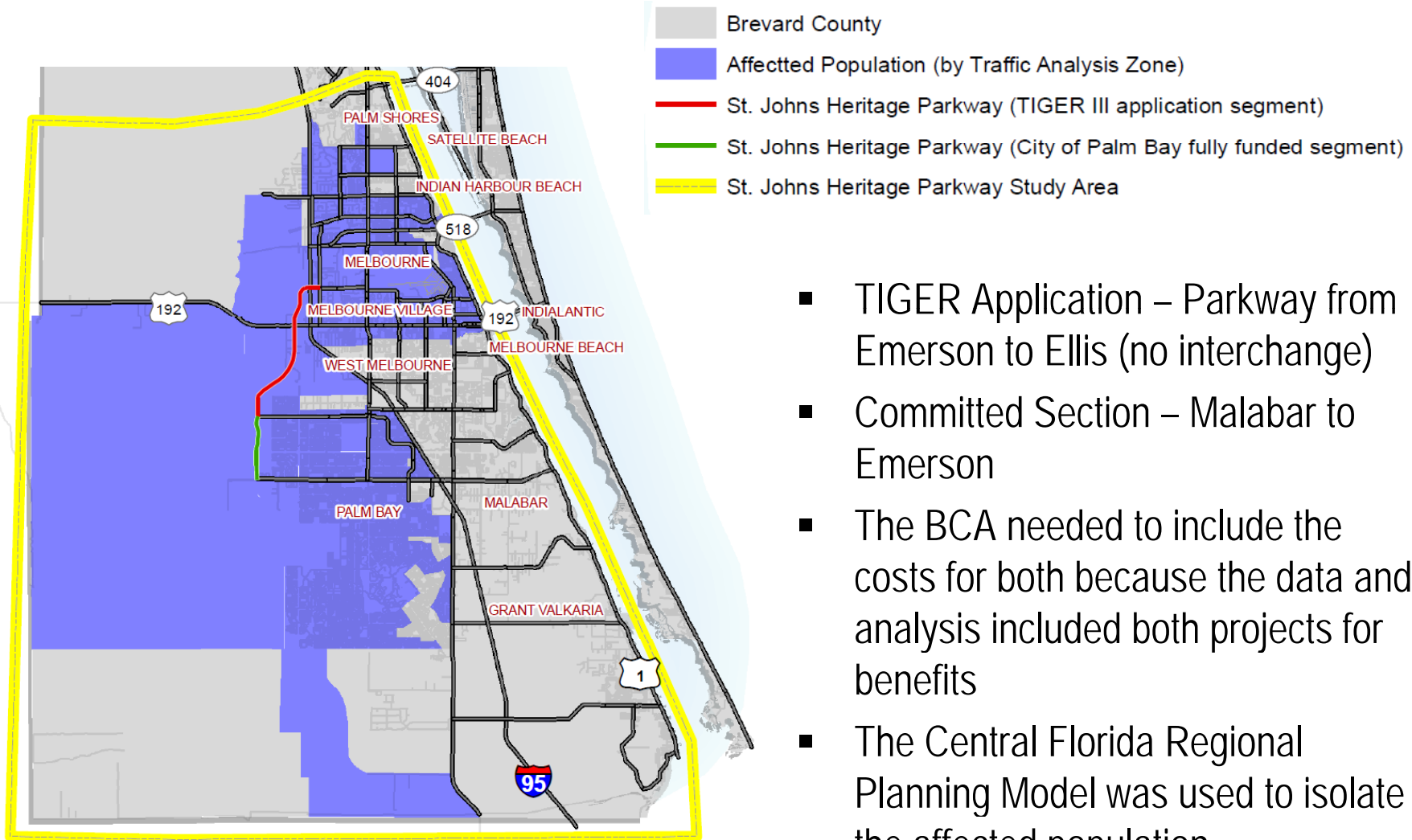
TIGER III – Benefit Cost Analysis

- Structured to provide the benefit of a project to the life-cycle cost of the project (20 years or more)

- Benefit Criteria
 - Livability
 - Economic Competitiveness
 - Safety
 - State of Good Repair
 - Environmental Sustainability

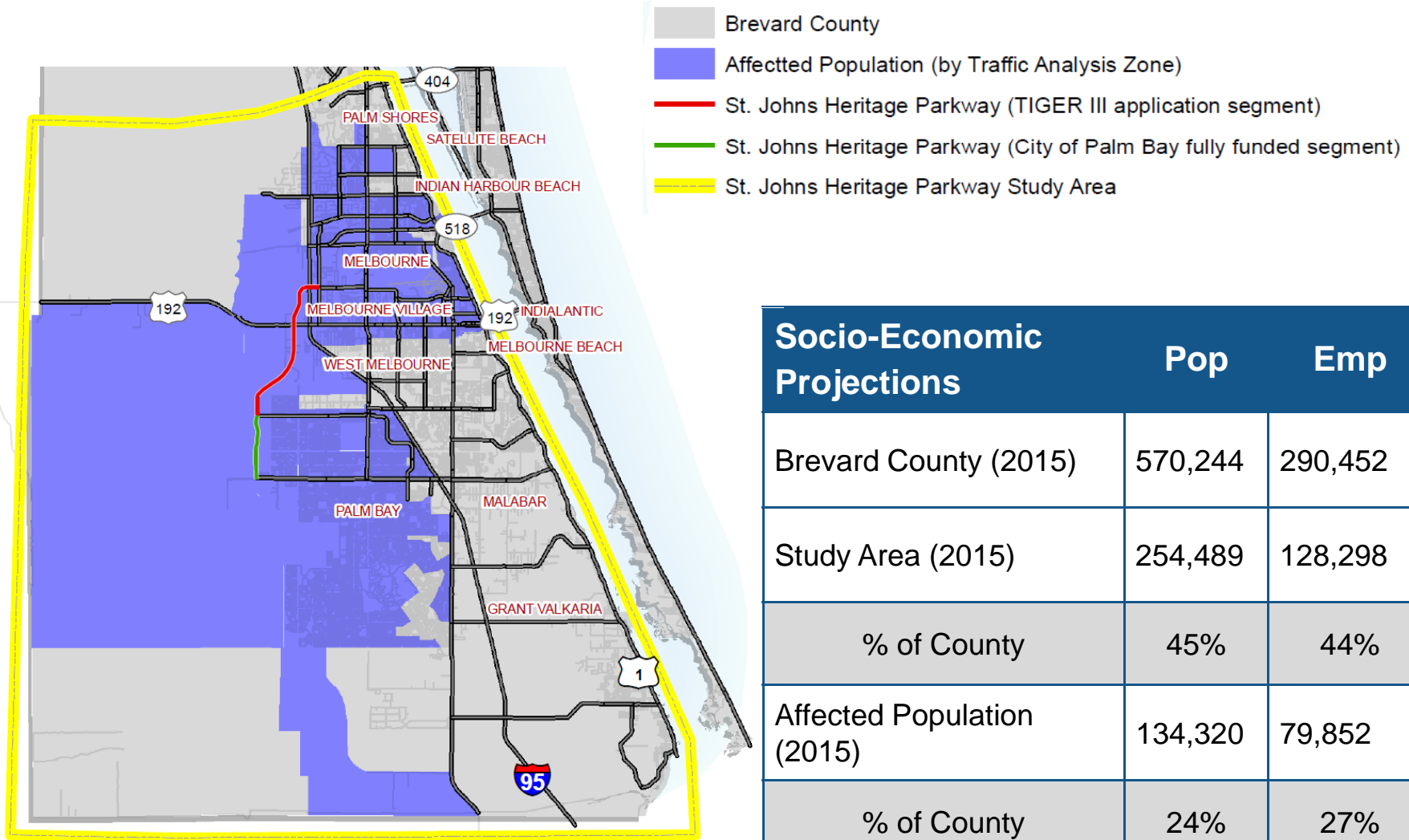
- Defensible methods and data assumptions represented in dollar value (monetized benefit)

Affected Population & Project Limits



- TIGER Application – Parkway from Emerson to Ellis (no interchange)
- Committed Section – Malabar to Emerson
- The BCA needed to include the costs for both because the data and analysis included both projects for benefits
- The Central Florida Regional Planning Model was used to isolate the affected population.

Affected Population & Project Limits



Socio-Economic Projections	Pop	Emp
Brevard County (2015)	570,244	290,452
Study Area (2015)	254,489	128,298
% of County	45%	44%
Affected Population (2015)	134,320	79,852
% of County	24%	27%

Criteria & Benefits

Criteria	Benefits	Description
Livability	Vehicle Operating Cost Savings	Reductions in vehicle operating costs due to reduced Vehicle Miles of Travel for the Affected Population to Major Employers
Economic Competitiveness	Travel Time Savings	Reductions travel time due to reduced Person Hours of Travel for the Affected Population to Major Employers
Safety	Accident Reduction	Reductions in property loss, injuries and deaths from accidents due to reduced Vehicle Miles of Travel for the Affected Population to Major Employers.
State of Good Repair	Pavement Maintenance	New Construction (Not Available)
Sustainability	Emission Reductions	Reductions in pollutants and Green House Gasses (GHG) due to reduced Vehicle Miles of Travel for the Affected Population to Major Employers.

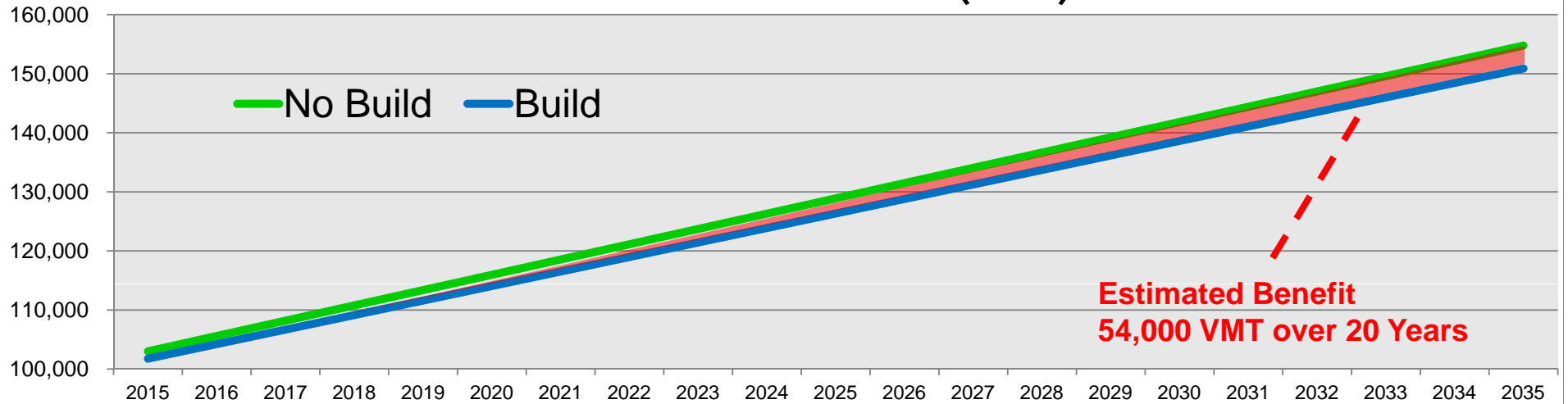
Input Variables and Process

- Federal Agencies and TIGER Guidance provided the monetized costs, travel variables and factors for the Analysis
 - Fuel cost per gallon and average miles per gallon
 - Value of a persons time in hours
 - Cost per accident
 - Cost of vehicle emissions

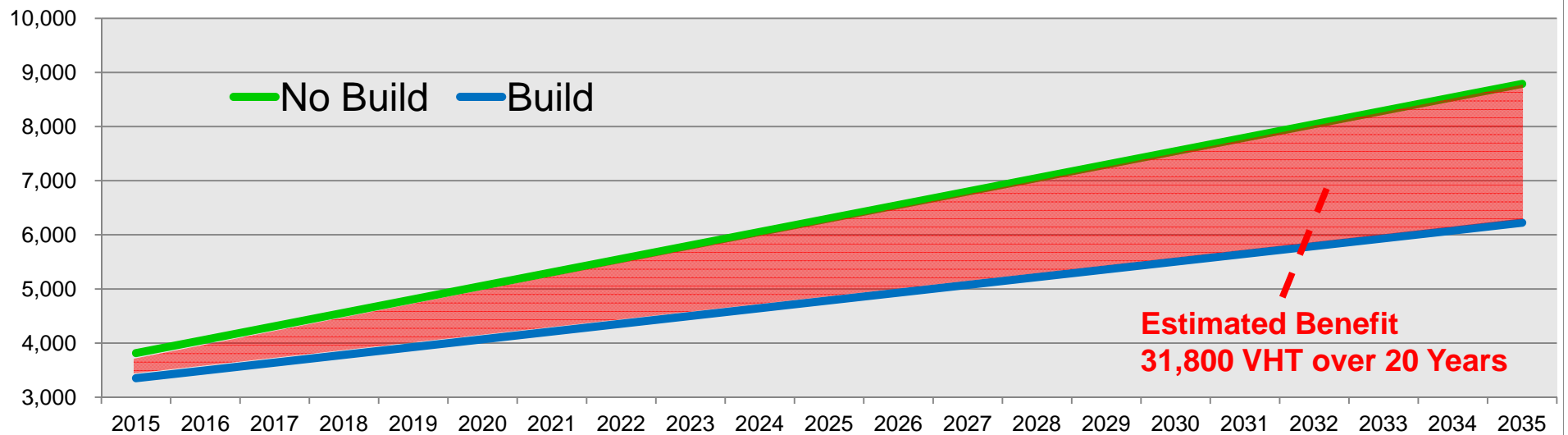
- CFRPM was the foundation for the localized travel variables
 - Vehicle Miles of Travel difference for the Affected Population
 - Vehicle Hours of Travel difference for the Affected Population

- Costs and Benefits converted to Equivalent Uniform Annual Cost (EUAC) for an accurate comparison over the lifecycle of the project

Vehicle Miles of Travel (VMT)



Vehicle Hours of Travel (VHT)



Livability

Annual Livability Benefit	Variables	Monetized Benefit (7%)	Monetized Benefit (3%)
Vehicle Operating Cost Savings for Affected Population to Major Employment Centers	Fuel Savings	\$ 169,024	\$ 120,360
	Oil Savings	\$ 11,165	\$ 7,950
	Tire Savings	\$ 6,453	\$ 4,595
	Maintenance and Operations Savings	\$ 8,491	\$ 6,046
	Depreciable Value Savings	\$ 193,805	\$ 138,006
Total Benefit (per year)		\$ 388,938	\$ 276,957

Economic Competitiveness

Annual Economic Competitiveness Benefit	Variables	Monetized Benefit (7%)	Monetized Benefit (3%)
Travel Time Savings for Affected Population to Major employment Center	Travel Time Savings	\$ 10,953,947	\$ 7,800,132
Total Benefit (per year)		\$ 10,953,947	\$ 7,800,132



Safety

Annual Safety Benefit	Variables	Monetized Benefit (7%)	Monetized Benefit (3%)
Accident Reduction for Affected Population to Major Employment Centers	Fatal Accident Savings	\$ 176	\$ 125
	Injury Accident Savings	\$ 3,915	\$ 2,787
	Property Damage Savings	\$ 8	\$ 6
Total Benefit (per year)		\$ 4,098	\$ 2,918

State of Good Repair

Annual Economic Competitiveness Benefit	Variables	Monetized Benefit (7%)	Monetized Benefit (3%)
Pavement maintenance Savings	Pavement Maintenance or Repair	\$ 0	\$ 0
	Total Benefit (per year)	\$ 0	\$ 0

Environmental Sustainability

Annual Livability Benefit	Variables	Monetized Benefit (7%)	Monetized Benefit (3%)
Vehicle Operating Cost Savings for Affected Population to Major Employment Centers	CO2 Savings	\$ 126	\$ 89
	VOCs Savings	\$ 26	\$ 18
	NOX Savings	\$ 31	\$ 22
	SOX Savings	\$ 2	\$ 1
	PM Savings	\$ 63	\$ 45
Total Benefit (per year)		\$ 247	\$ 176

Life Cycle Cost

Equivalent Uniform Annual Cost	Present Day Cost	Monetized Benefit (7%)	Monetized Benefit (3%)
St. Johns Heritage Parkway	\$ 49,811,000	\$ 49,846,000	\$ 49,831,370
Life Cycle Cost – Equivalent Uniform Annual Cost (EUAC)	\$ 2,492,300	\$ 4,703,730	\$ 3,349,940

Benefit Cost Calculation

Criteria	Benefits	Monetized Benefit (7%)	Monetized Benefit (3%)
Livability	Vehicle Operating Cost Savings for Affected Population to Major Employment Centers	\$ 388,938	\$ 276,956
Economic Competitiveness	Travel Time Savings for Affected Population to Major employment Center	\$ 10,953,947	\$ 7,800,132
Safety	Accident Reduction for Affected Population to Major Employment Centers	\$ 4,098	\$ 2,918
State of Good Repair	Pavement maintenance Savings	\$ 0	\$ 0
Sustainability	Vehicle Operating Cost Savings for Affected Population to Major Employment Centers	\$ 247	\$ 176
Total Benefit		\$ 11,347,230	\$ 8,080,183
St. Johns Heritage Parkway	EUAC – Life Cycle Cost	\$ 4,703,730	\$ 3,349,940
Benefit / Cost Ratio		2.41	2.41
Benefit / Cost Ratio (TIGER III Funds only - \$ 28,037,882)		4.28	4.28



Other Benefits

- The Federal Highway Administration Guidelines provide guidance to what and how Benefits should be calculated for the analysis.

- There are other Benefits to the area that the Parkway will provided, but could not be quantified at this time.
 - Public Safety and response time benefits with increased accessibility and travel options
 - Property value change with increased accessibility
 - Job Creation from new construction and spurred growth from a new / expanded facility



Questions?