“Net Impacts of Travel Efficiency Benefits”

I-49 South Economic Impact Analysis

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REMI Webinar 2018

Performance-based Transportation Investment:
Estimating A Project's Efficiency Impacts

REMI

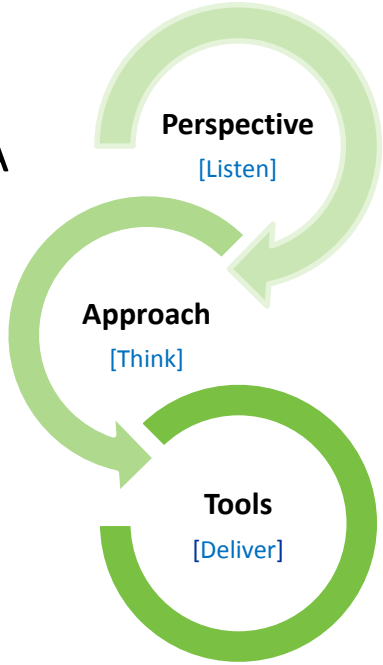
Project team

- Regional Economic Models, Inc. (REMI)
  - worldwide leader in regional economic modeling
  - over 30 years of experience in economic model development
  - transport, economic development, energy, environment, and taxation.
- CDM Smith
  - transport planning and economic analyses for over 60 years
  - economic feasibility and impact for all modes
  - wide range of tools and processes tailored for each project

Overview – study areas and scenarios

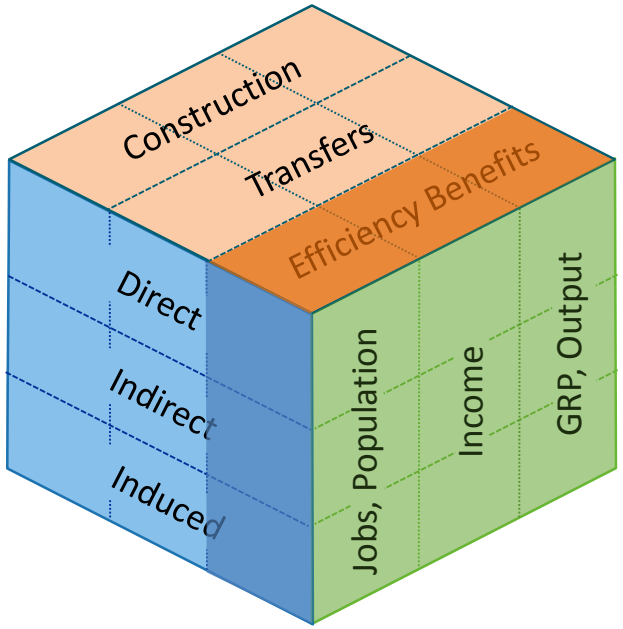
Tailor economic evaluation

- Perspective
  - 30-years history
  - other LA Megaprojects
  - support and funding from local, state (DOTD), FHWA
- Approach
  - Objectives – benefits (BCA) vs. impacts
  - Scenarios – Connector vs. Corridor
  - Impacts – net vs. gross effect, by region
- Tools
  - capital improvements – what, when, where?
  - TDMs – VMT and VHT detail
  - monetize benefits
  - estimate impacts with REMI model



Economic impacts: *many facets*

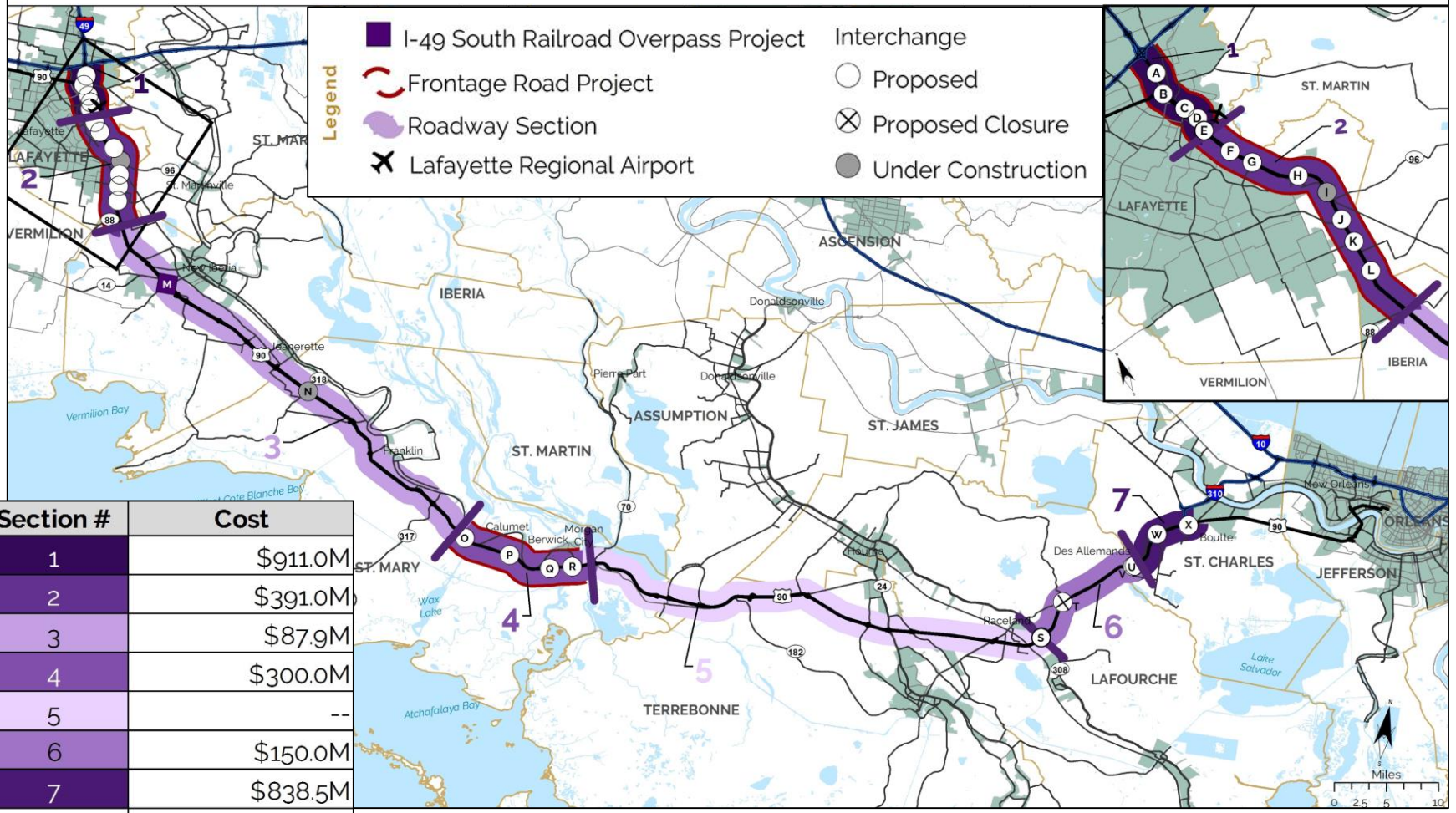
- Components
  - construction – ROW, PE, construction (1-3 years)
  - transfers – relocation, base growth
  - efficiency benefits – time, VOC, accidents, emissions (20+ years)
- Types
  - Direct
  - Indirect
  - induced
- Measures
  - jobs, population
  - income
  - GRP, output



Evaluation process

- Identify capital improvements
  - construction – unfunded project locations, costs, and timing
- Estimate travel efficiency
  - TDM – VMT/VHT △ between base/build scenarios
  - time horizon – interpolate △ between current and future year
  - monetize benefits – time, VOC, accidents, and emissions
  - tabulate change – by type and aggregate by region (REMI)
- Evaluate feasibility and impacts
  - benefits vs. costs – per FHWA guidelines
  - regional impacts (REMI)
    - capital costs
    - efficiency benefits

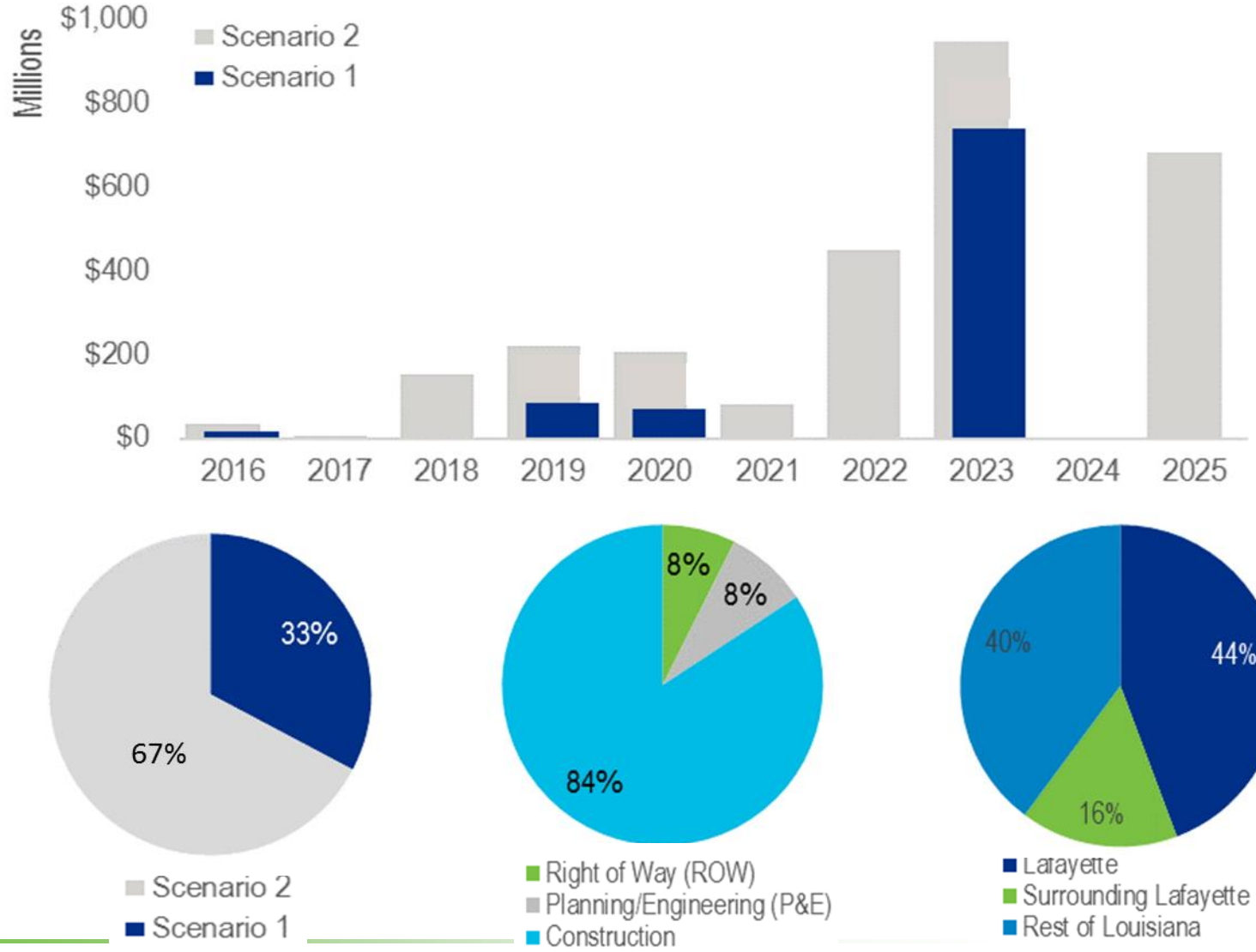
Capital improvements – what, where?



Section #	Cost
1	$911.0M
2	$391.0M
3	$87.9M
4	$300.0M
5	--
6	$150.0M
7	$838.5M
Total	**$2.7B**

- Scenario 1 – includes Section 1
- Scenario 2 – includes Section 1-7

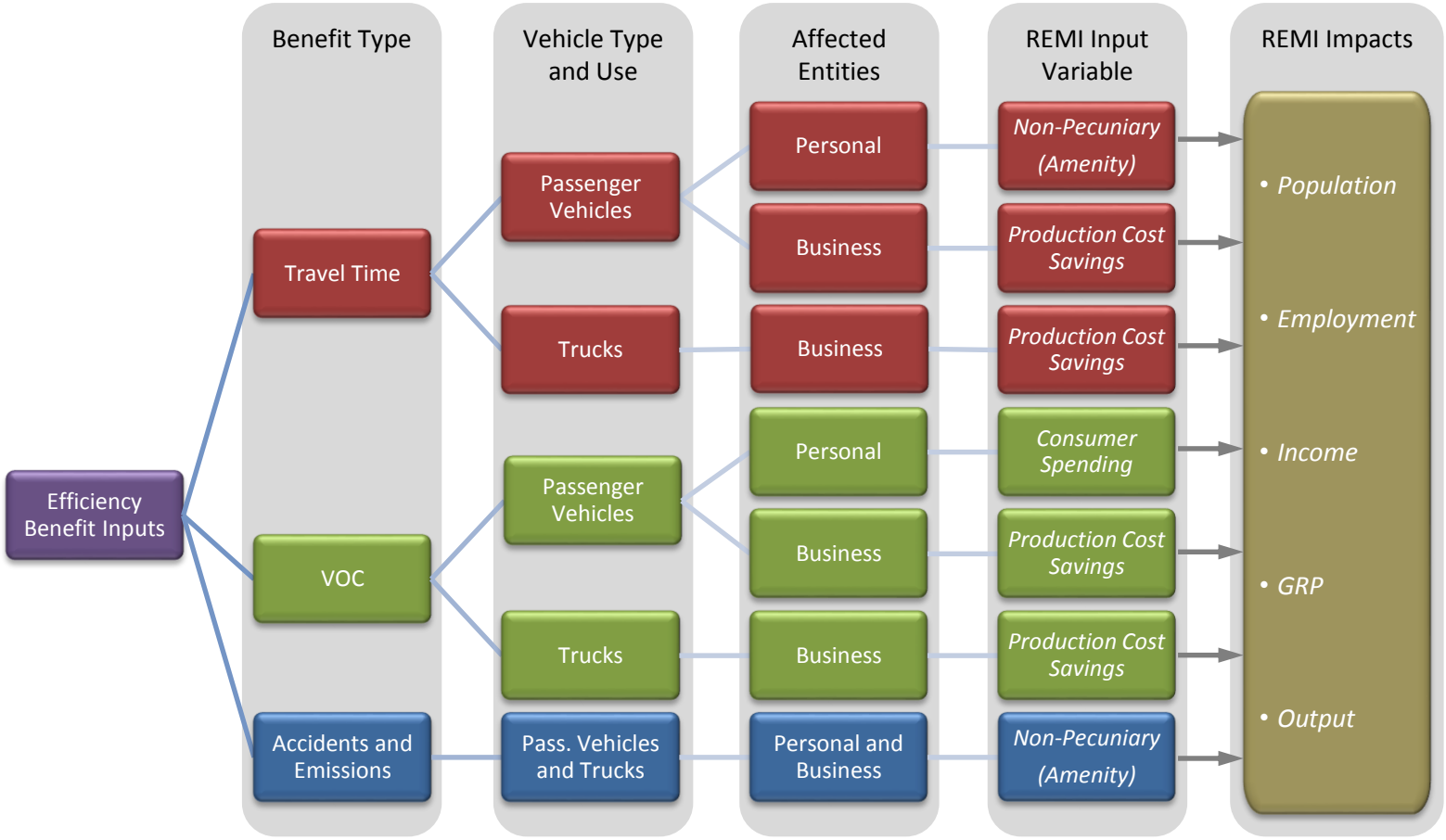
Capital exp. – scenario, year, type, region



Travel efficiency *benefits*

- Factors
  - Time – vehicle type, trip purpose
  - VOC – fuel and non-fuel
  - Accidents – Rates and costs by type (fatality, injury, PDO)
  - Emissions – Rates and costs by type (VOC, NOX, SOX, PM)
- REMI provides
  - Aggregate VMT/VHT ***vs.*** detailed policy variable translation
  - Fuel consumption – $/VMT for POV and CV
  - Accident costs – by type (fatality, injury, PDO)

Travel efficiency *impacts*



Source: CDM Smith

Evaluation summary – overview

Metrics	Scenario 1 I-49 Lafayette Connector	Scenario 2 I-49 South	Difference
Capital Expenditures (2016-2025)[1]			
Travel Efficiency Benefits (2044)[1]			
Economic Feasibility (2016-2044)			
Impacts (2044)[2]			

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

Evaluation summary – expenditures

Metrics	Scenario 1 I-49 Lafayette Connector	Scenario 2 I-49 South	Difference
Capital Expenditures (2016-2025)[1]			
Right of Way	$70	$206	194%
Planning / Engineering	$99	$232	134%
Construction	$742	$2,343	216%
Total	$911	$2,781	205%
Travel Efficiency Benefits (2044)[1]			
Economic Feasibility (2016-2044)			
Impacts (2044)[2]			

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

Evaluation summary – benefits

Metrics	Scenario 1 I-49 Lafayette Connector	Scenario 2 I-49 South	Difference
Capital Expenditures (2016-2025)[1]	$911	$2,781	**205%**
Travel Efficiency Benefits (2044)[1]			
Louisiana	$181	$772	327%
National	$199	$899	352%
Economic Feasibility (2016-2044)			
Impacts (2044)[2]			

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

Economic summary – feasibility

Metrics	Scenario 1 I-49 Lafayette Connector	Scenario 2 I-49 South	Difference
Capital Expenditures (2016-2025)[1]			
Travel Efficiency Benefits (2044)[1]			
Economic Feasibility (2016-2044)			
NPV @ 3% discount rate	$794	$3,705	367%
NPV @ 7% discount rate	$177	$1,153	551%
Impacts (2044)[2]			

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

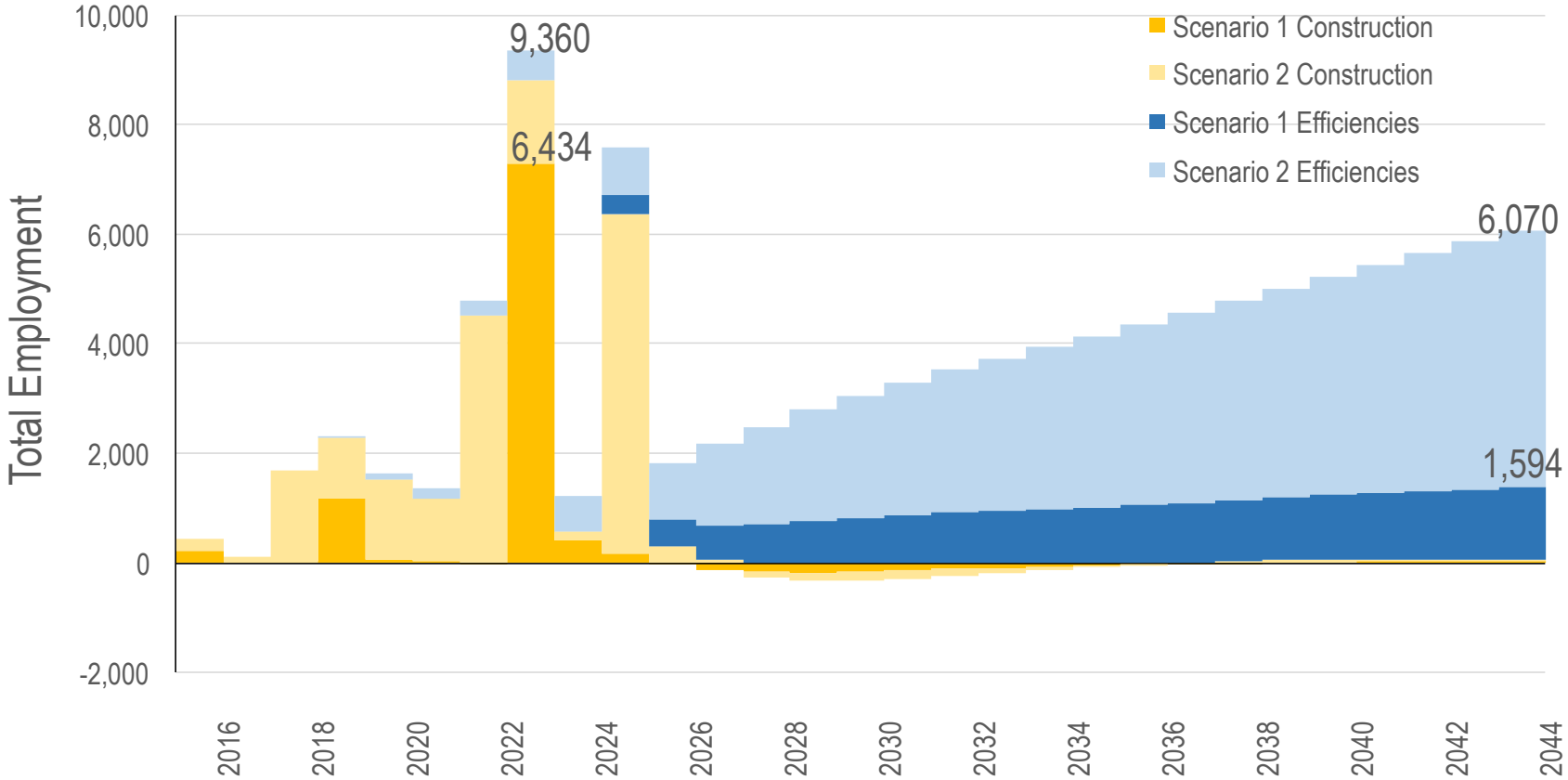
Evaluation summary – impacts

Metrics	Scenario 1 I-49 Lafayette Connector	Scenario 2 I-49 South	Difference
Capital Expenditures (2016-2025)[1]	$911	$2,781	**205%**
Travel Efficiency Benefits (2044)[1]			
Economic Feasibility (2016-2044)			
Impacts (2044)[2]			
Employment			
Lafayette Parish	723	1,594	120%
Surrounding Parishes	84	1,931	2199%
Rest of Louisiana	523	2,545	387%
Total Louisiana	1,330	6,070	356%
Income - Statewide[1]	$180	$901	401%
Output - Statewide[1]	$320	$1,285	302%

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

Annual employment impacts – statewide



Summary

- Net benefit/impact approach
  - multiple uses
    - BCA for State DOTD, FHWA
    - impacts by region
  - REMI model input
    - Utilizes various input blocks
    - incremental impact perspective
    - Compare regions
- Scenarios
  - Lafayette Connector (S1)
    - Benefits, impacts, and BCA metrics are robust
  - I-49 South (S2)
    - dependent on Lafayette Connector
    - benefits, impacts > the marginal capital cost.
    - impacts accrue across State

Thank you

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