# “Net Impacts of Detailed Travel Efficiencies”

## I-49 South Economic Impact Analysis

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*Evaluating Infrastructure Investment*

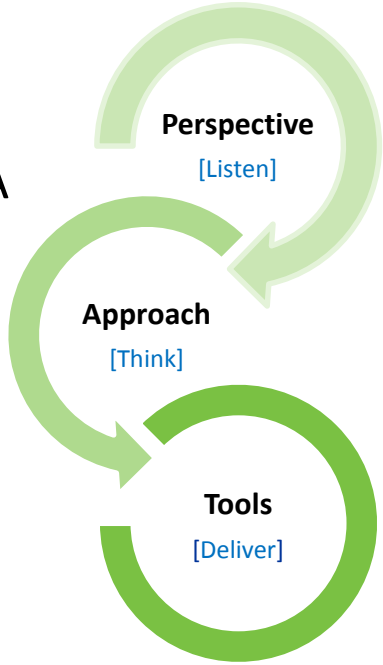
# Project team

- 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

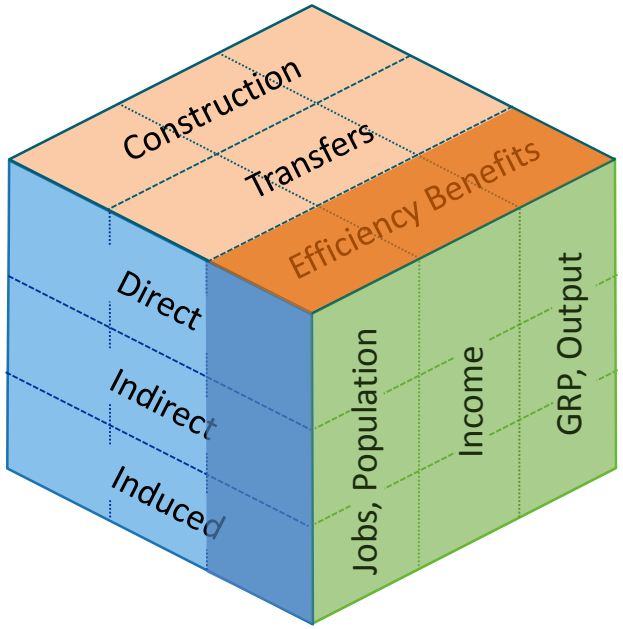
# Tailor economic evaluation

- Perspective
  - 30-years history
  - other LA Megaprojects
  - support and funding from local, state (DOTD), FHWA
- Approach
  - impacts vs. BCA
  - net vs. gross effect
- Tools
  - Capital improvements – what, when, where?
  - TDMs – VMT and VHT detail
  - BCA processing
  - estimate impacts with REMI model



# Economic impacts: *many facets*

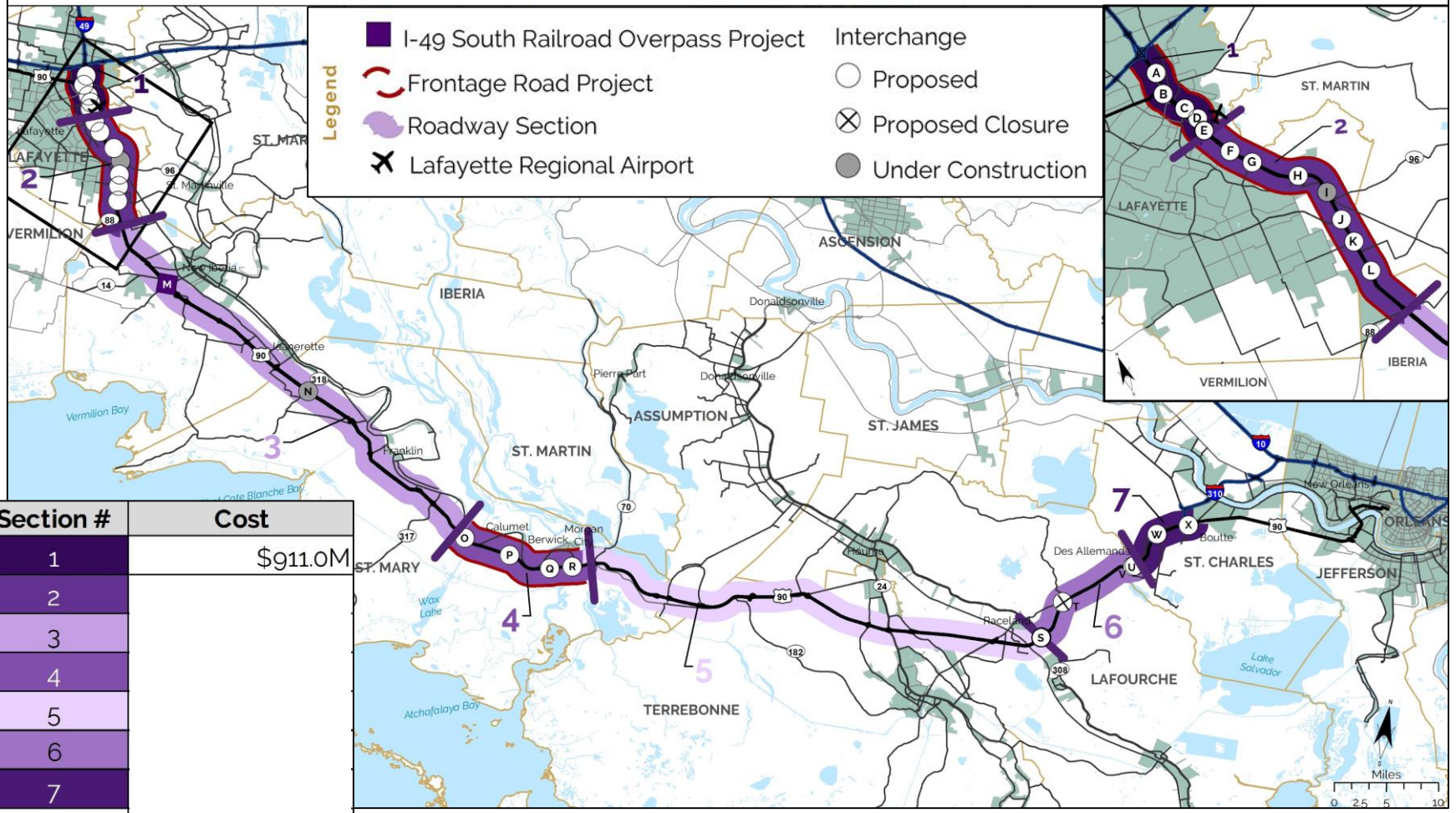
- Components
  - construction – ROW, PE, construction (1-3 years)
  - transfers – relocation, base growth
  - efficiency benefits – time, VOC, accidents, emissions (20+ years)
- Types
  - direct
  - Indirect
  - induced
- Impact Measures
  - jobs, population
  - income
  - GRP, output



# 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

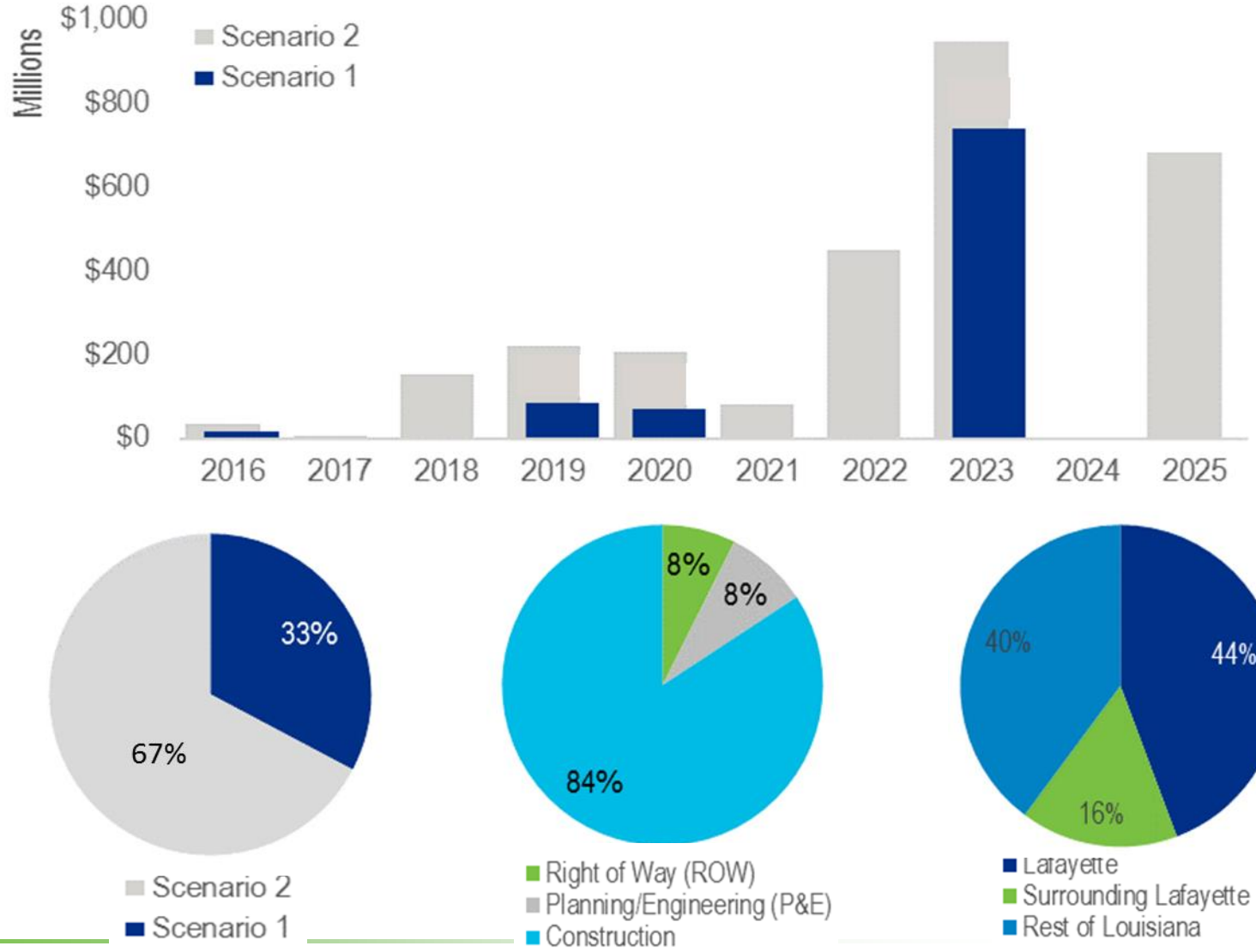
# Capital improvements – what, where?




| Section # | Cost |
|---|---|
| 1 | $911.0M |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| Total | |

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

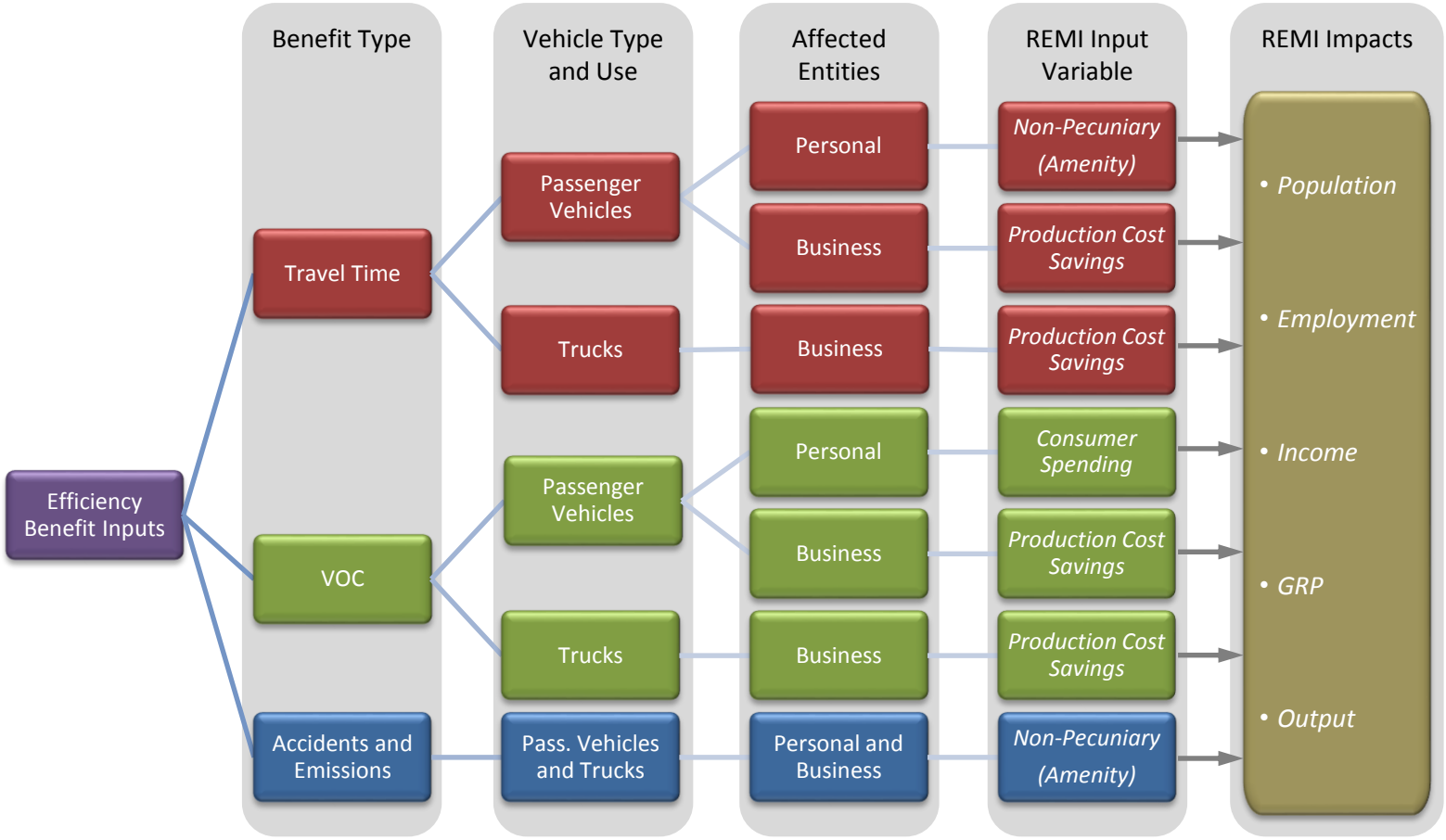
# Capital exp. – scenario, year, type, region



# 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<br>I-49 Lafayette Connector | Scenario 2<br>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<br>I-49 Lafayette Connector | Scenario 2<br>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<br>I-49 Lafayette Connector | Scenario 2<br>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] | $911 | $2,781 | **205%** |
| Travel Efficiency Benefits (2044)[1] | | | |
| Economic Feasibility (2016-2044) | | | |
| *3% discount rate* | | | |
| Net Present Value (NPV)[1] | $794 | $3,705 | 367% |
| Benefit Cost Ratio (BCR) | 1.93 | 2.42 | 25% |
| *7% discount rate* | | | |
| Net Present Value (NPV)[1] | $177 | $1,153 | 551% |
| Benefit Cost Ratio (BCR) | 1.27 | 1.58 | 24% |
| Impacts (2044)[2] | | | |

[1] in millions of 2016$

[2] based on Louisiana TDM perspective

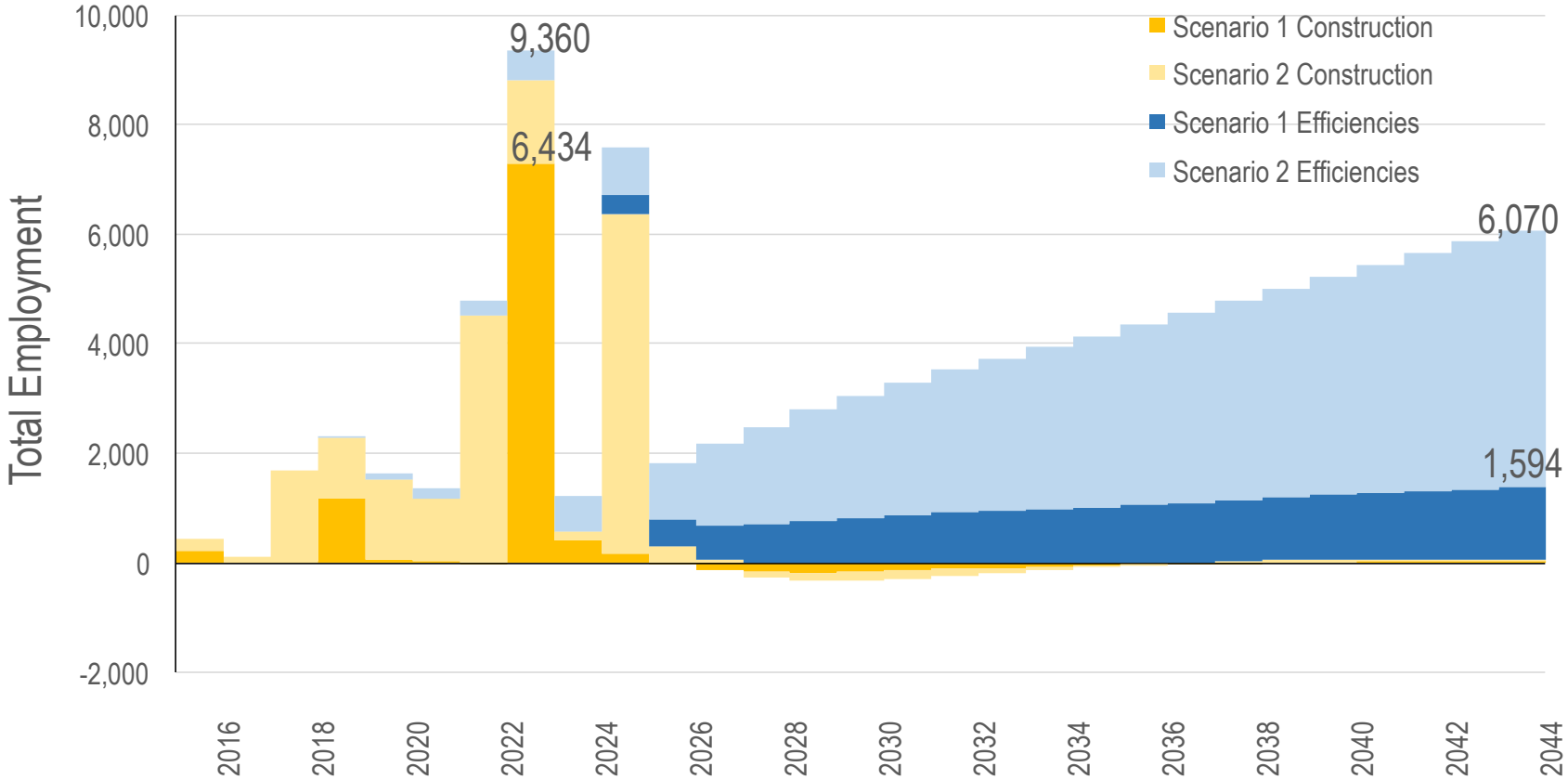
# Evaluation summary – impacts

| Metrics | Scenario 1<br>I-49 Lafayette Connector | Scenario 2<br>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 | | | |
| Rest of Louisiana | | | |
| Total Louisiana | | | |
| Income - Statewide[1] | | | |
| Output - Statewide[1] | | | |

[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