
Implementing the Business Case Guide for Intercity Passenger Rail Investment

October 19, 2021



ACKNOWLEDGEMENTS

Study Team:

- EBP: Glen Weisbrod, Ira Hirschman, Adam Blair
- Mineta Transportation Institute: Simon Tan

Technical Committee

- Charlie Quandel – Quandel Consultants
- Sharon Greene – InfraStrategies
- Toni Horst – AECOM
- Jonathan Dees – North Carolina DOT, AASHTO CORT
- Eric Peterson – APTA HSIPR Committee
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- Joseph Giulietti, Commissioner, Connecticut DOT
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- Patricia Quinn (Northern New England Passenger Rail Authority),
- Arun Rao (Wisconsin DOT, and Chair, States for Passenger Rail),
- James Redeker (former Commissioner of Connecticut DOT),
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- Emily Stock (Virginia Dept. of Rail and Public Transportation),
- Julie White (Deputy Secretary, North Carolina DOT),
- Christopher Zappi (Government and External Affairs, Amtrak),
- Matt Dickens (APTA).

FUNDERS

- APTA –
American Public Transportation Association
- AASHTO
American Association of State Highway and
Transportation Officials

with

- APTA Business Members Group
- Quandel Consultants
- AECOM
- Mineta Transportation Institute



SPEAKERS

Webinar Presentation (30 minutes)

- Glen Weisbrod – Chair, EBP

Implementation Comments (15 minutes)

- Patricia Quinn, Exec. Director, Northern New England Passenger Rail Authority
- Sharon Greene, Managing Principal, InfraStrategies
- Arun Rao, Chair, States-for-Passenger Rail Coalition,
Passenger Rail Manager, Wisconsin Department of Transportation

Discussion and Q&A (30 minutes)

Responses from presenter, panel, additional support by Charlie Quandel (Quandel Consultants) and Ira Hirschman (EBP)

AGENDA

1. The Need for a “Business Case” Concept for Intercity Passenger Rail ROI
2. ROI Guide: Elements + Use
3. Implementation Process
4. Discussion: Implementation Opportunities + Challenges



1. THE NEED for Business Case ROI Assessment

Intercity Passenger Rail (IPR) – new funding prospects, renewed interest

1. Need to responsibly consider ROI, recognize factors of value to constituents (contrast to federal BCA focus on system performance & emissions)
2. Need to address factors of legislative/policy importance for levels of government (risk mitigation, economic development, equity, resilience, sustainability)
3. Opportunities to leverage state-region-local benefits for support + funding (unique business model)
4. Create dialog for multi-level planning + financing (common ground)



Use of the ROI Guide



Business Case ROI = Full Return on Investment

1. Addresses limitations of traditional benefit-cost analysis; brings in all relevant factors
2. Can make a clear, concise, and compelling assessment that resonates with local, regional, state decision makers who come with different perspectives
3. Redefines public “Return on Investment” (ROI) to recognize full benefits and provide a framework for cooperation among levels of government
4. Can be relevant for all kinds of passenger rail: commuter/regional, intercity, high-speed



Core Concept: Business Case ROI

Adapt the private sector “business case” for investment

- Sustainable business model
- Resilient to unexpected future economic shocks
- Addresses needs for specific target markets
- Value to shareholders
- Value to customers
- Win goodwill (payback) for quality, service, fairness (equity)

*Private industries operate this way,
our Public ROI should require nothing less.*



2. ROI ELEMENTS + USE

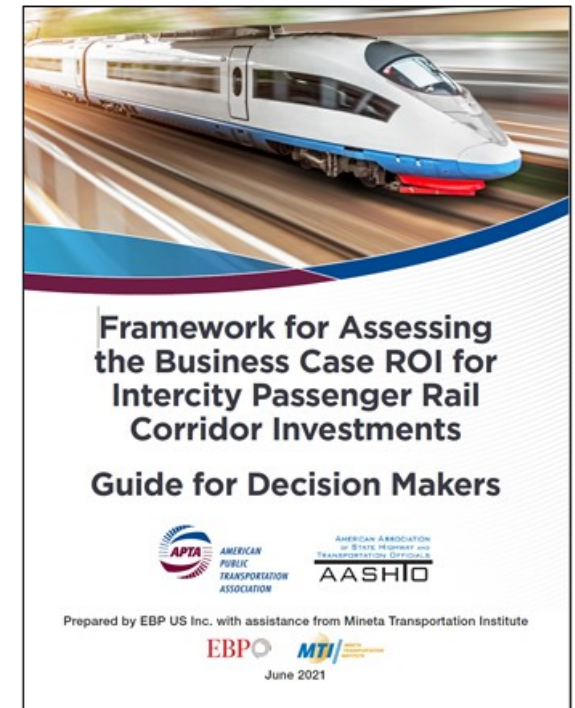
ROI Elements - Identify relevant:

- ROI Stakeholders (agencies, organizations)
- ROI Issues and Concerns
- ROI Metrics and Methods



ROI Use - Engage applicable ROI stakeholders for:

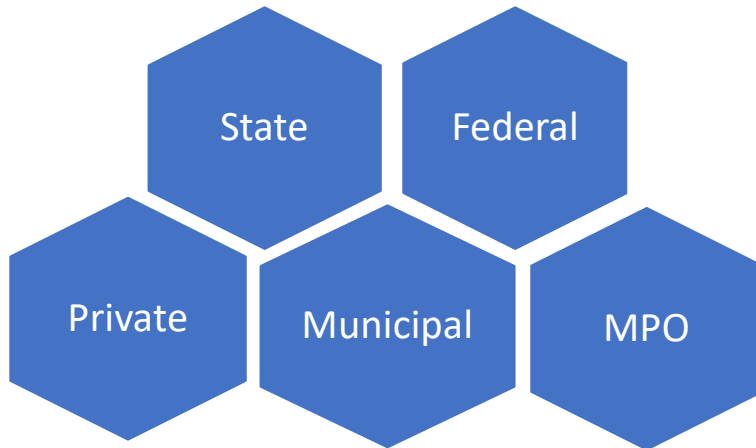
- Finance
- Support
- Plan approval
- Development



ROI Stakeholders: Relevant Parties

Recognize that Intercity Passenger Rail is different from Hwy

1. Highway oriented assessment is not sufficient for IPR
2. Planning and financing is more complex, more parties involved (due to focus on operators, station development, supporting services)
3. User base involves on specific constituencies and city/region links



ROI Perspectives - Issues and Concerns

Perspective	Constituency	HS&IPR Public Policy Talking Points (benefit issues)
National Benefit	US (taxpayers, residents and business)	<ul style="list-style-type: none"> • saves time, expense and improves safety for travelers • enhances national productivity and hence GDP • can alleviate the need for investments in aviation and highway systems • reduce greenhouse gas emissions
State Benefit	State (taxpayers, residents and business)	<ul style="list-style-type: none"> • enhances efficiency of the state's highway, rail and aviation facilities effectively enlarges labor and business markets • leading to more economic activity and tax base growth over time
Local Benefit	Station area, city or metro (taxpayers, residents, business)	<ul style="list-style-type: none"> • supports growth (of jobs, income, investment) around HSR stations; adding tax revenue • visitors may also dwell longer and spend more money in the city

ROI Metrics and Methods

1. User Benefits

- Travel Time & Cost Savings
- Reliability & Induced Travel Impacts

2. Societal Spillovers

- Emissions
- Safety

3. Spatial Connectivity

- Regional Economic Integration
- Intermodal Access to Broader Markets
- Regional Equity: Income Opportunities

4. Risk Reduction

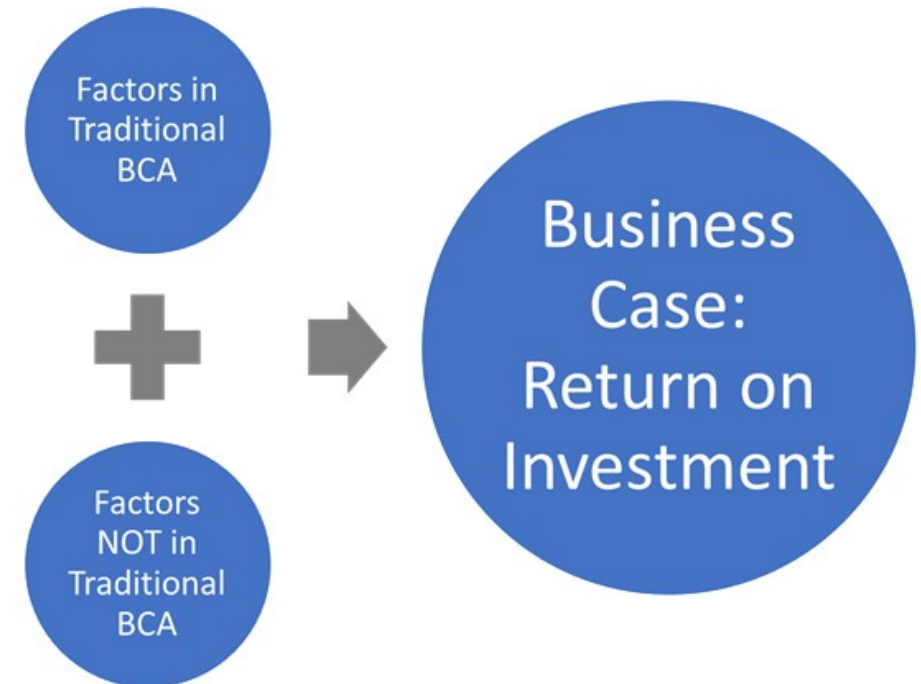
- Resilience/Redundancy (Backup Options)
- Economic Futures (incl. Jobs-Housing Balance)

5. Local Land Impact

- Local Development (productivity and density)

6. Operator Impact

- Revenues & Life Cycle Costs



Different Factors of Importance from Different Perspectives

Impacts Potentially Relevant for a HS&IPR Business Case	Federal Govt.	State Govt.	Local + Metro Govt.	Rail System Operators	Land Owners + Developers
1. User Benefits					
Travel Time Savings	⊞⊞⊞	⊞⊞			
Travel Time Reliability	⊞⊞⊞	⊞⊞			
Travel Cost Savings	⊞⊞⊞	⊞⊞			
Induced Travel	⊞⊞⊞	⊞⊞			
2. Societal Spillover Benefits					
Emissions	⊞⊞⊞	⊞⊞	⊞		
Safety	⊞⊞⊞	⊞⊞	⊞	⊞	
3. Spatial Connectivity Benefits					
Regional Integration		⊞⊞⊞			
Intermodal Transfer Connectivity	⊞	⊞⊞⊞			⊞
Equity		⊞⊞⊞	⊞⊞⊞		
4. Risk Reduction Benefits					
Resilience/Redundancy		⊞⊞⊞	⊞⊞⊞		
Sustainable Economic Future		⊞⊞⊞	⊞⊞⊞		
5. Local Land Impacts					
Local Land Development			⊞⊞⊞		⊞⊞⊞
6. Operator Impact					
Operator Revenues				⊞⊞⊞	⊞⊞⊞
Life Cycle Costs	⊞⊞	⊞⊞		⊞⊞⊞	⊞⊞⊞

Illustrative Example

Methods to Quantify and Monetize Values

*Dismiss the doubters who see a “zero sum” gain from regional benefits
...identify and document (don’t ignore) real gains*

1. Creating activity concentrations at station areas (generating economic scale benefits)
2. Connecting complementary econ activities (enabling market synergies, satellite activities)
3. Expanding intermodal connectivity options
4. Saving on costs paid due to inequity, jobs-housing imbalance, lack of infra redundancy, infrastructure capacity imbalance (*costs to: affected parties, government, society*)



Yes they can be measured



Examples: Measuring Broader Public Benefits

Don't make it overly complicated; just talk with key players to identify key benefit categories, then document their magnitude and \$

1. Connecting complementary economic activities
(enabling market synergies, satellite activities)
2. Creating activity concentrations at station areas
(generating income from economic scale)
3. Expanding intermodal connectivity options
4. Saving on costs paid due to access inequity, jobs-housing imbalance
(costs to affected parties, government, society)
5. Reducing cost risks from road closures, natural disasters, weather events, infrastructure failures
(cost savings from having alternative options)

e.g., connecting university, R&D, sports activity centers

e.g., airport transfers, expanding markets, saving time

e.g., Δ income, payments for unemployment, housing subsidy, poverty programs

ROI Should Include Multi-Jurisdiction Linkage Impacts

- It involves multiple jurisdictions - linking cities and usually also states.
- It concentrates activity at key intermediate cities and their station areas.
- These activity links are of local + state interest

Boston Metro – NYC Metro Intermediate Stops

- Air – 0
- Acela – 3 * ● (CT and RI)
- Amtrak Regional – 8 * ●
- I-95 Highway – over 60 ○

* *plus Stamford within NY metro and 128/Westwood in Boston metro)*



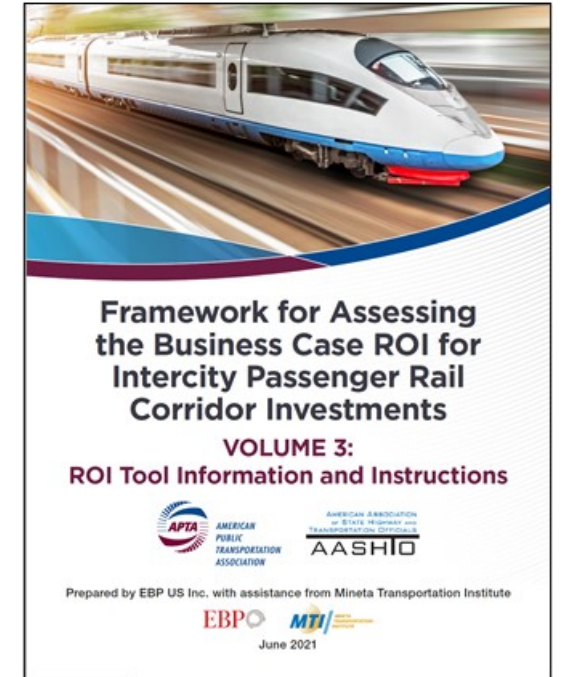
3. IMPLEMENTATION PROCESS – Underlying Foundation

No single perspective captures all benefits to all parties.
Each perspective recognizes some and ignores others.

A multi-perspective approach can recognize all benefits
and allocate them to jurisdictions that value them.

Each jurisdiction can have its own ROI based on its
recognized benefits and corresponding allocation of costs.

Result is higher overall ROI and stronger case for
federal-state-local-private support and funding participation.



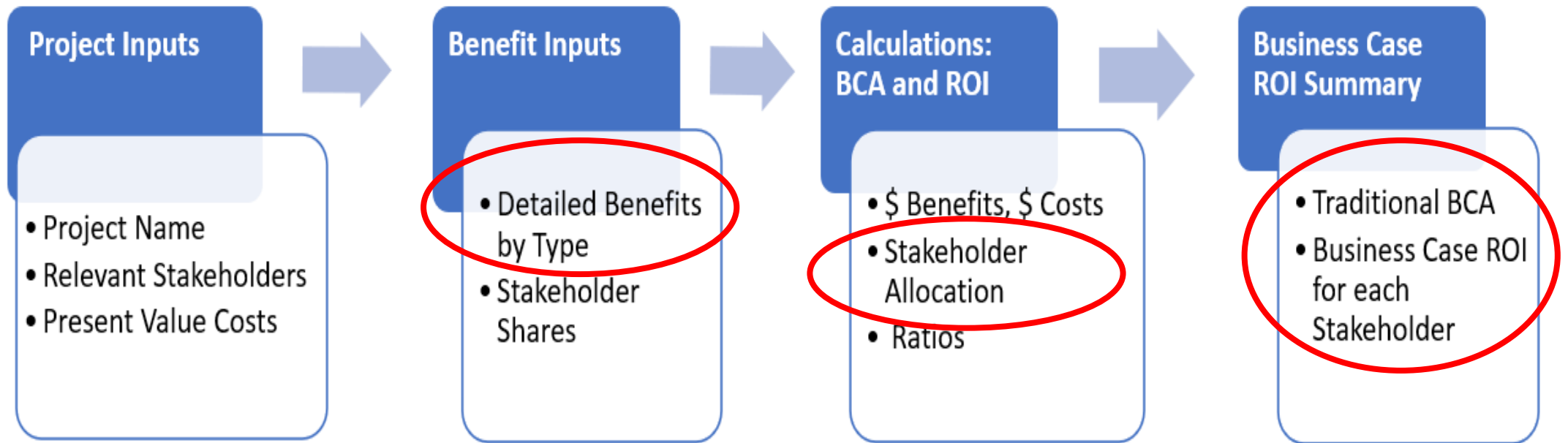
→ *The ROI Tool calculates and allocates benefits for each perspective*

Process Steps

- 1) Identify + Engage all relevant parties (state, regional, local, private) and agree on business case themes
- 2) Define scenarios, assemble data for business case metrics –leverage the ROI Guide using travel demand + economic data for a common measurement framework
- 3) Evaluate metric from relevant perspectives – leverage the ROI Guide and Tool to discern different perspectives and cumulative benefits among parties
- 4) Communicate results on cumulative benefits and costs among parties to provide a more complete Business Case ROI
- 5) Use the results to support public/private and state/local/federal decision-making and financing



Business Case ROI Tool (spreadsheet workbook)



Basis for Allocating Benefits Among Jurisdictions

Illustrative allocations based on transportation model

- by Track Mileage - for allocating operation and maintenance costs
- by Passenger-Miles - for allocating emissions reduction benefits
- by Station (Origin) Boardings - for allocating Δ passenger-hrs. (time savings), as well as passenger cost savings and traveler safety gain

Illustrative allocations based on transportation and economic models

- by Station Destination Alightings - for allocating local spending and income effects
- by Government Unit - for tax base gain, subsidy cost reduction, risk cost reductions
- by Region - for population unemployment reduction, income gain
 - for employment market expansion, productivity gain

Benefit Input and Allocation

Rail Project X - Benefit Input and Allocation																
Breakdown of Benefit Types into submetrics, approaches to valuation, and Stakeholder allocation																
Benefit Category	Benefit Type	Economic Value Measure	Valuation Approach	Source of Valuation (see	Stakeholder Allocation Basis	Total PV to be Allocated	Federal	State 1	State 2	State 3	Local 1	Local 2	Public Agency	P3 Project Developers		
LOCAL LAND IMPACTS	Time Savings	\$ value passenger hours saved by existing rail users	Average hourly value of travel time - intercity rail travelers	DOT, FAA guidance	reduction in annual passenger hours, by stakeholder trip origins	\$ 537,000,000	46%	27%	6%	41%	74%	74%	18%	13%		
		\$ value passenger hours saved by car users shifting to rail	Average hourly value of travel time - intercity highway travelers			\$ 3,000,000,000	80%	45%	68%	69%	66%	48%	79%	72%		
		\$ value passenger hours saved by intercity bus users shifting to rail	Average hourly value of time - intercity bus travelers			\$ 50,000,000	42%	93%	5%	73%	16%	70%	59%	48%		
		\$ value person hours reduced for air travelers shifting to rail	Average hourly value of time - air travelers		\$ 200,000,000	national level effects only	71%	52%	60%	96%	4%	64%	81%	6%		
		\$ value passenger hours saved by remaining car users	Average hourly value of travel time - intercity highway travelers		\$ 500,000,000	reduction in annual passenger hours, by stakeholder trip origins	8%	35%	24%	99%	58%	83%	37%	74%		
		\$ value passenger hours saved by remaining bus users	Average hourly value of time - intercity bus travelers		\$ 500,000,000	reduction in annual passenger hours, by stakeholder trip origins	83%	20%	10%	86%	68%	84%	20%	48%		
		\$ value passenger hours saved for remaining air travelers, including propagated delay	Average hourly value of time - air travelers		\$ 500,000,000	national level effects only										0%
		Total Time Savings Benefits						\$ 5,287,000,000								
	LOCAL LAND IMPACTS	Cost Savings	reduced auto vehicle operating costs from reduced VMT - auto to rail mode shift	VOC per mile for light duty vehicles	DOT, FAA guidance	reduction in annual VMT, by stakeholder trip origin	\$ 100,000,000									
			reduced air travel costs - air to rail mode shift	average commercial air fare		reduction in annual air passenger trips, by stakeholder trip origin	\$ 300,000,000								68%	
reduced bus travel costs - bus to rail mode shift			average intercity bus fare	reduction in annual bus passenger trips, by stakeholder trip origin		\$ 25,000,000	30%	44%	80%	82%	4%	53%	36%	18%		

Allocation % provides a view of relative benefits among parties.

They will sum to over 100 % whenever benefits overlap among parties

Example of Results

Benefit	Total Benefit (PV)	Total Benefit							Public	P3 Project
		Federal	State 1	State 2	State 3	Local 1	Local 2	Agency	Developers	
Time Savings	\$ 5,287,000,000	97%	30%	26%	40%	18%	28%	10%	0%	
Cost Savings	\$ 850,000,000	93%	30%	23%	40%	14%	20%	10%	0%	
Reliability Savings	\$ 200,000,000	85%	35%	20%	30%	15%	30%	10%	0%	
Induced Travel	\$ 200,000,000	90%	40%	30%	20%	30%	30%	10%	0%	
Environmental (Emissions)	\$ 380,000,000	40%	13%	15%	12%	9%	9%	2%	0%	
Safety	\$ 35,000,000	100%	30%	25%	45%	30%	30%	0%	0%	
Regional Integration	\$ 1,500,000,000	40%	30%	40%	30%	50%	50%	0%	0%	
Intermodal Transfer	\$ 2,000,000	100%	30%	25%	45%	30%	30%	10%	0%	
Equity	\$ 10,000,000	50%	30%	20%	20%	30%	25%	0%	0%	
Resilience (Redundancy)	\$ 20,000,000	100%	30%	25%	45%	40%	40%	0%	0%	
Sustainable Economic Future	\$ 1,000,000	90%	50%	30%	10%	30%	30%	17%	0%	
Local Land Value	\$ 10,000,000	10%	30%	20%	30%	50%	50%	50%	0%	
Local Land Development	\$ 10,000,000	10%	30%	20%	30%	50%	50%	50%	30%	
Revenue	\$ 1,500,000,000	10%	10%	10%	10%	30%	30%	20%	50%	
Life Cycle Cost Savings	\$ 1,000,000,000	10%	10%	10%	10%	30%	25%	80%	0%	
Total	\$ 11,005,000,000	7353903775	2770035249	2617556213	3332400000	2737800000	3271049641	1772689622	753000000	
Total Stakeholder-based benefits	\$ 24,608,434,500									
Global ROI	1.10									
		Federal	State 1	State 2	State 3	Local 1	Local 2	Public Agency	P3 Project Developers	
Stakeholder Allocated Benefits		\$ 7,353,903,775	\$ 2,770,035,249	\$ 2,617,556,213	\$ 3,332,400,000	\$ 2,737,800,000	\$ 3,271,049,641	\$ 1,772,689,622	\$ 753,000,000	
Stakeholder ROI (with costs allocated by total stakeholder benefits)		2.46	2.46	2.46	2.46	2.46	2.46	2.46	2.46	
Stakeholder ROI (with costs allocated by user benefits only)		1.88	2.24	2.49	2.10	3.76	3.00	4.37	NA	

Guide for Decision-Makers

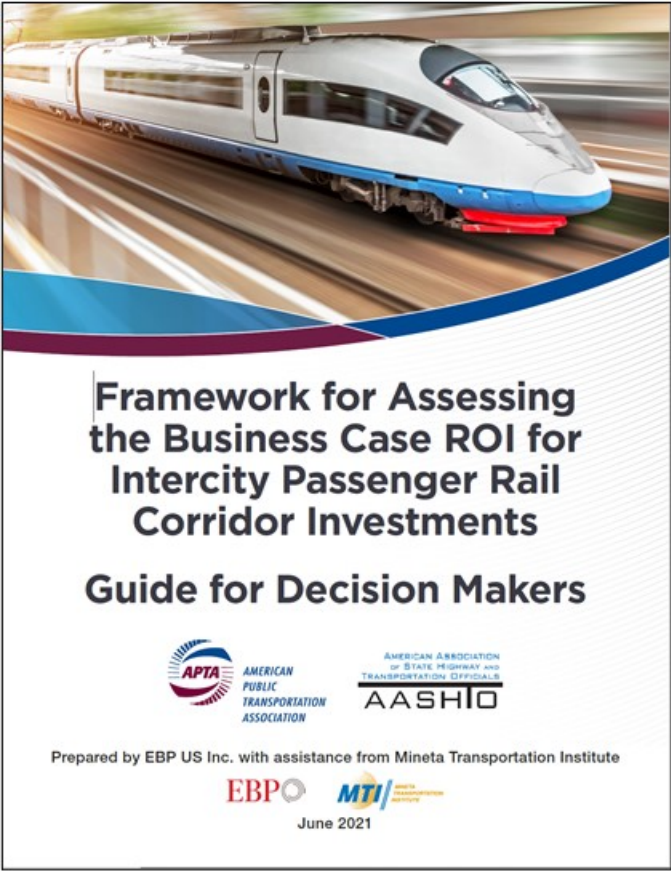
14 pages

Technical Appendices

41 pages

ROI Tool

Spreadsheet + instructions



Framework for Assessing the Business Case ROI for Intercity Passenger Rail Corridor Investments
Guide for Decision Makers

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 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AASHIO

Prepared by EBP US Inc. with assistance from Mineta Transportation Institute

EBP MTI
 June 2021

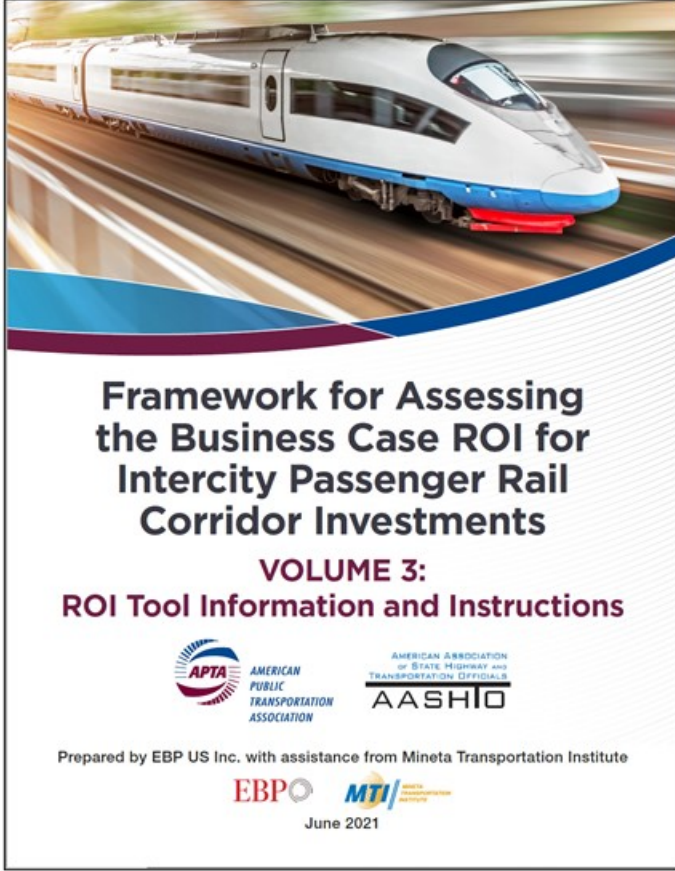


Framework for Assessing the Business Case ROI for Intercity Passenger Rail Corridor Investments
VOLUME 2: Technical Appendices

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Framework for Assessing the Business Case ROI for Intercity Passenger Rail Corridor Investments
VOLUME 3: ROI Tool Information and Instructions

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Guides and Tool at <https://rail.transportation.org>

NEXT STEPS

DOTs, other agencies to utilize the Business Case ROI Approach

- Flexible Use – selection of parties, relevant themes
- Can use the documentation methods with or without the allocation spreadsheet
- Looking for pilot opportunities to demonstrate practical use of methods
- Report on results – successes, limitations, challenges for future

Discussion of challenges and opportunities

Guides and Tool at <https://rail.transportation.org>

4. DISCUSSION

Panelist Remarks

- Arun Rao, Chair, States-for-Passenger Rail Coalition, Passenger Rail Manager, Wisconsin Department of Transportation
- Patricia Quinn, Exec. Director, Northern New England Passenger Rail Authority
- Sharon Greene, Managing Principal, InfraStrategies

Q&A

Responses by presenter, panel, and support by Charlie Quandel (Quandel Consultants) and Ira Hirschman (EBP)

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