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Prioritizing Projects Emerging from Aviation System Plans

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The primary purpose of airport system planning is to study the performance and interaction of an entire aviation system to understand the interrelationship of the member airports.

- FAA Advisory Circular 150/5070-7,
The Airport System Planning Process, 2004

The Role of Economic Analysis in a System Plan

Among goals of a System Plan are:

- To provide for the timely development of airports that will meet the air transportation needs and economic goals of the system planning study area
- To maximize the economic benefits from the development of the airport system

- FAA Advisory Circular 150/5070-7

FAA lists 25 scoping items that may be included in a System Plan

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- Economic studies to measure the benefit of interrelated developments in the network of airports and their impact on airport activity

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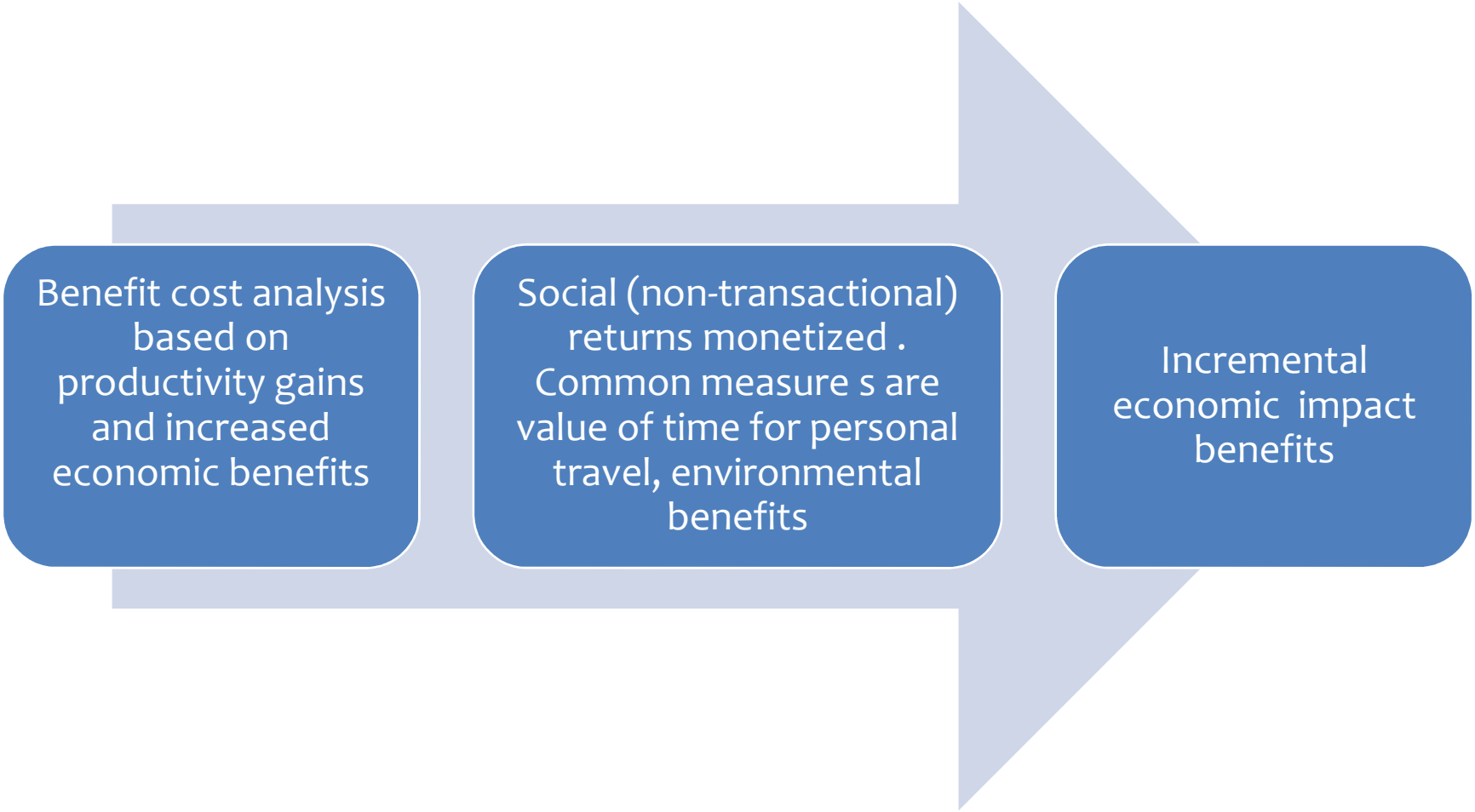
- Performance indicators or priority systems for pavement management and capital improvement plans

Return on Investment in System Planning



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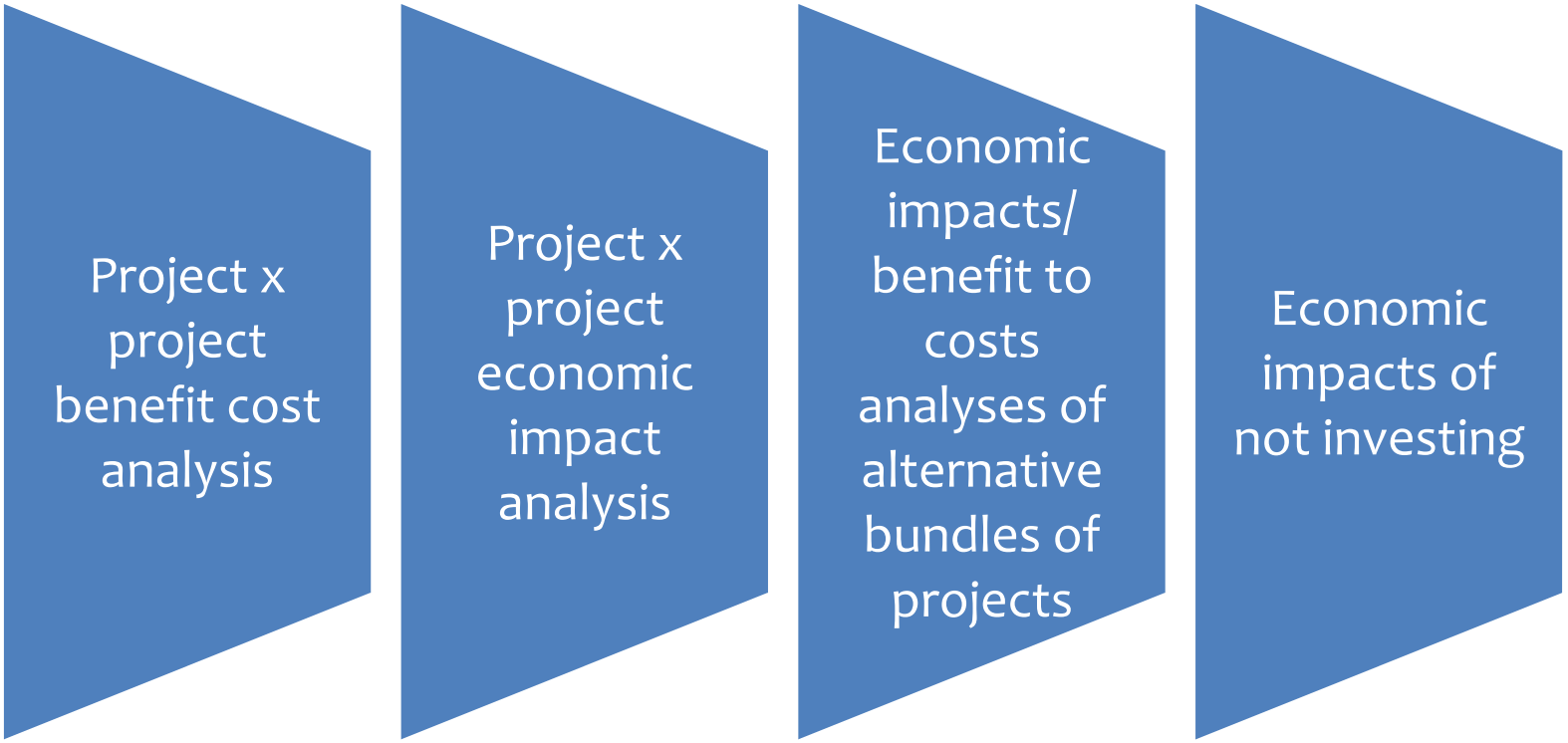
Setting Priorities in Transportation

States are using economic criteria to help prioritize surface transportation improvements.



Among these are North Carolina, Kansas & Ohio.

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Example of Criteria

Performance Measures
Congestion
Safety Score
Pavement Score
Benefit/Cost
Economic Competitiveness (Value Added in $)
Lane Width (Existing Width vs. Standard Width)
Shoulder Width (Existing Width vs. Standard Width)

Source: North Carolina DOT Project Prioritization Process

Multiple Reasons to Support Projects

Project Classification	Engineering Data	Local Input	Economic Impact
Preservation	100%		
Modernization	80%	20%	
Expansion	50%	25%	25%

Source: Kansas DOT “Tworks”

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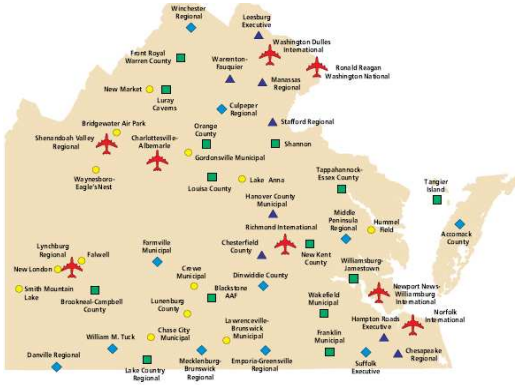
Aviation System Plans Include

- Actions and projects to improve system performance relative to airport-specific facility, service, and equipment objectives; and provide
- Generalized cost estimates related to implementing improvements identified in the system plan



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Examples of Projects Evaluated & Recommended in System Plans

Safety/Security	Services	Airfield Operations
De-Icing Equipment	Auto Parking	Apron
Fencing	Ground Transportation	Parallel Taxiway
Snow Removal Equipment	Hangars	Precision Approach or LPV/APV
Maintenance Facilities	Paved Aircraft Parking	Runway Extension
Runway Edge Lights (LIRL, HIRL, MIRL)	Terminal Improvements	Runway Strengthening
Weather Reporting facilities		Runway Widening
		Upgrade Airport Role in State
		Visual Aids

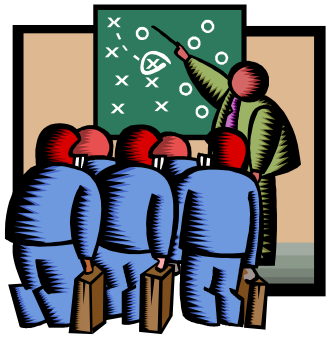
Metrics Derived/Inferred from System Plans

- Rough cost estimates
- Approximate implementation schedules
- Likely benefits of investments (e.g., operations, enplanements, reduced diversions)
- Forecasts of operations, enplanements & fleet mix

Are Some Capital Investments More Important than Others?

Who wants to know?

- Managers of aviation and transportation budgets
- Policy makers who appropriate state & local expenditures for airports
- Airlines and other airport stakeholders



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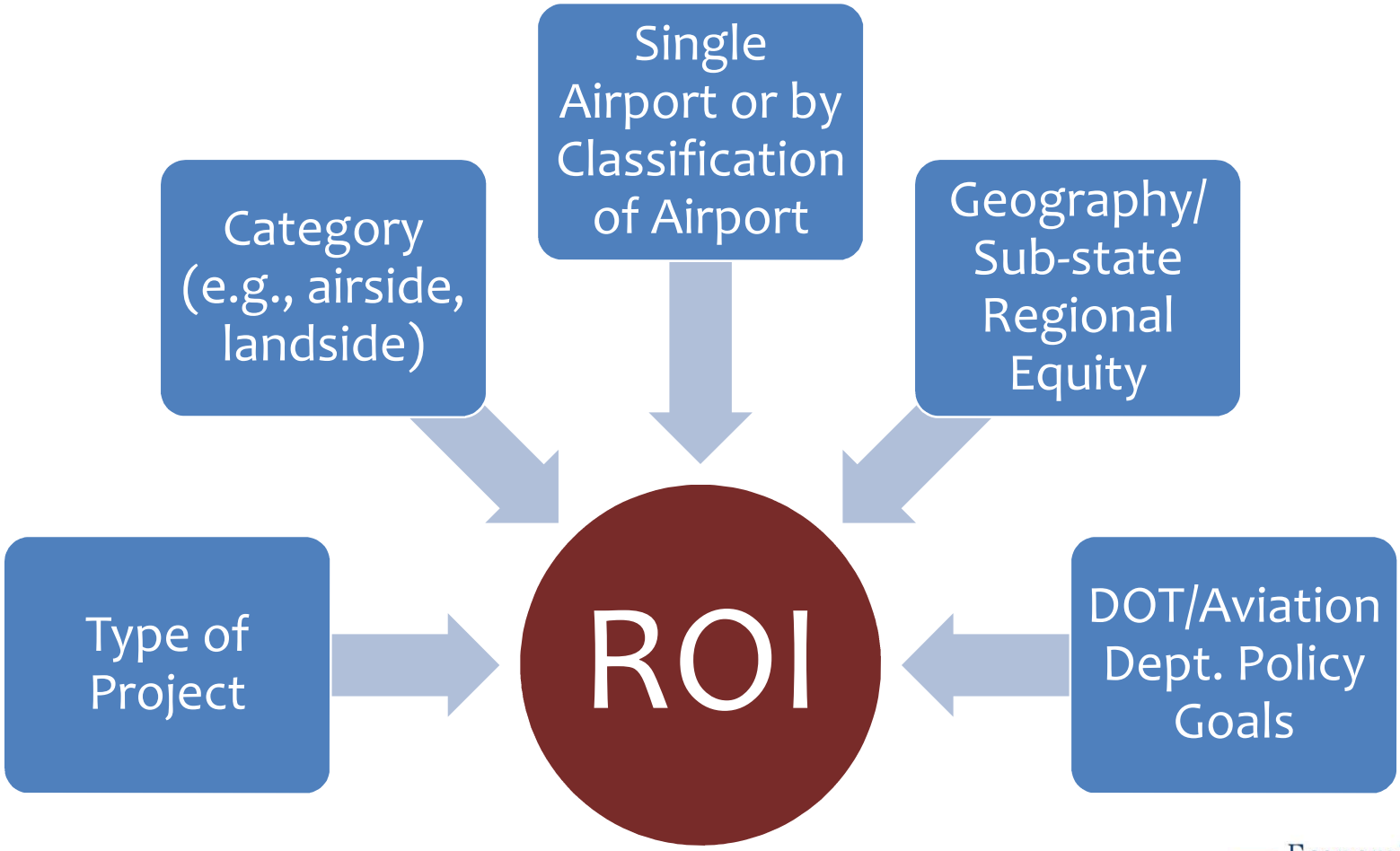
Different Ways to Classify ROI Element of System Plan



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Project Profile – Single Project

	Discounted Present Value ($)
(A) Travel Efficiency (User) Benefits	
Savings in Travel Cost - in the air	$6,666,386
Value of reduction in Traveler Time	$26,976,097
Total Value of Efficiency Benefits	**$33,642,483**
(B) Other Public Benefits	
Emissions (tons/year)	---
Noise level Index (dBA)	---
Safety Improvements (scale)	---
$ Value of Environmental Benefits	$493,736
Cargo - Transportation Savings	$0
Cargo - Production Savings	$0
Total Value: Efficiency + Public Benefits	**$34,136,218**
(C) Local Economic Development Benefits	
Value of Net Income Growth	$21,380,874
Value of Other Economic Benefits	$0
Total Value: Economic Development Benefits	**$21,380,874**
(D) Public Revenue Benefits	
Additional Airport Tax && Fee Revenue	$134,092
Additional Community Tax & Fee Revenue	$317,833
Additional State Tax && Fee Revenue	$192,540
Total Public Revenues	**$644,465**
Project Costs	
Additional Capital Improvement Cost	$9,535,914
Additional Ongoing Maintenance Cost	$75,882
Total Additional Cost of Project	**$9,611,796**

Benefits - Costs	Benefit/ Cost Ratio	Net Benefit - Cost
Travel Efficiency Benefit (A)	**3.50**	**$24,030,687**
Statewide Public Benefit (A+B)	**3.55**	**$24,524,423**
Local Public Benefit (A+B+C)	**5.78**	**$45,905,297**
Public Revenue (D)	**0.07**	**($8,967,331)**

Runway Extension - 30 year cost and benefit stream

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Benefit/Cost by Different Perspectives

Benefit	Perspective	Benefit / Cost Ratio	Net Present Value
Traveler Efficiency Benefit	User Benefits/ Costs	3.50	$24,031,000
General Public Benefits	(User Benefits + Other Public Benefits)/ Costs	3.55	$24,524,000
Wider Benefits	(User Benefits + Other Public Benefits + Discounted GSP)/ Costs	5.78	$45,905,000
Fiscal Impacts	Public Revenue/ Costs	0.07	($8,967,000)

Multi-Modal Improvements

Present Value of Benefit Stream ($m 2013 Const Dollars)

Mode	(A) Traveler Money Benefit		(B) Value of Traveler Non-Money Benefit			(C) Shipper Logistics Productivity ($)	(D) Mkt Access / Other Prod. ($)	(E) Social & Environ Value
	(A1) Vehicle Operating Costs	(A2) Business Time + Rel Cost	(B1) Personal Time + Rel Value	(B2) Safety Reduction Value	(B3) Consumer Surplus Value			
Passenger Car - Business	0.94614	3.16359	0	0.24986	0	0	--	0.0508
Passenger Car - Personal	0	--	0	0	0	0	--	0.02428
All Trucks - Freight	0	0	0	0	0	0	--	0
Passenger Bus - Personal	0	--	0	0	0	0	--	0
Commercial Jet - All	0	0	0	0	4.04333	0	--	-0.02749
Regional Jet - All	0	0	0	0	0	0	--	0.09193
Jumbo Jet - All	0	0	0	0	0	0	--	0.09314
Totals	0.94614	3.16359	0	0.24986	4.04333	0	2.06533	0.23267

Present Value of Cost Stream ($m 2013 Const Dollars)

Facility Type	Startup Costs	Annual O&M Costs	Residual Value	Net Total Costs
Road	0	-1.22692	0	-1.22692
Rail	0	0	0	0
Air	9.30713	-3.90457	0.39475	5.00781
Marine	0	0	0	0
Total for All Facilities	9.30713	-5.13149	0.39475	3.78089

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Bang for the Buck: Benefits & Costs

Airport	Project	Travel Efficiency Benefits ($1000s)	Total Public Benefits ($1000s)	Govt. Revenue ($1000s)	Project Cost ($1000s)	Travel Efficiency	Total Public B/C	Govt.
AAA	Runway Extension	$23,823	$24,142	$0	$9,895	2.41	2.44	0.00
AAB	Runway Extension	$13,642	$14,136	$644	$9,612	1.42	1.47	0.07
AAC	Parallel Taxiway	$1,993	$2,152	$0	$2,081	0.96	1.03	0.00
AAD	Runway Extension	$12,167	$12,615	$585	$8,718	1.40	1.45	0.07
AAE	Runway Widening	$15,079	$17,252	$0	$4,938	3.05	3.49	0.00
AAF	PCI Increase	$1,793	$1,817	$79	$1,782	1.01	1.02	0.04
AAF	Taxiway Lighting	$398	$432	$15	$125	3.18	3.46	0.12
AAG	PCI Increase	$1,152	$1,194	$57	$920	1.25	1.30	0.06
AAG	Parallel Taxiway	$1,869	$1,942	$45	$2,053	0.91	0.95	0.02
AAH	Taxiway Lighting	$91	$99	$11	$75	1.21	1.32	0.15
AAI	Parallel Taxiway	$1,823	$1,890	$0	$1,755	1.04	1.08	0.00
AAJ	PCI Increase	$889	$966	$25	$920	0.97	1.05	0.03
AAJ	PAPI (visual guidance)	$29	$46	$0	$40	0.73	1.15	0.00
AAK	PCI Increase	$945	$1,027	$0	$920	1.03	1.12	0.00
AAL	Runway/Highway Widening	$8,403	$10,701	$0	$3,781	2.22	2.83	0.00

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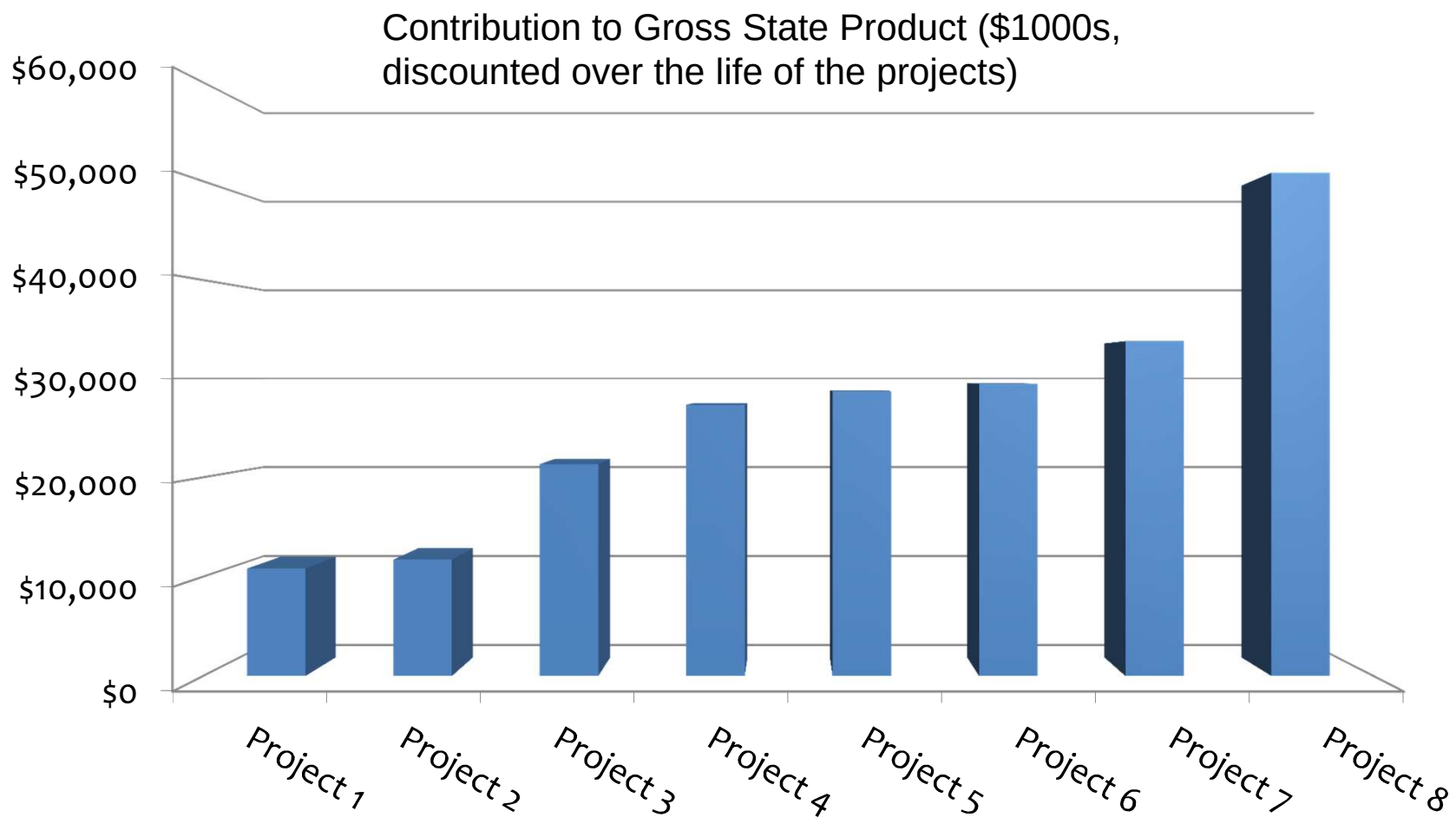
Net Present Value & Benefit Cost Ratio

Airport	Project	Net Present Value ($1000s)	Total Public B/C
AAE	Runway Widening	$12,314	3.49
AAF	Taxiway Lighting	$307	3.46
AAH	Taxiway Lighting	$153	3.04
AAL	Runway/Highway Widening	$6,920	2.83
AAA	Runway Extension	$14,247	2.44
AAB	Runway Extension	$4,524	1.47
AAD	Runway Extension	$3,897	1.45
AAG	PCI Increase	$247	1.30
AAI	Parallel Taxiway	$354	1.20
AAJ	PAPI (visual guidance)	$6	1.15
AAK	PCI Increase	$107	1.12
AAJ	PCI Increase	$46	1.05
AAC	Parallel Taxiway	$71	1.03
AAF	PCI Increase	$35	1.02
AAG	Parallel Taxiway	-$111	0.95

Marginal Economic Impacts



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System Planning using ROI

Decide on Important Measures/ Categories

Analyze possible investments as System Plan is being developed to help decide on project that should be recommended

Prioritize final recommendations

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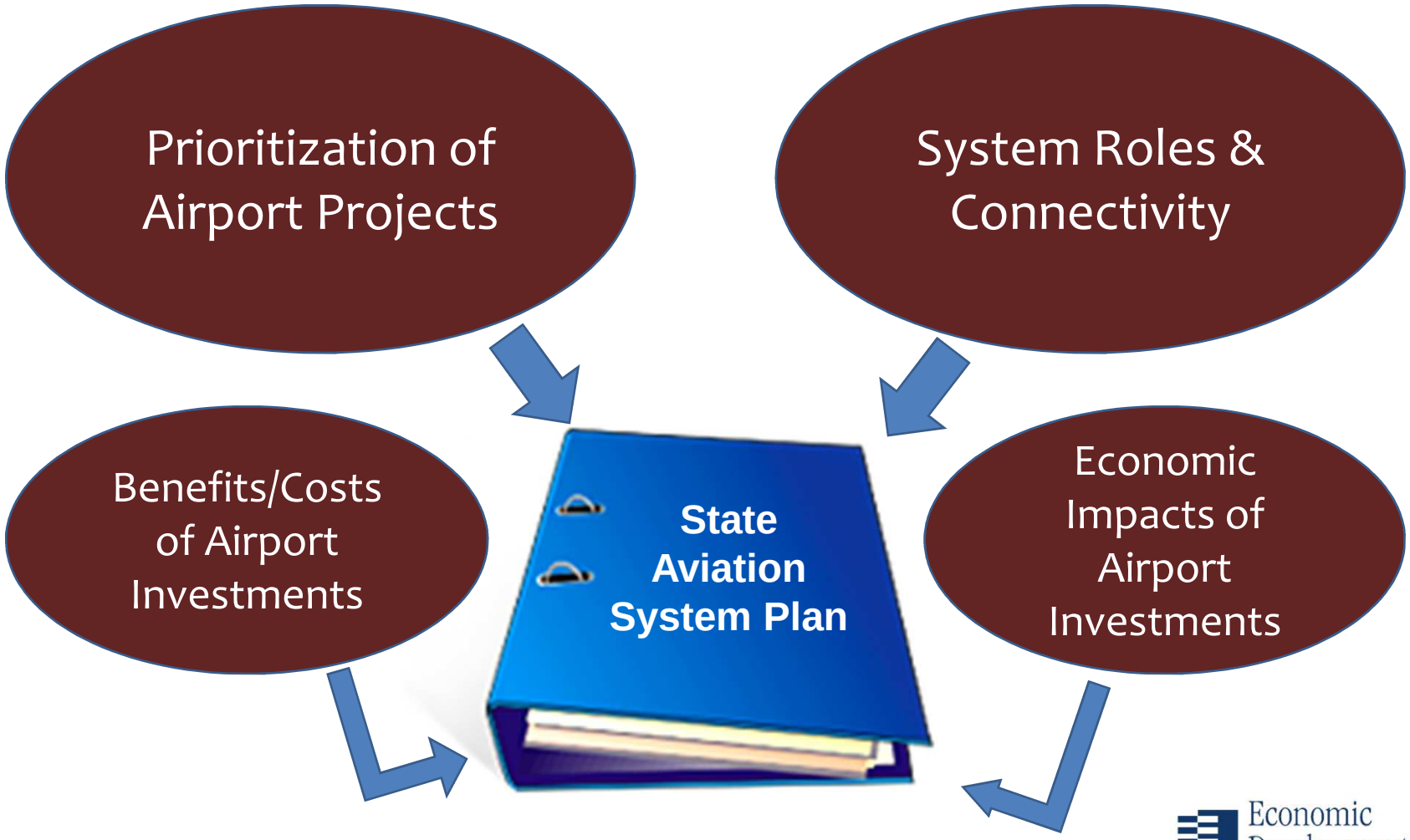
Economic Analysis Communicates ROI Of Airport Investment

- Demonstrates how economic analysis is being used in the screening/selection process and how it helps lead to better decisions on how to spend public money

Measures	Key Application issues in State System Plan
User time and cost factors Broader economic impacts	For airport improvements Need to balance large and small airports/commercial and GA-only airports

Setting & Communicating Priorities



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Thank You

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