

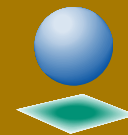
Least Cost Planning (LCP) for Transportation:

Presentation to
Oregon Transportation Commission

July 21, 2010



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Agenda

- Project objectives
- LCP background – origins, principles, and attributes
- Findings from the four case studies
- How does Oregon compare?
- Questions and answers

Objectives of our Study

- Provide overview of history and applications of LCP for transportation
- Describe and compare different conceptions and applications of LCP
- Discuss their strengths and weaknesses, through case studies and lessons learned

Origins of Least Cost Planning

- LCP first developed in electric utility industry
- Initially: to consider broader set of choices for meeting service requirements
- Motivated by volatility in oil prices, federal legislation, push for conservation
- Key characteristics:
 - explicit consideration of objectives
 - wide variety of options, including demand management
 - consideration of environmental and other social costs
 - public participation
 - uncertainty analysis

There is No One Method to Do LCP

- Cost Minimization, Cost Effectiveness Analysis
- Goals Achievement
- Community Impact Evaluation
- Cost Benefit Analysis (standard and extended frameworks)
- Multiple Accounts Evaluation
- Multi-Criteria Analysis (weighted or not)
- Social Return on Investment
- Sustainable Return on Investment
- Strategic Environmental Assessment
- Agency-specific approaches
 - MICA (WSDOT)
 - MIN / CoSS (VDOT)
 - SCS (CALTRANS)
 - NATA (UK DfT)
 - ITA (Auckland RTA)
 - Etc.

Principles of Least Cost Planning

- 1) The evaluation framework rolls up multiple goals.
- 2) The range of Oregon-specific transportation policy goals and objectives can be addressed.
- 3) A broad range of possible multi-modal capacity, demand-management, land-use, maintenance, and other planning options can be considered.
- 4) Members of the community and decision makers are engaged in the planning and decision-making process.
- 5) The approach facilitates the adoption of a meaningful, relevant and operationally useful basis for choice.
- 6) The methodology can be applied at the project-specific level, and the collective (multi-project) level.
- 7) The approach has been used for transportation planning.

Evaluation of Methods against Least Cost Planning Principles

	1) Multiple goals	2) Oregon-specific policy goals	3) Demand-management and other planning options	4) Engagement of communities and decision	5) Useful basis for choice	6) Project specific or multi-project	7) Has been used
Cost Minimization, Cost Effectiveness Analysis	0	0	2	0	2	2	2
Goals Achievement	2	1	1	0	1	2	2
Community Impact Evaluation	2	1	2	1	1	2	2
Cost-Benefit Analysis, Standard Framework	1	0	1	0	2	2	2
Cost-Benefit Analysis Extended Framework	1	1	2	0	2	2	2
Multiple Accounts Evaluation	2	2	2	0	2	2	2
Multi Criteria Analysis (MCA)	2	2	2	2	1	2	2
Social or Sustainable Return on Investment	1	1	2	2	2	2	1
Strategic Environmental Assessment	1	1	1	2	1	1	1

0 = not satisfied ; 1 = partially satisfied; 2 = fully satisfied

Technical Attributes of Least Cost Planning

- 1) Costs and benefits are measured in terms that facilitate the comparison of planning options (such as monetary-equivalent units).
- 2) The approach makes use of quantitative and qualitative evidence.
- 3) Impacts on the non-users of planning options and projects are estimated.
- 4) Indirect effects, such as changes in local employment and land use, are accounted for.
- 5) Interactions (“synergies”) between planning options are considered.
- 6) The approach explicitly accounts for risk and uncertainty in forecasts and cost and benefit calculations.

Evaluation of Methods against Technical Attributes

	1) Facilitates comparison of options	2) Uses quantitative and qualitative evidence	3) Considers impacts on non-users	4) Accounts for indirect effects	5) Considers interactions and synergies	6) Accounts for risk and uncertainty
Cost Minimization, Cost Effectiveness Analysis	2	0	1	1	0	0
Goals Achievement	1	1	1	0	0	1
Community Impact Evaluation	2	2	2	2	1	0
Cost-Benefit Analysis Standard Framework	2	0	0	0	0	1
Cost-Benefit Analysis Extended Framework	2	0	2	2	1	1
Multiple Accounts Evaluation	2	0	2	2	1	1
Multi Criteria Analysis (MCA)	2	2	2	2	1	0
Social or Sustainable Return on Investment	2	0	2	2	1	2
Strategic Environmental Assessment	1	1	2	2	1	1

0 = not satisfied ; 1 = partially satisfied; 2 = fully satisfied

Criteria for Case Study Selection

- Our four case studies represent some of the most advanced and well-documented examples of LCP in the transportation industry
- They employ the key principles and attributes that are important to Oregon
- They are diverse in scope (national, statewide, and regional applications) and in content (program and project-specific applications)

Case Studies

No.	Case Study Location	Scale	Project/Program
1.	WA – Puget Sound Regional Council	Metro Area - state as driver	Transportation 2040
2.	United Kingdom – UK Department for Transport	National	New Approach to Appraisal - “Refresh”
3.	IN - Indianapolis	Metro Area – private sector as driver	Central Indiana Transportation Plan
4.	Virginia – Virginia DOT	State	VTrans 2035

Questions asked of Case Study Participants

- Give us an overview of the agency and its planning responsibilities
- To what extent does your agency's planning approach follow LCP principles?
- When was LCP introduced? Why? Who structured the process?
- How is LCP used to select projects and determine priorities?

Case Study Questions, Cont.

- How are the benefits of multi-modal options weighed?
- How are you accounting for risk and uncertainty?
- Are you considering possible changes to the built environment?
- Give us your agency's evaluation: overall satisfaction, strengths and weaknesses, etc.
- What are the lessons from your experience?

Key Findings Across Case Studies

- 1) Applications have developed in response to each agency's unique mission, mandate and goals
- 2) Stakeholders have helped improve the tools and the process
- 3) LCP has helped agencies and stakeholders make more transparent and informed decisions
- 4) LCP applications use a Benefit-Cost framework
- 5) LCP has been applied at both project and system levels
- 6) Applications have evolved and improved over time

Summary of Case Studies

Why is this LCP?

Comparison of Case Studies to LCP Principles

LCP Principles	PSRC	NATA	VTrans2035	Indianapolis
Multiple goals	✓	✓	✓	✓
Oregon-specific policy goals	Partially	Partially	Partially	Partially
Demand-management and other planning options	✓	✓	✓	✓
Engagement of communities and decision-makers	✓	✓	✓	✓
Useful basis for choice	✓	✓	✓	✓
Project specific or multi-project	Network	Project	Network	Project
Has been used in decision support	✓	✓	✓	✓

Summary of Case Studies

Why is this LCP?

Comparison of Case Studies to LCP Attributes

LCP Attributes	PSRC	NATA	VTrans2035	Indianapolis
Facilitates comparison of options	✓	✓	✓	✓
Uses quantitative and qualitative evidence	Both	Principally Quantitative	Both	Principally Quantitative
Considers impacts on non-users	✓	✓	✓	✓
Accounts for indirect effects		✓		✓
Considers interactions and synergies	✓	✓	✓	✓
Accounts for risk and uncertainty	✓	✓		✓

How does Oregon compare?

- Clear statewide policies that inform transportation decision-making
- Commitment from its leaders to consider the broader impacts and benefits of transportation on communities
 - economic
 - land use
 - environmental
- A robust and meaningful collaborative stakeholder involvement process
- Robust analysis tools
 - Land use model
 - Statewide Integrated Model



Questions