SROI
SUSTAINABLE RETURN ON INVESTMENT

A Triple Bottom Line Decision Making Framework

Sustainability Round-Table, Denver

October 12th, 2011

Name: Eric Bill, M. Econ, MBA
Title: Senior Economist, HDR Decision Economics

eric.bill@hdrinc.com
Contents

1. Introduce Sustainable Return on Investment (SROI)
2. Provide Examples of Recent SROI Projects
3. Explain SROI Methodology
4. Examples of SROI Results/Outputs
Full Portfolio of HDR Economics and Finance Services

- Alternative Delivery Methods
- Business Case Analysis
- Contingency Management
- Cost and Schedule Risk Analysis
- Cost-Benefit Analysis
- Cost Risk Analysis and Value Engineering (CRAVE™)
- Decision Support Frameworks
- Demand Forecasting
- Economic Development
- Economic Impact Analysis
- Enterprise Risk Management
- Financial Feasibility Analysis
- Financial Planning
- Grant Application Support
- Least Cost Planning
- Life Cycle Cost Analysis
- Operational Risk Analysis
- Policy Analysis
- Pricing and Revenue Forecasting
- Program Management Support
- Public-Private Partnership Program Support
- Regulatory Impact Analysis
- Schedule Optimization
- Statistical Analysis
- **Sustainable Return on Investment (SROI)**
- Third Party Review
Traditional Business Case Analysis

Life-Cycle Cost Analysis involves the analysis of the costs of a system or a component over its entire life span.

Financial Analysis involves evaluation of cash flow impacts to determine investment suitability.

Traditional models often fall short:
- Only consider cash impacts
- Do not account for uncertainty
- Lack transparency
What is SROI?
Triple Bottom Line Decision Making Framework

It’s best practice in Cost-Benefit Analysis and Financial Analysis over a project’s entire life-cycle, augmented by:

➢ Accounting for uncertainty using state-of-the-art risk analysis techniques
➢ Engaging stakeholders directly to generate consensus and transparency

- Reduced Transport Air Emissions
- Increased Transportation Safety
- Reduced O&M Costs
- Transportation Time Savings / Reliability
- Transportation Cost Savings
- Reduced Stormwater Runoff
- Economic Development Benefits
- Economic Option Value
- Public Expenditures
- Higher Density / Higher Efficiency
Developed by HDR’s Decision Economics Group

Input from Columbia University’s Graduate School of International and Public Affairs

Launched into the public domain at the 2009 Clinton Global Initiative annual meeting

Elements of the SROI process have been used to evaluate the monetary value of sustainability programs and projects valued at over $10B
...to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions a priority...agencies shall prioritize actions based on a full accounting of both economic and social benefits and costs"
Sustainability: Additional Priorities

Assistant Secretary of the Treasury: National Infrastructure Bank will “improve the efficacy of our infrastructure investment by having a merit-based selection process”

Transportation Infrastructure Finance and Innovation Act (TIFIA)

Application: “emphasis on projects that minimize lifecycle costs and use environmentally sustainable practices and materials. For example, describe reductions in pollution (e.g., air, water, noise, etc.) that would result from the project”

US Government Accountability Office (GAO)

“Surface Freight Transportation” – Jan 2011 Report

Summarizes efforts to do full cost accounting for freight modes: identifying and quantifying all “external costs”...
SROI adds to traditional financial analysis the monetized value of non-cash benefits and externalities.
SROI Flow Diagram

**PROJECT TYPES**
- Capacity Expansion
- Modernization / Enhancements
- Communication / Security
- Preventative Maintenance

**SERVICE ATTRIBUTES**
- Access
- Frequency of Service
- Vehicle Speed
- Safety and Comfort

**SERVICES**

**BENEFITS**
- User Benefits
  - Time Savings
  - Out-of-pocket Cost Savings
- Safety

**BENEFITS**
- Non-user Benefits
  - Congestion relief
  - Reduced Emissions
  - Reduced System Costs
  - Reduced Public Costs
  - Economic Development
  - Option Value
Decision Metrics
From Both a Financial & SROI Perspective

- Net Present Value (NPV)
- Discounted Payback Period (DPP)
- Benefit to Cost Ratio (BCR)
- Internal Rate of Return (IRR)
- Return On Investment (ROI)
### Examples of Recent SROI Projects

<table>
<thead>
<tr>
<th>Client</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Defense</td>
<td>SROI analysis of the Fort Belvoir Community Hospital, USAG Humphreys in Korea, Fort Bliss in El Paso TX, etc.</td>
</tr>
<tr>
<td>BNSF, CSX &amp; UP Railroads</td>
<td>Proved the public benefit of dozens of new infrastructure projects resulting in over $700M in State &amp; Federal grants</td>
</tr>
<tr>
<td>City and County of Honolulu</td>
<td>SROI analysis of the merits of the local Waste-to-Energy plant as compared to alternative uses of the waste</td>
</tr>
<tr>
<td>Boston Redevelopment Authority</td>
<td>The city of Boston used SROI to analyze its portfolio of ARRA funded projects</td>
</tr>
<tr>
<td>Chicago Area Waterway System</td>
<td>Using SROI to help determine the most sustainable form of barrier between the Great Lakes and the Mississippi</td>
</tr>
<tr>
<td>Denver Metro Wastewater Reclamation District</td>
<td>Using SROI to make design &amp; construction decisions on Denver’s proposed new wastewater treatment facility</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>Provided SROI analysis of JHU’s Campus Sustainability Initiative project in order to secure LEED certification</td>
</tr>
<tr>
<td>Department of Energy</td>
<td>SROI analysis of energy and water reduction initiatives at Argonne National Laboratory Energy Sciences Building</td>
</tr>
</tbody>
</table>
Transit Benefits for Strategic Corridors, FTA

- Congestion management study of several corridors. Developed a model to measure the performance of transit in several cities, including: Washington DC, Portland, St. Louis, Sacramento, Dallas and Chicago.

Economic Development Benefits of Transit, FTA

- Applied hedonic land value methods to measure the direct and indirect benefits associated with doing business in transit accessible centers. Measured impact of mass transit on commercial property value.

Performed Analysis of Cost Escalation, FTA

- Analyses were associated with six FTA New Starts projects based on individual cost components.

Transit Investments Cost Benefit Analysis Tool, Transport Canada

- Conducted an economic study to establish a cost-benefit framework for the evaluation of various types of transit investments.
Benefits of Transit for WISDOT, PennDOT, VADRPT, MIDOT, SD DOT, SORTA (Cincinnati), MCTS (Milwaukee), GRTC (Richmond), Valley Metro (Roanoke)

- Conducted studies to identify the social and economic benefits of public transportation services to the main economic sectors in each State.

Transit Investments Cost Benefit Analysis Tool, VADRPT.

- Conducted an economic study to establish a cost-benefit framework for the evaluation of various types of transit investments.

Financial Plan for New Starts Projects

- Assisted in preparation of Financial Plans for New Starts projects in Cincinnati, Columbus, Austin, and Portland.

Paratransit Forecast for NYMTA, WMATA, SEPTA, OC Transpo, Access Services, RTA, King County Department of Metropolitan Services.

- Econometric forecast of demand for, and productivity of, paratransit services.

Conducted Risk Assessment for Transit Investments, Various Cities

- Projects located in Phoenix, Portland, Seattle, New York, and Boston
“Public leaders need to understand the triple bottom line of the policy and programmatic choices before them. The ability to assign monetary values to the full costs and benefits associated with sustainable initiatives will unlock the door to additional public investment. Now, mayors can actually measure and articulate the monetary value of green.”

Thomas Menino
Four-term Mayor of the City of Boston
SROI Methodology
A Four Step Process

1. Develop the Structure and Logic
2. Quantify Input Data Assumptions
3. Risk Analysis Session
4. Quantify Benefits

“SROI reveals the hidden value in projects.”

David Lewis, PhD
Former Principal Economist at the US Congressional Budget Office
Author “Policy and Planning as a Public Choice: Mass Transit in the United States”
SROI Methodology – Step 1
Develop Structure and Logic Diagrams

Grease to Biodiesel Blending Facility: City of Tempe, AZ

Social Benefit of Reduced Green House Gases
Social Benefit of Reduced Accidents
SROI Methodology – Step 2
Quantifying Inputs – Sources of Data and Evidence

Data Sources

- Over 8,000 Engineers, Architects, Scientists & Economists
- Meta-analysis of third party research & data
- Financial & insurance markets
- Contingent valuation i.e. willingness to pay surveys
- Bayesian analysis/expert opinion

Accident & Safety Example: Value of a Statistical Life

<table>
<thead>
<tr>
<th>Units</th>
<th>Most Likely</th>
<th>Low</th>
<th>High</th>
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</thead>
<tbody>
<tr>
<td>Value of a Statistical Life</td>
<td>$6,000,000</td>
<td>$3,300,000</td>
<td>$8,700,000</td>
</tr>
</tbody>
</table>

Relative Disutility Factors by Injury Severity Level (Maximum Abbreviated Injury Scale)

<table>
<thead>
<tr>
<th>Injury Severity Level</th>
<th>Fraction of VSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIS 1 - Minor injury</td>
<td>0.0020</td>
</tr>
<tr>
<td>MAIS 2 - Moderate injury</td>
<td>0.0155</td>
</tr>
<tr>
<td>MAIS 3 - Serious injury</td>
<td>0.0575</td>
</tr>
<tr>
<td>MAIS 4 - Severe injury</td>
<td>0.1875</td>
</tr>
<tr>
<td>MAIS 5 - Critical injury</td>
<td>0.7625</td>
</tr>
<tr>
<td>MAIS 6 - Fatality</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: US DOT
SROI Methodology – Step 2
Quantifying Inputs – Values & Distributions

<table>
<thead>
<tr>
<th>Greenhouse Gases</th>
<th>Expected Mean Value</th>
<th>Probability Distribution</th>
<th>$/Short Ton (2011 $)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Dioxide (CO2)</td>
<td>$30.57</td>
<td>Median</td>
<td>$21.49</td>
<td>IWGSCC (2010)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>$7.79</td>
<td>Nordhaus (2008)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>$89.64</td>
<td>Stern Review (2006)</td>
</tr>
</tbody>
</table>

![Diagram showing the probability distribution of carbon dioxide values](image-url)
SROI Methodology – Step 3
Risk Analysis Process Session

Sample Participants

- **Client:**
  - Project team
  - Technical specialists
  - Financial experts

- **HDR:**
  - Facilitator
  - Economists
  - Technical specialists

- **Outside Experts:**
  - Costing experts
  - Energy modelers
  - Other consulting firms
  - Public agencies & officials
SROI Methodology – Step 4
Run the Model and Produce Results

Social Cost of CO2 ($/ton)

Jointly Determined Probabilities

Value of a Statistical Life ($/life)

Capital Costs ($)

Social Cost of Potable Water ($/gallon)

F = f (A, B, C, D, ..)

FROI & SROI Output Metrics
## Examples of SROI Results

**Ft Belvoir Hospital, VA – US Army**

<table>
<thead>
<tr>
<th>SROI</th>
<th>Current Design</th>
<th>Alternative</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Value of Benefits</td>
<td>$1,284,097</td>
<td>$1,388,514</td>
<td>Aggregate annual benefits</td>
</tr>
<tr>
<td><em>Energy Reduction</em></td>
<td>$474,470</td>
<td>$516,241</td>
<td>Cash benefit</td>
</tr>
<tr>
<td><em>Water Reduction</em></td>
<td>$80,039</td>
<td>$80,039</td>
<td>Cash benefit</td>
</tr>
<tr>
<td><em>Greenhouse Gases Savings</em></td>
<td>$163,461</td>
<td>$177,654</td>
<td>Non-cash benefit</td>
</tr>
<tr>
<td><em>Air Pollutants Savings</em></td>
<td>$558,039</td>
<td>$606,492</td>
<td>Non-cash benefit</td>
</tr>
<tr>
<td><em>Reduced Water Use Social Benefit</em></td>
<td>$8,088</td>
<td>$8,088</td>
<td>Non-cash benefit</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$15,773,620</td>
<td>$13,798,340</td>
<td>PV Benefits / PV All Costs</td>
</tr>
<tr>
<td>Return on Investment</td>
<td>39.30%</td>
<td>18.00%</td>
<td>Average % Return on Capital</td>
</tr>
<tr>
<td>Discounted Payback Period</td>
<td>4.6</td>
<td>7.7</td>
<td>Years until positive discounted cash flow</td>
</tr>
<tr>
<td>Internal Rate of Return (%)</td>
<td>31.00%</td>
<td>18.10%</td>
<td>Discount rate making NPV = 0</td>
</tr>
<tr>
<td>Benefit to Cost Ratio</td>
<td>4.7</td>
<td>2.8</td>
<td>PV Benefits / PV Costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FROI</th>
<th>Current Design</th>
<th>Alternative</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Value of Benefits</td>
<td>$554,870</td>
<td>$596,193</td>
<td>Aggregate annual benefits</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$4,353,935</td>
<td>$1,391,047</td>
<td>PV Benefits / PV All Costs</td>
</tr>
<tr>
<td>Return on Investment</td>
<td>15.90%</td>
<td>5.50%</td>
<td>Average % Return on Capital</td>
</tr>
<tr>
<td>Discounted Payback Period</td>
<td>12.9</td>
<td>25</td>
<td>Years until positive discounted cash flow</td>
</tr>
<tr>
<td>Internal Rate of Return (%)</td>
<td>14.20%</td>
<td>6.80%</td>
<td>Discount rate making NPV = 0</td>
</tr>
<tr>
<td>Benefit to Cost Ratio</td>
<td>2</td>
<td>1.2</td>
<td>PV Benefits / PV Costs</td>
</tr>
</tbody>
</table>
Examples of SROI Results  
Tehachapi Trade Corridor, California – BNSF Railroad

<table>
<thead>
<tr>
<th>Net Benefit #</th>
<th>Net Benefit Name</th>
<th>Net Benefit Category</th>
<th>Total Discounted Value (2007 US$ M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reduced Cost of Train Delay at Current Capacity</td>
<td>Transportation System Savings</td>
<td>$11 $7.2 $14.7</td>
</tr>
<tr>
<td>2</td>
<td>Reduced Transportation Costs from Displacing Heavy Truck Travel</td>
<td>Transportation System Savings</td>
<td>$580 $324 $847</td>
</tr>
<tr>
<td>3</td>
<td>Change in Inventory Costs from Displacing Heavy Truck Travel</td>
<td>Transportation System Savings</td>
<td>-$48 -$65 -$33</td>
</tr>
<tr>
<td>4</td>
<td>Change in Inventory Costs from Reduced Train Delay</td>
<td>Transportation System Savings</td>
<td>$6.6 $4.2 $9.4</td>
</tr>
<tr>
<td>5</td>
<td>Savings From Reduced Highway Congestion</td>
<td>Transportation System Savings</td>
<td>$16.4 $12.1 $21.0</td>
</tr>
<tr>
<td>6</td>
<td>Reduction in Maintenance Costs from Displacing Heavy Truck Travel</td>
<td>Transportation System Savings</td>
<td>$85 $47 $127</td>
</tr>
<tr>
<td>7</td>
<td>Environmental Savings from Displacing Heavy Truck Travel</td>
<td>Environmental Improvements</td>
<td>$31 $16 $48</td>
</tr>
<tr>
<td>8</td>
<td>Environmental Savings from Reduced Train Delay (Idling)</td>
<td>Environmental Improvements</td>
<td>$.2 $.01 $.04</td>
</tr>
<tr>
<td>9</td>
<td>Reduced Accident Costs from Displacing Heavy Truck Travel</td>
<td>Transportation Safety</td>
<td>$96 $63 $130</td>
</tr>
<tr>
<td>10</td>
<td>Aid in Case of Massive Natural Disaster Relief / Terrorist Attack</td>
<td>Emergency Relief</td>
<td>$4.1 $1.0 $8.1</td>
</tr>
</tbody>
</table>

Total Discounted Value of Net Benefits (Note: Separate calculations, may not add)  
$782 $507 $1,071
Sustainability S-Curve Diagram

- **A. Mean**
  - 6%
  - 34%
  - 42%

- **B.**
  - Additional non-cash benefits to an organization
  - Benefits to larger society

- **C.**

**Axes:***
- **return on investment (percentage)**
- **probability of not exceeding**

**Legend:**
- Basic financial return on investment
- Cash plus non-cash benefits realized by an organization
- Sustainable return on investment
Examples of SROI Results
Campus Sustainability - John Hopkins University, Baltimore
Valley Metro, AZ: Tempe Street Car Alignment Analysis

Project Characteristics

• Cost-benefit analysis for a streetcar project aimed to spur economic redevelopment activity in downtown Tempe

• Estimated life-cycle costs and benefits of each alignment option

• Alignment chosen has potential benefits of $181.1M and $45.3 NPV

• Over 80% of benefits are derived from economic development
NYCDOT: Fordham Bus Transit Plaza Reconstruction

Project Characteristics

• Improvements to bus facility
• Cost-benefit analysis of feasibility and economic development
• Estimated the impacts of the planned improvements on accident rates, based on Federal Highway Administration data and guidelines
• Potential $77.5M in benefits
• NPV-TIGER grant awarded

Distribution of Benefits

<table>
<thead>
<tr>
<th>Long-Term Outcomes</th>
<th>Benefit Categories</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Competitiveness</td>
<td>Travel Time Savings</td>
<td>$12.7</td>
</tr>
<tr>
<td></td>
<td>Vehicle Operating Cost</td>
<td>$0.3</td>
</tr>
<tr>
<td></td>
<td>Savings</td>
<td></td>
</tr>
<tr>
<td>Livability</td>
<td>Low Income Mobility &amp; Budgetary Savings to Low Income Households</td>
<td>$5.8</td>
</tr>
<tr>
<td>Environmental Sustainability</td>
<td>Reductions in Air Emissions</td>
<td>$0.02</td>
</tr>
<tr>
<td>Safety</td>
<td>Accident Reduction</td>
<td>$58.7</td>
</tr>
<tr>
<td>Total Benefit Estimates</td>
<td></td>
<td>$77.5</td>
</tr>
</tbody>
</table>
SROI reveals benefits in:

- Community form: compact vs. sprawl
- Economic development benefits
- Environmental benefits
- Modal mix
- Congestion management
- Cross-sector/social benefits

Reduced Highway Plan
Express Lanes
Blended Light / Commuter Rail
Central Indiana Transportation Plan
Ensuring Success with SROI
Project Screening of Alternatives

- Desirable
- Acceptable
- Affordable
- Technically Feasible

Evaluation Stages

Scope / Criteria
- Engineering Analyses
- Financial Analysis
- Stakeholder Assessment
- Sustainable Return on Investment

Best Option

Evaluation Stages
### Prioritizing Projects – Hypothetical Example

<table>
<thead>
<tr>
<th>Projects on Radar Screen</th>
<th>Project Name</th>
<th>Project Description</th>
<th>Profitability</th>
<th>Project Rank</th>
<th>Capital Required ($M)</th>
<th>Cumulative Capital ($M)</th>
<th>Project Grouping</th>
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</thead>
<tbody>
<tr>
<td>Foxtrot</td>
<td>Solar Caps</td>
<td></td>
<td>25%</td>
<td>1</td>
<td>$58</td>
<td>$58</td>
<td>Projects that should be implemented</td>
</tr>
<tr>
<td>Delta</td>
<td>Landfill Gas Collection</td>
<td></td>
<td>21%</td>
<td>2</td>
<td>$321</td>
<td>$379</td>
<td></td>
</tr>
<tr>
<td>Victor</td>
<td>WTE 1</td>
<td></td>
<td>20%</td>
<td>3</td>
<td>$72</td>
<td>$451</td>
<td></td>
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<tr>
<td>Mike</td>
<td>Long Haul Rail Option</td>
<td></td>
<td>19%</td>
<td>4</td>
<td>$95</td>
<td>$546</td>
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<tr>
<td>Juliet</td>
<td>MRF refurbishment</td>
<td></td>
<td>17%</td>
<td>5</td>
<td>$150</td>
<td>$696</td>
<td></td>
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<tr>
<td>Sierra</td>
<td>Anaerobic digestion of waste</td>
<td></td>
<td>17%</td>
<td>6</td>
<td>$265</td>
<td>$961</td>
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<td>Max Annual Capital $1B</td>
<td>Quebec</td>
<td>Autoclave</td>
<td>15%</td>
<td>7</td>
<td>$250</td>
<td>$1,211</td>
<td></td>
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<tr>
<td>Lima</td>
<td>Waste Park</td>
<td></td>
<td>14%</td>
<td>8</td>
<td>$170</td>
<td>$1,381</td>
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<tr>
<td>Alpha</td>
<td>Road haul Option</td>
<td></td>
<td>14%</td>
<td>9</td>
<td>$60</td>
<td>$1,441</td>
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<tr>
<td>Whiskey</td>
<td>WTE 2</td>
<td></td>
<td>13%</td>
<td>10</td>
<td>$143</td>
<td>$1,584</td>
<td></td>
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<tr>
<td>November</td>
<td>Additional MRF 1</td>
<td></td>
<td>12%</td>
<td>11</td>
<td>$86</td>
<td>$1,670</td>
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<tr>
<td>Uniform</td>
<td>Standardized Garbage Bins</td>
<td></td>
<td>12%</td>
<td>12</td>
<td>$77</td>
<td>$1,747</td>
<td></td>
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<tr>
<td>Zulu</td>
<td>Additional MRF 2</td>
<td></td>
<td>11%</td>
<td>13</td>
<td>$99</td>
<td>$1,846</td>
<td></td>
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<tr>
<td>Golf</td>
<td>Landfill 1</td>
<td></td>
<td>10%</td>
<td>14</td>
<td>$112</td>
<td>$1,958</td>
<td></td>
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<tr>
<td>Tango</td>
<td>Natural Gas Trucks</td>
<td></td>
<td>9%</td>
<td>15</td>
<td>$41</td>
<td>$1,999</td>
<td></td>
</tr>
<tr>
<td>Charlie</td>
<td>Solar Panels on HQ</td>
<td></td>
<td>8%</td>
<td>16</td>
<td>$250</td>
<td>$2,249</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Wind Turbines on capped L/F</td>
<td></td>
<td>7%</td>
<td>17</td>
<td>$14</td>
<td>$2,263</td>
<td></td>
</tr>
<tr>
<td>NPV Break-Even Line</td>
<td>Bravo</td>
<td>Hybrid Trucks</td>
<td>6%</td>
<td>18</td>
<td>$87</td>
<td>$2,350</td>
<td></td>
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<tr>
<td>Hurdle Rate 7% IRR</td>
<td>X-ray</td>
<td>Landfill 2</td>
<td>5%</td>
<td>19</td>
<td>$300</td>
<td>$2,650</td>
<td></td>
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<tr>
<td></td>
<td>Oscar</td>
<td>Plasma Gasification</td>
<td>5%</td>
<td>20</td>
<td>$12</td>
<td>$2,662</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hotel</td>
<td>Wind Turbine for HQ</td>
<td>2%</td>
<td>21</td>
<td>$357</td>
<td>$3,019</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Romeo</td>
<td>3 R's Education Program</td>
<td>1%</td>
<td>22</td>
<td>$37</td>
<td>$3,056</td>
<td></td>
</tr>
</tbody>
</table>

Projects that aren't worth pursuing
Decision Support & Risk Management

Alternatives Assessment

Risk Ranking (Tornado Chart)

RISK FACTORS THAT INCREASE EXPECTED COST

- Ongoing evaluation of storm drain for portion to possibly remain in place
- Uncertainty in value assessment
- Added left turn lanes requirement
- Unknown utility facilities
- Park-and-ride configuration not determined
- Noise impacts & mitigation measures
- Limited contractors
- Design at 15% completion - future stage design costs
- Design exceptions - Landscape and Sidewalk at Stations
- Stakeholders request late changes
- Ability of Kinko's to deliver additional vehicles
- City of Phoenix DSD process for ROW acquisition
- The Flood Control District (FCD) preparation of the Metro ADMP
- Priorities change on System Contract
- Definition of ROW too early in design process
- Development occurring within parcels that may impact project

- $277
- $402
- $483
- $255
- $367
- $419
- $235
- $337
- $363

-2.3
-2.0
-1.0
0.0
1.0
2.0
3.0

Net Benefits ($Millions)
TIGER – Example

Transportation Investments Generating Economic Recovery

• $2 billion awarded on a competitive basis (TIGER I&II)
• $525 million for TIGER III
• Part of ARRA (2009) and Appropriations Act (2010, 2011)
• Required a CBA and estimates of employment and production impacts (livability, safety, economic impacts, sustainability, etc.)

- Highways, bridges, roadway (FHWA)
- Public transportation including New Starts and Small Starts projects (FTA)
- Passenger and freight rail projects (FRA)
- Port infrastructure investments (MARAD)
TIGER – HDR Results

TIGER I – 2009

3% of Applications → 20% of Value ($300M)

TIGER II – 2010

20% of Value ($114M of $557M)
New Project
Creating BCA Guidelines for US DOT: The Need

The need for clear technical guidance for incorporating a number of emerging benefits categories into BCA analyses

The public policy framework seeks a broader understanding of the way benefits and costs need to be identified, measured and presented

An evolving federal policy framework seeks additional measures of performance

What emerges is a need to consider multiple perspectives and measures of a project, while still maintaining comparisons of projects on a level playing field
Decision makers want BCA-based information to enable budgetary decisions that reflect value-for-money comparisons of investment proposals among different modes and different geographic regions (more so, against a specific goal).
So Why Use SROI?

✓ It’s a proven Cost-Benefit Analysis based approach to making planning & budgeting decisions
✓ It fully incorporates non-cash benefits and externalities into the decision making process
✓ It provides a full range of possible outcomes using state-of-the-art risk analysis techniques
✓ It helps generate consensus by being both interactive and transparent
✓ It’s an invaluable tool to help organizations secure funding, generate public support, generate internal approval, etc.