1. TBL Process Overview – Where are we?
2. TBL Criteria
3. Model Overview
4. Community Values Survey – Initial Results
5. Q&A / Discussion
TBL Process – Where are we?

We are here

- Identify Criteria & Indicators
- Develop overall TBL Framework
- Develop Ranking & Beta Model
- Receive Public Input
- Evaluate Project Alternatives & Refine TBL
- Finish Evaluating Project Alternatives
- Recommended Alternatives Selected
- Train SFPUC Staff

Currently Ongoing

- January - June 2012
- June - December 2012
- January - July 2013
- July - October 2013
- December 2013
- December 2013 - March 2014
# TBL Evaluation Criteria

<table>
<thead>
<tr>
<th>Financial (LCA)</th>
<th>Environmental</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>Climate</td>
<td>System Resilience</td>
</tr>
<tr>
<td>Operations and Other* Costs</td>
<td>Habitat</td>
<td>Ratepayer Affordability</td>
</tr>
<tr>
<td></td>
<td>Water Use</td>
<td>Bicycle and Pedestrian Environment</td>
</tr>
<tr>
<td></td>
<td>Water Quality</td>
<td>Odor</td>
</tr>
<tr>
<td></td>
<td>Air Quality</td>
<td>Noise</td>
</tr>
<tr>
<td></td>
<td>Natural Resource Inputs</td>
<td>Recreation / Open Space</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cultural Resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction Impacts</td>
</tr>
</tbody>
</table>

* Includes Operations & Maintenance, Replacement & Renewal, Decommissioning, and Avoided Costs
TBL Model Workflow and Data Integration

TBL Model Inputs Required
- Projects Definition Data
- Project Specific Engineering Data (performance, cost etc.)
- GIS Analysis

TBL Model Outputs
- TBL Analysis Needs to be shared back with Integrated Team
TBL Model Workflow and Data Integration

Project Definition Interface

GIS Analysis

Watershed / Hydrologic Analysis

Other Engineering Assessment

Project Database

Import Project Data

TBL Project Comparison Matrix

Project Results Database

TBL Analysis
TBL Model Components – Project Data Input Form

Single Project Definition Form to capture all relevant information required by TBL model

Quick Entry fields on the left and conditional more detailed inputs on the right side

Form to have automated fill-in for certain fields

GIS Integration is being explored

3rd column space for Notes, additional comments and supporting graphics
TBL Model Components – TBL Model Inputs

Triple Bottom Line (TBL) Assessment Model

TBL HOME | MODEL INPUTS | MODEL CALIBRATION | TBL RESULTS | ALTERNATIVES | DATA ARCHIVE
---|---|---|---|---|---
Settings | Data Import | Model Data Summary

**IMPORT DATA from**

- **Project Data Form**
  - Browse to File
  - C:\SSIM\SSIM_Projects\TBL\TBL Model\EIP_SFSU.pdf

- **COST DATA**
  - Browse to File

- **PUBLIC INPUT DATA**
  - Browse to File

**Import Records**

Import records from an Adobe Acrobat (PDF), Excel (XLS), or comma-separated (CSV) file. Please select the file to import, and the type of data contained in that file, below:

- **File Name:**
- **Data Type:** SSIP TBL Project Data Form
- OK

Project Data Input Card For SFPU
TBL Model Components – Model Calibration

Model Includes 4 Calibration Screens for each TBL Criterion

Process Assumptions Rules Calculations

Triple Bottom Line (TBL) Assessment Model

Habitat
- Noise
- Climate
- Habitat
- Water Use
- Water Quality
- Natural Resources Use
- Air Quality
- Life Cycle Costs

Pattern Indicators
- Indicator 3P: Distribution / Continuity
- Indicator 4P: Corridor Width (linear projects)
- Indicator 5P: Connectivity to Existing Habitat
- Indicator 6P: Land Use Context

Habitat Structure Assumptions

Project Data Input
- Existing Landscape Area by Type & Proposed Landscape Area by Type

Project Questionnaires

Calculations
TBL Model Components – Model Results

Triple Bottom Line (TBL) Assessment Model

Environmental + Social + Financial + Sustainability

Version 1.0

TBL HOME | MODEL INPUTS | MODEL CALIBRATION | TBL RESULTS | ALTERNATIVES | DATA ARCHIVE

TBL Results | Results Template | Archive Result for Project

- High (Significantly Positive Influence to Criteria)
- Low (Positive Influence to Criteria)
- Neutral (No Influence to Criteria)
- Negative (Negative Influence to Criteria)
- Significantly Negative (Significantly Negative Influence to Criteria)
- N/A (Insufficient Information to Make a Judgment)

### Project: Islais Cr - project A
- Project Id: Islais_GS-a
- Project Type: Vegetated Filtration/Green Street
- Location: Valencia St.
- Result Date Generated: 9/26/2012

**TRIPLE BOTTOM LINE RESULTS for**

**Environmental**
- Climate
- Water Use
- Water Quality
- Air Quality
- Natural Resource Inputs

**Social**
- System Resilience
- Taxpayer Affordability
- Bicycle & Pedestrian Environment
- Transit
- Recreation & Open Space Amenities
- Employment
- Cultural Resources
- Noise
- Construction Impacts

**Financial**
- Capital Costs
- Operating and Maintenance Costs

$799.8K
$173.4K

With N/A Values

Without N/A Values
TBL Model Components – Model Results

**Triple Bottom Line (TBL) Assessment Model**

**Environmental**

**Social**

**Financial**

**Sustainability**

**Version 1.0**

---

**Triple Bottom Line RESULTS**

- **Project Name**: Islais Cr - Project B
- **Project Id**: Islais_GS-b
- **Project Type**: Permeable Paving
- **Location**: Valencia St.
- **Result Date Generated**: 9/25/2012

**Examples of Results**

- **With N/A Values**
  - **Environmental**: $1,347.0
  - **Capital Costs**: $260.9K

- **Without N/A Values**
  - **Environmental**: $1,347.0
  - **Capital Costs**: $260.9K
TBL Model Components – Model Results

**TRIPLE BOTTOM LINE RESULTS for**

- **Project Name:** Islais Cr - project C
- **Project Id:** Islais_GS-c
- **Project Type:** Vegetated Filtration/Green Street
- **Location:** Guerrero St.
- **Result Date Generated:** 9/25/2012

**Financial Components:**
- **Capital Costs:** $999.8K
- **Operating and Maintenance Costs:** $173.4K

**With N/A Values**

**Without N/A Values**
# TBL Model Components – Model Results

## Triple Bottom Line (TBL) Assessment Model

<table>
<thead>
<tr>
<th>Environmental + Social + Financial + Sustainability</th>
<th>Version 1.0</th>
</tr>
</thead>
</table>

## TBL HOME | MODEL INPUTS | MODEL CALIBRATION | TBL RESULTS | ALTERNATIVES | DATA ARCHIVE |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TBL Results</td>
<td>Results Template</td>
<td>Archive Result for Project</td>
<td>Generate Report for Printing</td>
<td>View Project Data Form</td>
<td></td>
</tr>
</tbody>
</table>

### Social Components
- System Resilience
- Host Community Acceptability
- Bicycle & Pedestrian Environment
- Traffic
- Recreation & Open Space Amenities
- Employment
- Cultural Resources
- Noise
- Construction Impacts

### Environmental Components
- Climate
- Habitat
- Water Use
- Water Quality
- Air Quality
- Natural Resource Inputs

### Financial Components
- Capital Costs
- Operating and Maintenance Costs

<table>
<thead>
<tr>
<th>Component</th>
<th>With N/A Values</th>
<th>Without N/A Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$1,549.1</td>
<td>$280.9K</td>
</tr>
</tbody>
</table>

---

**TRIPLE BOTTOM LINE RESULTS for**

- **Project Name:** Islais Cr - project D
- **Project Id:** Islais_GS-d
- **Project Type:** Permeable Paving
- **Location:** Guerrero St.
- **Result Date Generated:** 9/25/2012
Comparing Radial Charts – COMMUNITY INPUT

Without Community Input

With community input
## TBL Model Components – Project Alternatives Comparison

### Please Select Up To 5 Alternatives to Compare

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Islais GS-a - Islais Cr - project A (Valencia St)</th>
<th>Islais GS-b - Islais Cr - project B (Valencia St)</th>
<th>Islais GS-c - Islais Cr - project C (Guerrero St)</th>
<th>Islais GS-d - Islais Cr - project D (Guerrero St)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>Vegetated Filtration/Green Street</td>
<td>Permeable Paving</td>
<td>Vegetated Filtration/Green Street</td>
<td>Permeable Paving</td>
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<tr>
<td>Alternative 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative 3</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Alternative 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Alternative 5</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Project Type

**Social**
- System Resilience
- Ratepayer Affordability
- Bicycle & Pedestrian Environment
- Odors
- Recreation & Open Space Amenities
- Employment
- Cultural Resources
- Noise
- Construction Impacts

**Environmental**
- Climate
- Habitat
- Water Use
- Water Quality
- Air Quality
- Natural Resource Inputs

**Financial**
- Capital Costs
- Operating and Maintenance Costs
- Avoided Costs

### Influence to Criteria
- **High**: Significantly Positive Influence to Criteria
- **Low**: Positive Influence to Criteria
- **Neutral**: No Influence to Criteria
- **Negative**: Negative Influence to Criteria
- **Significantly Negative**: Significantly Negative Influence to Criteria
- **N/A**: Insufficient Information to Make a Judgment

<table>
<thead>
<tr>
<th>Influence Level</th>
<th>Islais GS-a</th>
<th>Islais GS-b</th>
<th>Islais GS-c</th>
<th>Islais GS-d</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Low</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Neutral</td>
<td>°</td>
<td>°</td>
<td>°</td>
<td>°</td>
</tr>
<tr>
<td>Negative</td>
<td>°</td>
<td>°</td>
<td>°</td>
<td>°</td>
</tr>
<tr>
<td>Significantly Negative</td>
<td>°</td>
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<td>°</td>
<td>°</td>
</tr>
<tr>
<td>N/A</td>
<td>°</td>
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</tr>
</tbody>
</table>
TBL Model Demonstration

The TBL Assessment Model is a module within the Citywide Sewer System Improvement Program (SSIP). The purpose of a TBL assessment is to provide a decision-support platform that facilitates the selection of SSIP projects and project alternatives that generate the highest value in terms of environmental improvement, social-benefit, and economic gain relative to criterion established. The determination of ‘value’ is carried out through a system of measurement that has two main aspects— the first is a set of Indicators that are designed to measure certain attributes of value, and second, is the Rating System that applies a consistent set of rules that can normalize, interpret, classify, aggregate and represent the measured indicator values in order to make them useful for decision-making. While indicators are primarily designed for measuring and monitoring performance of a system component, the Rating System is primarily designed to aid multi-criteria decision-making (MCDM)—a foundation of the TBL process.

The TBL Assessment Model is an indicator-based Rating System that incorporates multi-criteria decision making.

The main components of a robust TBL module are:
- A comprehensive list of indicators
- A collection of indicator measurement models and processes that utilize available data
- A scoring and representation model (Rating System) that makes sense of all the indicators and facilitates decision-making

Characteristics of a good TBL Rating System:
- Simple (easily understood but logically sound)
- Comprehensive (by topic/criteria and indicators)
- Consistent (across indicator types, project types)
- Structurally Unbiased between Indicators as a model (unless explicitly weighted)
- Computable/Measurable
- Scalable (expandable by number of indicators; can work at local, watershed, City scales)
- Aggregation capable (group indicators into indexes etc.)
- Visually Representable (in a compelling, easy to grasp way)
TBL
Community Values Survey
• TBL Community Values Survey – Part of SSIP iPad survey
• Goal of at least 170 surveys/watershed (1360 total); approximately 320 completed to-date
• Survey results organized by watershed
• Will be used as an overlay/advisory role to TBL model
TBL Community Values Survey: Preliminary Response Summary (Example)

The image displays a bar chart illustrating the results of a survey on TBL (Terminology, Beliefs, and Values) community values. The chart is titled "TBL Community Values Survey: Preliminary Response Summary (Example)." It shows the number of votes for various priority items under the TBL framework.

The chart includes categories such as "Jobs," "Earthquake Preparedness," "Reduce Flooding," "Low Rates," "Bikes and Pedestrians," "Reduce Odors," and "Recreational Opportunities." Each category is represented by three bars indicating 1st, 2nd, and 3rd priority votes.

The chart suggests that "Jobs" received the highest number of votes, followed by "Earthquake Preparedness" and "Reduce Flooding." "Recreational Opportunities" received the least votes among the list.

The y-axis represents the number of votes, ranging from 0 to 100, while the x-axis lists the TBL Priority Item categories.
Watershed Comparisons: Sample Weighted Responses

Channel

- Most Important: Earthquake Preparedness 27%
- 2nd Most Important: Jobs 23%
- 3rd Most Important: Reduce Flooding 21%
- Recreational Opportunities 5%
- Bikes and Pedestrians 5%
- Reduce Odors 8%
- Low Rates 11%

Richmond

- Most Important: Earthquake Preparedness 23%
- 2nd Most Important: Reduce Flooding 23%
- 3rd Most Important: Low Rates 16%
- Recreational Opportunities 5%
- Bikes and Pedestrians 9%
- Reduce Odors 11%
- Jobs 13%