



Evaluating and Planning for Sustainability in Projects and Initiatives

Workshop 3



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





Overview

- **Introductions**
- **Workshop progress past and present**
 - Handbook to Develop Sustainability Measures
 - Excel – Agency Specific Aspects
- **Next Workshop #4 – Resolving Conflicts between Sustainability Principles**
- **Workshop #3 Overview**





Definition of a Project/Initiative

- **Project – construction vertical or horizontal**
- **Programs/Initiative – programmatic in nature**





Evaluating Sustainability in Projects/Initiative

- **Why should we evaluate a project or a program?**





How do we evaluate sustainability?

- **Invest time in understanding life-cycles associated with project and initiative development**



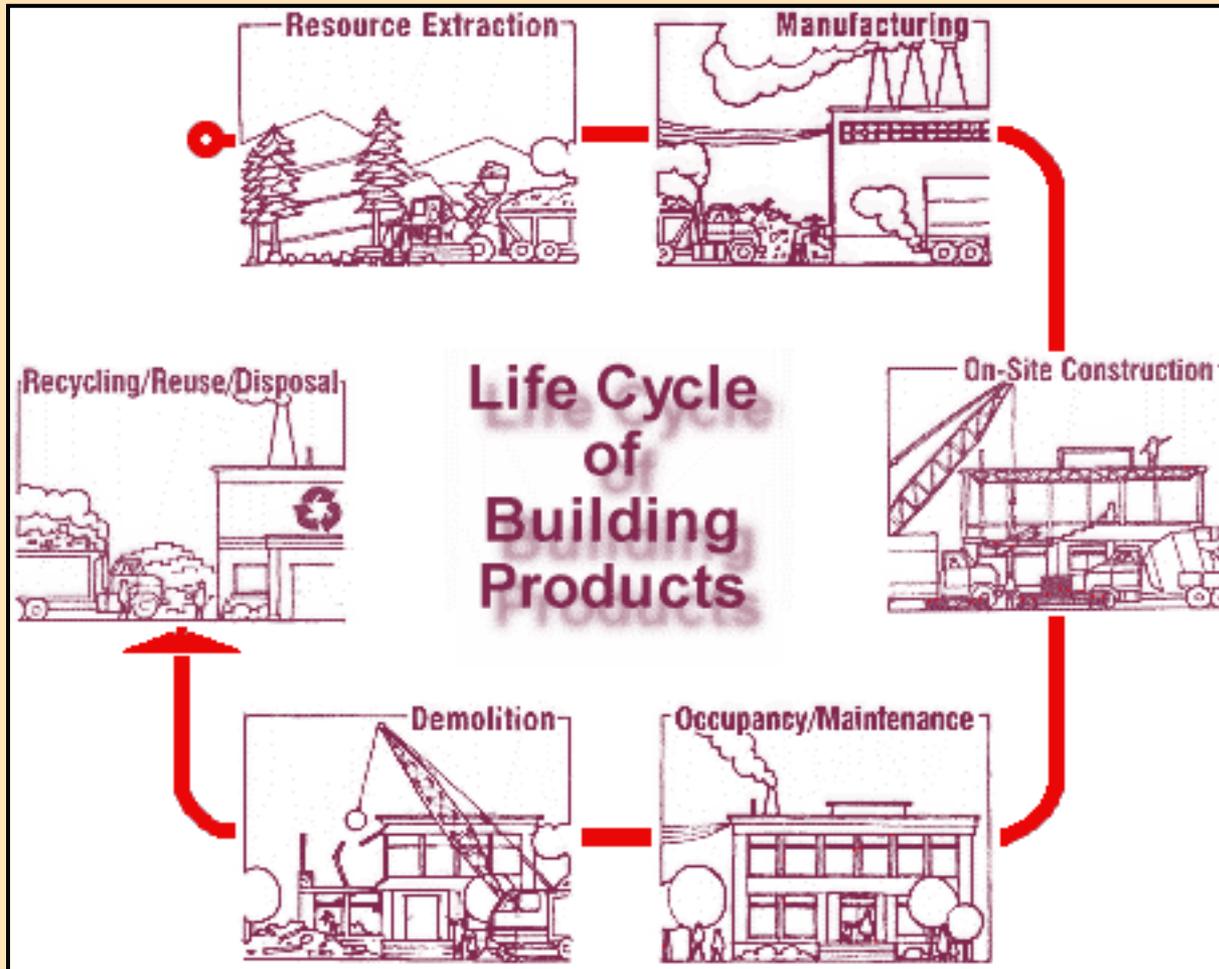


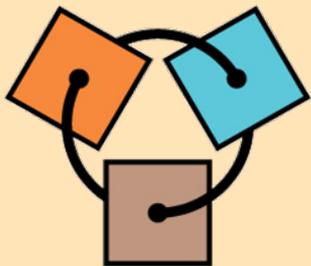
Life-Cycle Analysis

- **Definition**
 - Qualitative and quantitative assessment of a product's impacts on health and the environment across every stage of the product life cycle
- **Life-cycle stages**
 - Before (pre-use)
 - During (use and maintenance)
 - After (disposal, reuse and/or recycling)

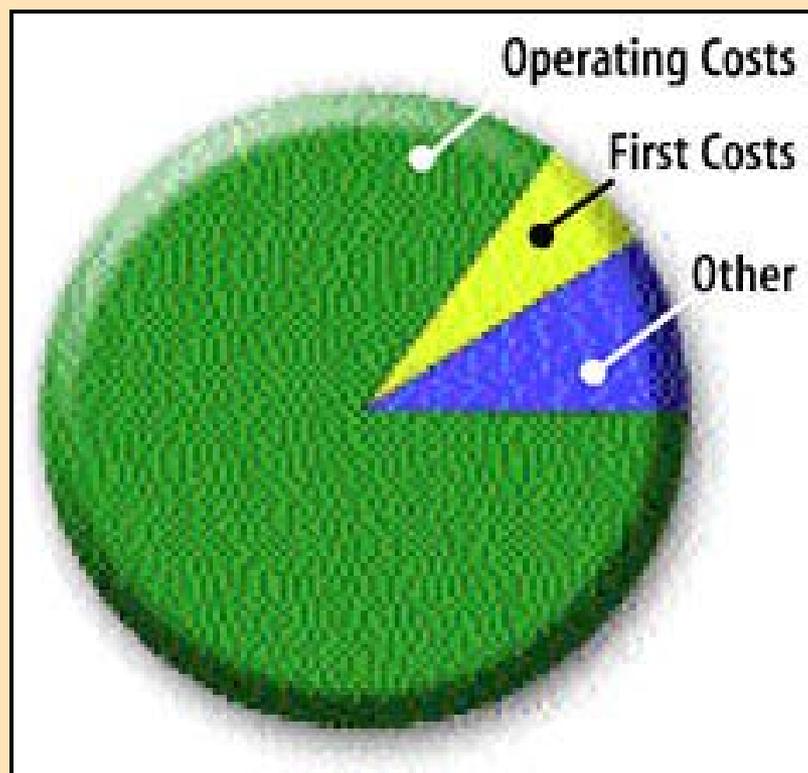


Life Cycle of Building Products





Life-Cycle Thinking: Buildings



<http://www.facilitiesnet.com/bom/Nov02/Nov02environment.shtml>

Source: National Research Council, 1998

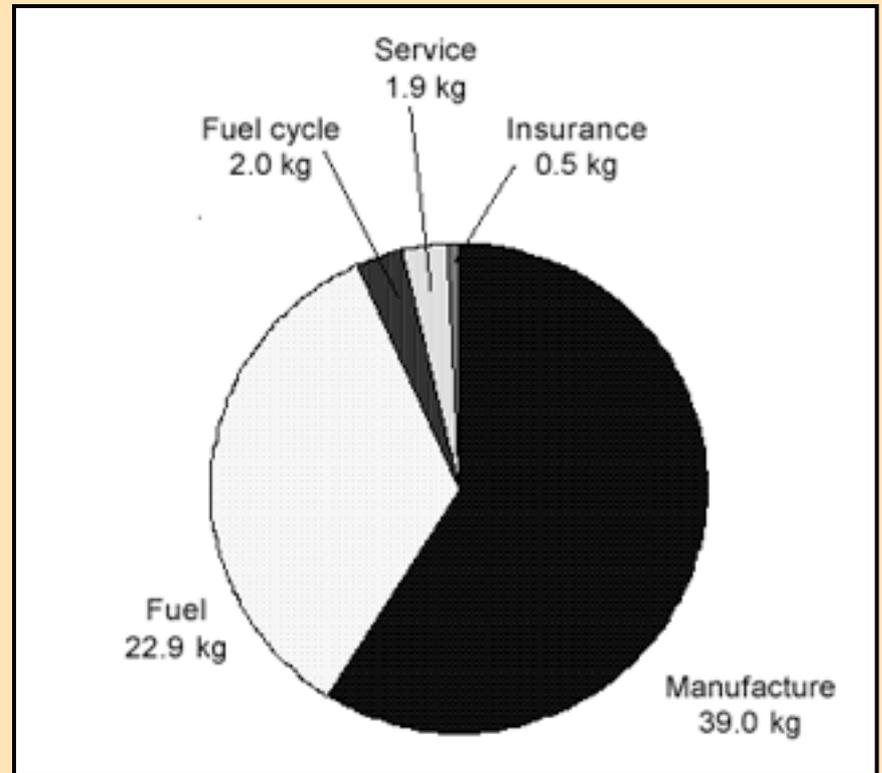
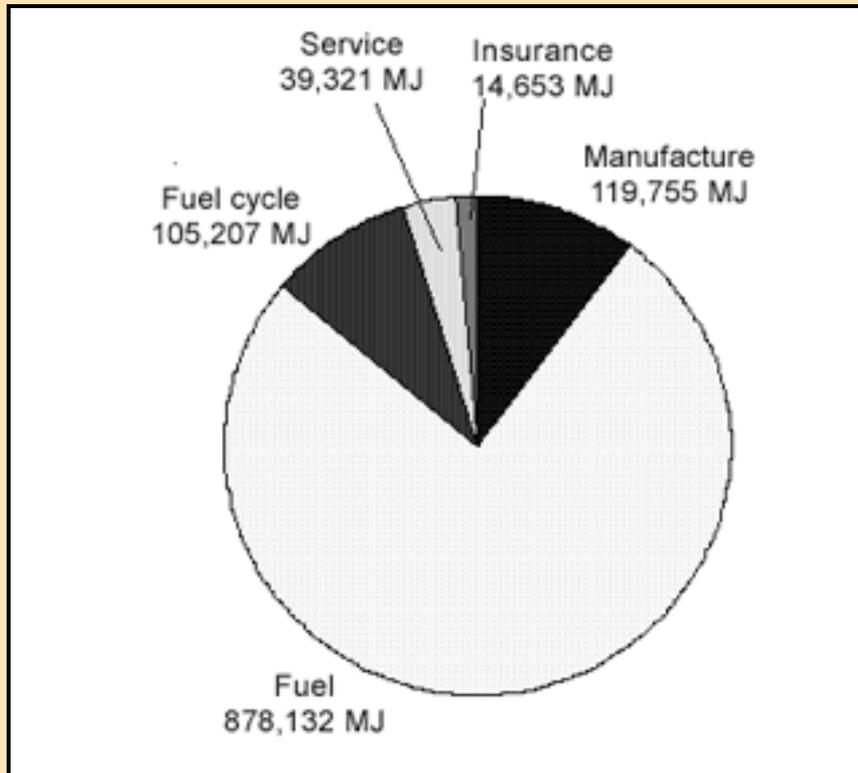




Life-Cycle Thinking: The Car

Energy

Toxins



FELSBURG HOLT & ULLEVIG

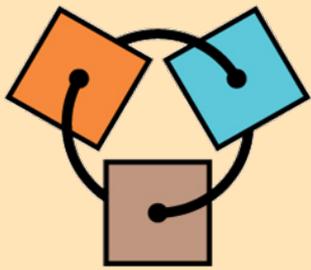


CH2MHILL

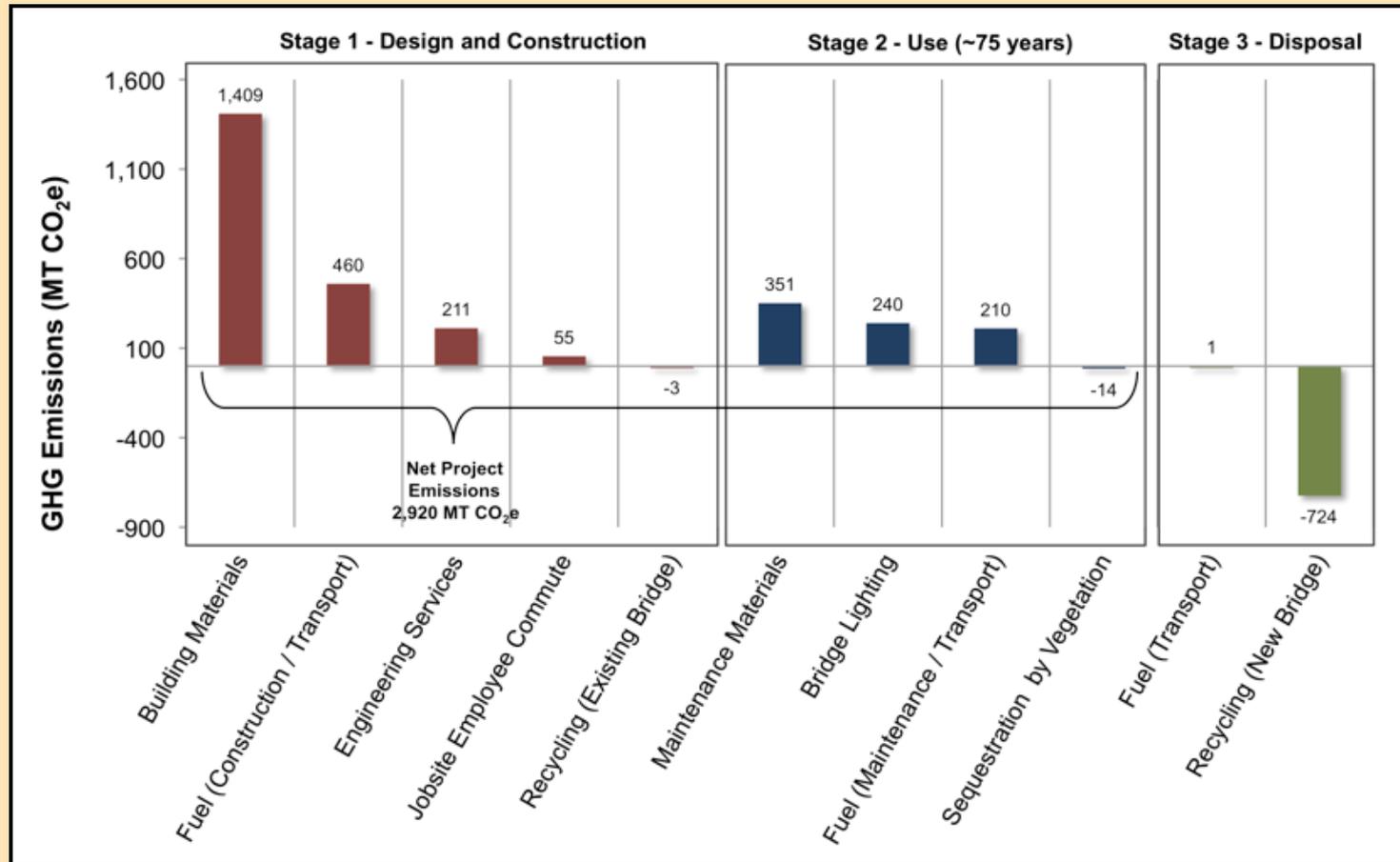


GOOD COMPANY





Life-Cycle Findings: Bridge Project by Stage & Source



FELSBURG HOLT & ULLEVIG



CH2MHILL

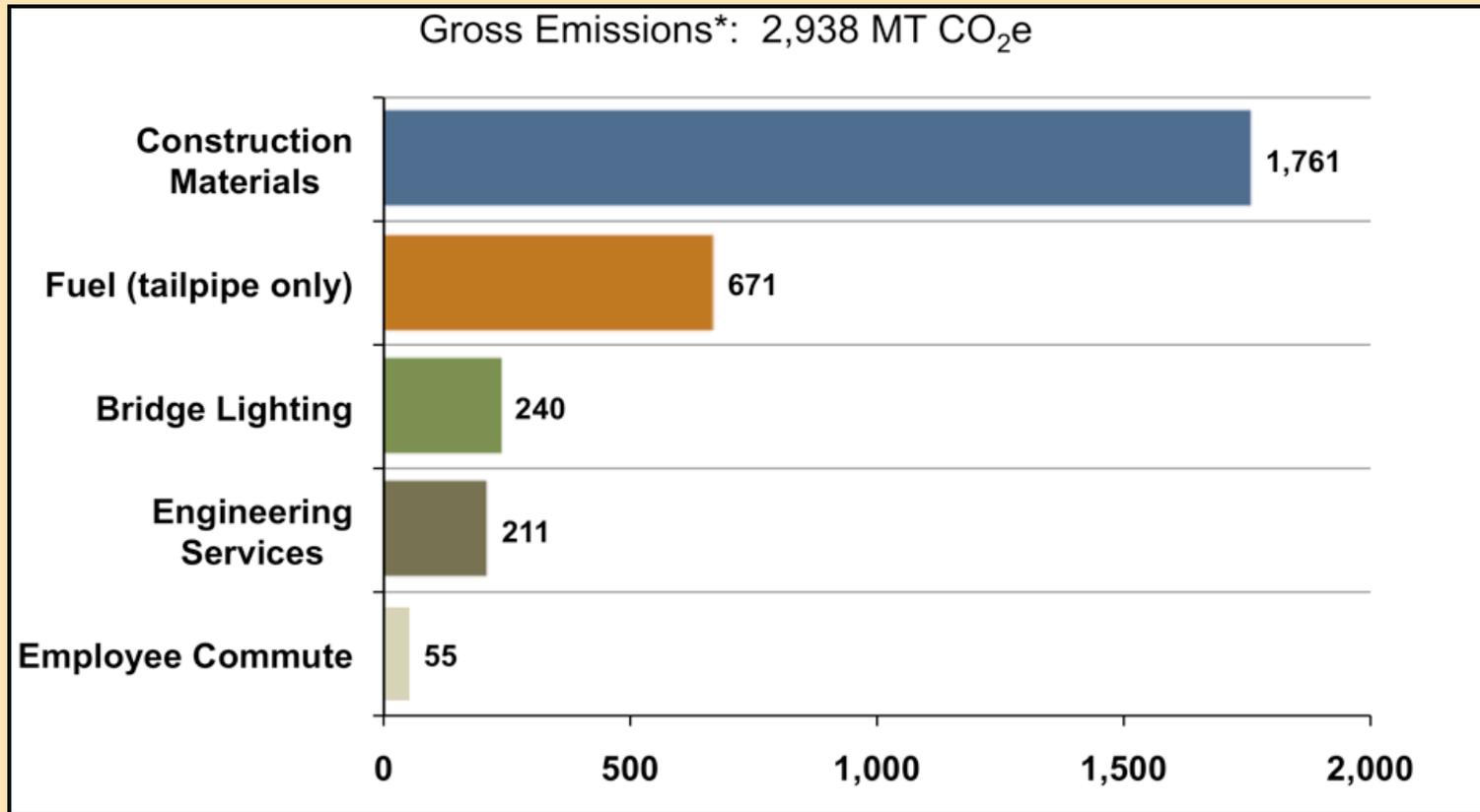


GOOD COMPANY





Life-Cycle Findings: Bridge Project Largest Emissions



FELSBURG HOLT & ULLEVIG

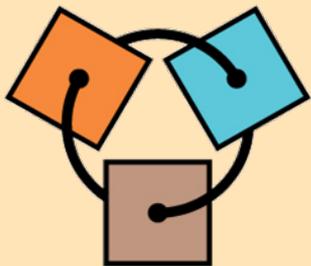


CH2MHILL

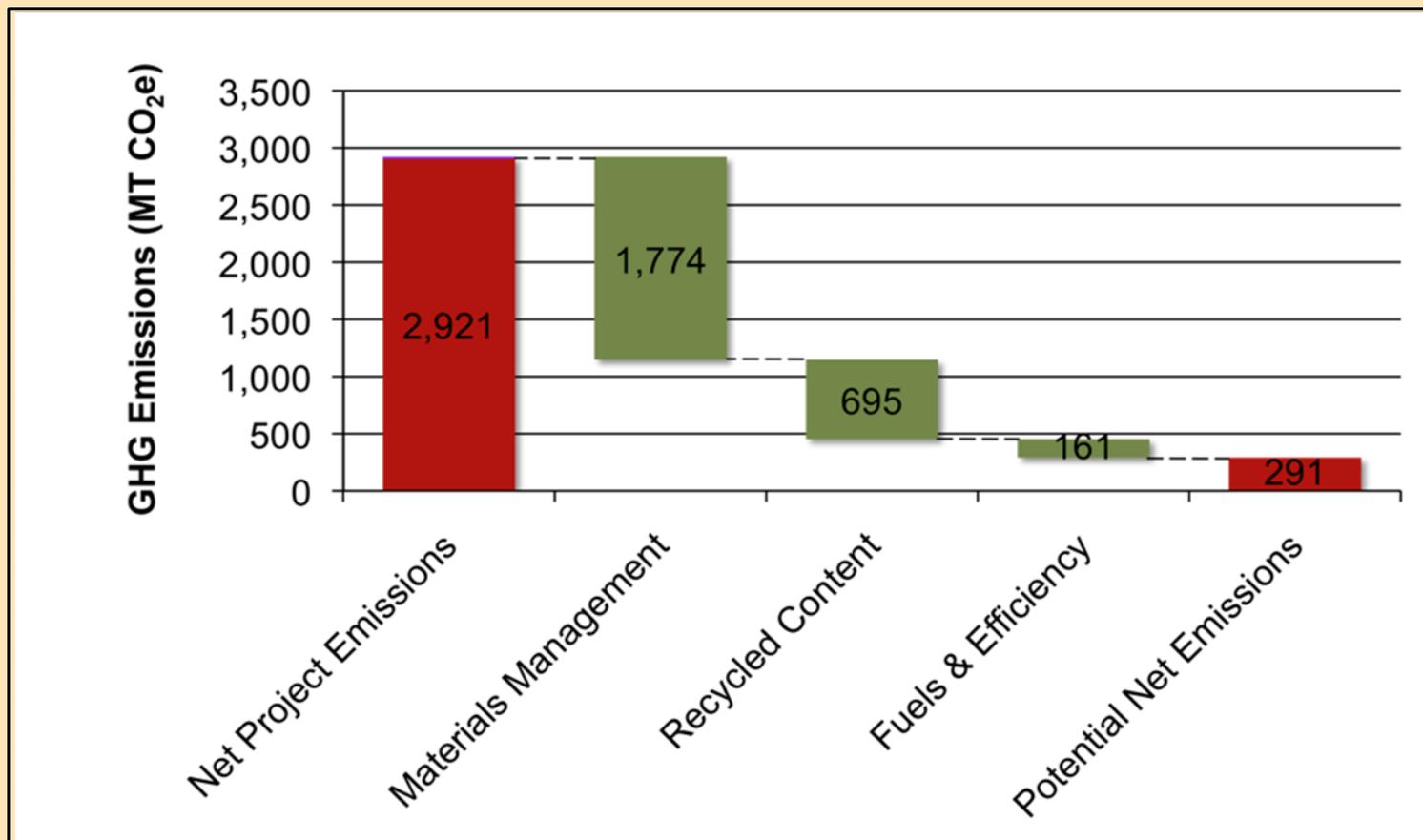


GOOD COMPANY





Life-Cycle Findings: Bridge Project Emissions Reductions



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY

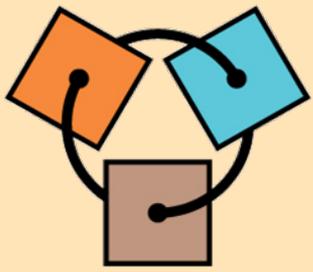




Ah ha moment!

**What do you think about what
you've just heard??**

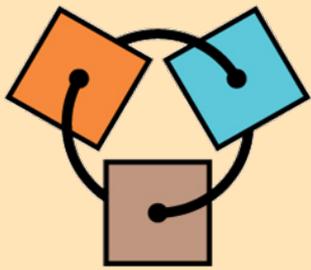




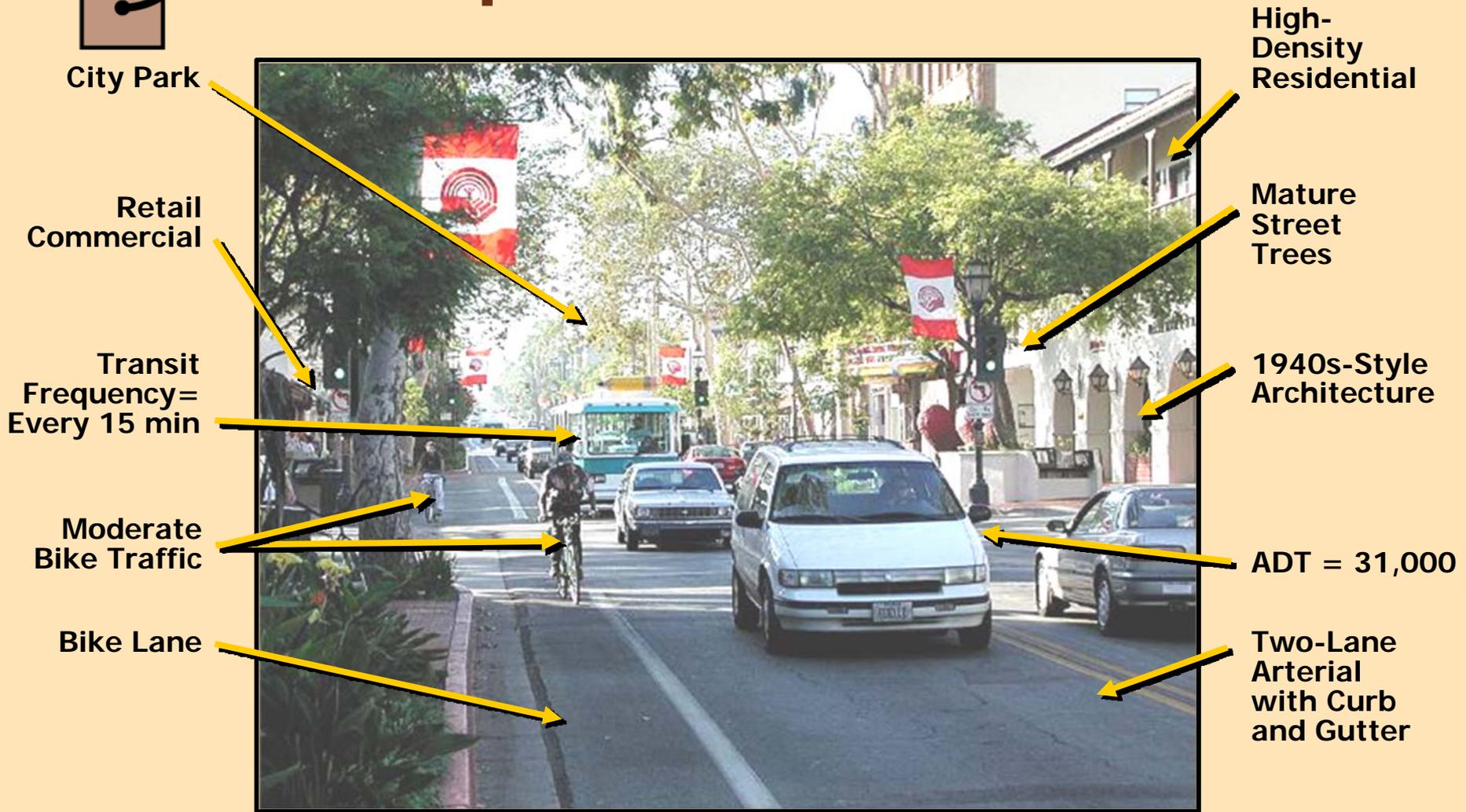
Understanding the Context of Your Project

- Context analysis is a way to understand the categories and aspects relevant to your project
- Context analysis involves a collaborative approach involving citizens and agencies as part of the project team
- Useful for understanding:
 - Community well-being
 - Environmental stewardship
 - Economic vitality and quality





Examples of Urban Context



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





Examples of Rural Context

1.2 Miles East of Town
(pop. 2,868,
est. 1850s)

Combination
of Forest and
Meadow

Low-Density
Single Family
Residential

Topography
Relatively Flat

Cyclists Share
Low-Volume
Road



0.4 Miles East
of Fresno River

Elk Habitat
Area

No Sidewalk,
Pedestrians
Walk Along
Side of Road

ADT = 3,500

Two-Lane
Arterial



Every project has a unique context



FELSBURG HOLT & ULLEVIG

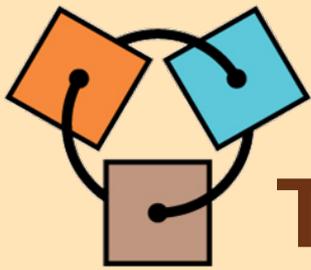


CH2MHILL

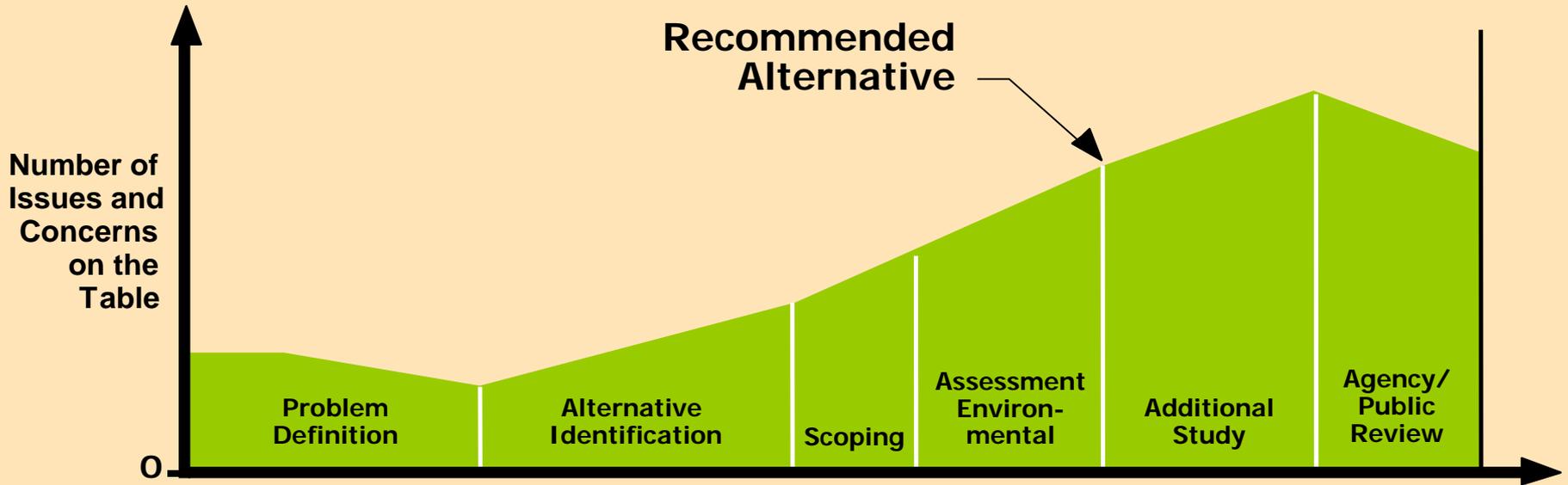


GOOD COMPANY





The traditional planning process



FELSBURG HOLT & ULLEVIG



CH2MHILL



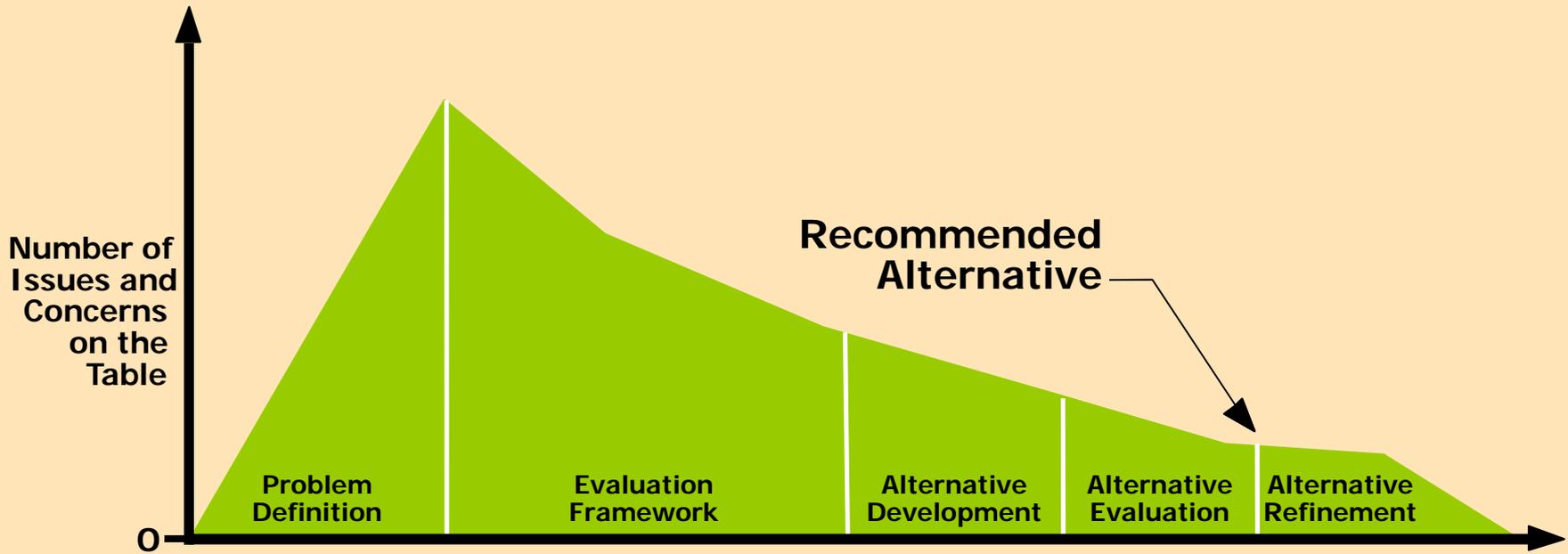
GOOD COMPANY





TERC Sustainability Framework

...moves to a process that looks like this...



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





Vertical Projects



■ LEED

- Green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. (USGBC.org)

■ Green Globes

- A revolutionary green management tool that includes an assessment protocol, rating system and guide for integrating environmentally friendly design into commercial buildings. Once complete, it also facilitates recognition of the project through third-party review and assessment. (theGBI.org)





more sustainable roads for a better transportation future

What is the Greenroads rating system?

A performance metric for roadway design and construction that awards points for more sustainable practices. Greenroads helps quantify the sustainable attributes of a roadway project.



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





LEED and Green Globes – the leading vertical frameworks

LEED

- Prominent brand
- Credibility with environmentalists
- More widely adopted
- Non-profit with environmental backing
- Requires specific education
- Third generation

Green Globes

- Not as well known
- Credibility with facility managers
- Emerging system
- Non-profit with trade association backing
- Easy to use and learn
- Second generation



Greenroads

more sustainable roads for a better transportation future

What is the Greenroads rating system?

A performance metric for roadway design and construction that awards points for more sustainable practices. Greenroads helps quantify the sustainable attributes of a roadway project.



Greenroads is design to build awareness, improve practices, and stimulate innovation.

[Web address: www.greenroads.us](http://www.greenroads.us)



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





Greenroads

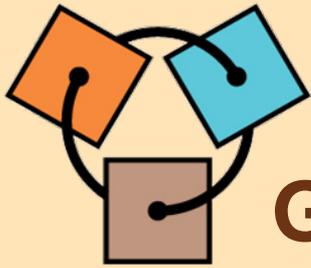
more sustainable roads for a better transportation future

Greenroads is a system currently oriented to project design and construction

It does not deal with system-level planning and it does not deal (yet) with operations or maintenance.



- FELSBURG HOLT & ULLEVIG
- CH2MHILL
- GOOD COMPANY



Greenroads Categories (Version 1.0)

Category	Description	Points
Project Requirements	Minimum requirements for a Greenroad	Req
Environment & Water	Stormwater, habitat, vegetation	21
Access & Equity	Modal access, culture, aesthetics, safety	30
Construction Activities	Construction equipment, quality, use	14
Materials & Resources	Material extraction, processing, transport	23
Pavement Technology	Pavement design, material use, function	20



Certification Levels

Version 1.0: 108 Voluntary Credit Points



32-42 points

PR + 30% VC



43-54 points

PR + 40% VC



55-63 points

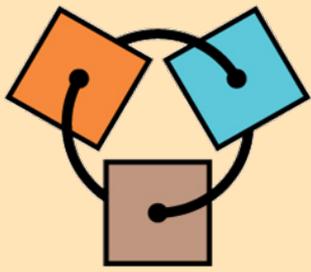
PR + 50% VC



64+ points

PR + 60% VC





TERC Sustainability Framework

FHWA's Sustainable Highways Initiative – in pilot stage

A voluntary, web-based self-evaluation tool for measuring sustainability over the life cycle of a transportation project or program — from system and project planning through design, construction, and operations and maintenance

[Web address: www.sustainablehighways.org](http://www.sustainablehighways.org)



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





System Planning & Processes Credits in the FHWA Initiative

- **Comprehensive & Integrated Planning**
- **Environmental Management System**
- **Context Sensitive Solutions**
- **Equity Analysis**
- **Integrated Transportation Land Use Planning**
- **Multimodal Transportation**
- **Professional Development**
- **Travel Demand Management**
- **Safety Management**
- **Air Quality Management**
- **Greenhouse Gas Emissions**
- **Climate Change Effects**
- **Noise Reduction Management Plan**
- **Financial Sustainability**





TERC Sustainability Framework

Project Planning and Development Credits – FHWA's Initiative

- **Cost Benefit Analysis**
- **Highway and Traffic Safety**
- **Context Sensitive Solutions**
- **Lifecycle Assessment**
- **Lifecycle Cost Analysis**
- **Freight Mobility**
- **Educational Outreach**



FELSBURG HOLT & ULLEVIG

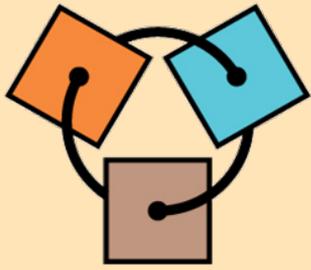


CH2MHILL



GOOD COMPANY





Transportation System Management, Operations & Maintenance Credits – FHWA’s Initiative

- **Pollution Prevention Plan**
- **Pavement Management System**
- **Bridge Management System**
- **Paved Surfaces Management System**
- **Traffic Control Infrastructure Maintenance**
- **Cleaning and Litter**
- **Roadside Infrastructure Maintenance**
- **Mobility**
- **Safety**
- **Snow & Ice Control**
- **Renewable Energy Use**
- **Sustainability Plan**
- **Alternative Fuel Fleet**
- **Recycle and Re-use**
- **Ecological Connectivity**





Civil Engineering Environmental Quality - CEEQUAL System

- CEEQUAL is the assessment and awards scheme for improving sustainability in civil engineering and public realm projects.
- The international version of CEEQUAL will be launched in January 2011 but the European version was launched in 2003.
- Applies to all civil infrastructure.





CEEQUAL Topics and Weights

- Project Management (10.9%)
- Land Use (7.9%)
- Landscape (7.4%)
- Ecology & Biodiversity (8.8%)
- The Historic Environment (6.7%)
- Water resources and the Water Environment (8.5%)
- Energy and Carbon (9.5%)
- Material Use (9.4%)
- Waste Management (8.4%)
- Transport (8.1%)
- Effects on Neighbors (7.0%)
- Relations with the Local Community and other Stakeholders (7.4%)





ASCE-ACEC-APWA Rating System for Infrastructure Sustainability and Management

- The piloting process is to be undertaken by up to ten project teams, on a range of project types and with a range of clients, designers and constructors.





ASCE-ACEC-APWA Rating System for Infrastructure Sustainability and Management

- **Level 1** is the introductory level of the system, designed to create and build awareness of sustainability and its role in infrastructure projects.
- **Level 2** is the foundation level of the system. It establishes the structure, scope and content of the rating system, as well as relative weightings of performance objectives, plus award levels for performance achievement.
- Applies to all civil infrastructure.





TERC Sustainability Framework

Break – 15 Minutes



FELSBURG HOLT & ULLEVIG



CH2MHILL



GOOD COMPANY





Sustainability Evaluation Tool

- **This tool will be emailed to you after this workshop.**





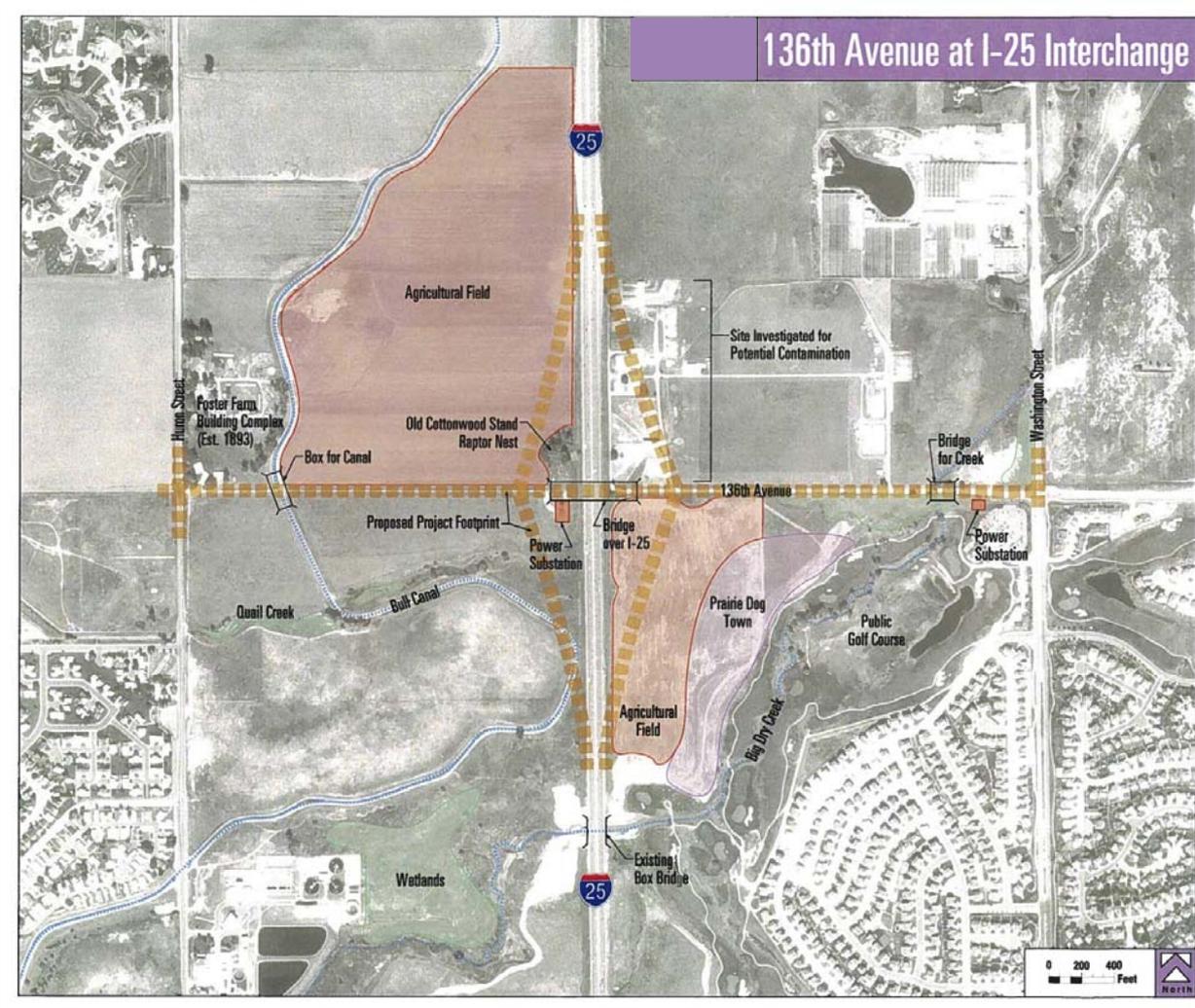
Group Activity: Evaluating a Project

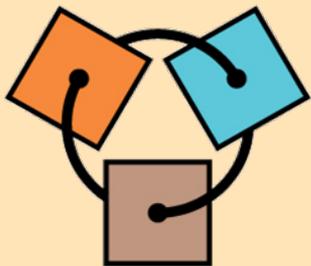
- **Divide into 3 groups for each topic: Community Well-being, Environmental Stewardship, or Economic Vitality and Quality**
- **Brainstorm for categories in your topic and mark up your maps.**
- **Whole group sharing of important evaluation findings.**
- **Planning for priorities.**





Group Activity: 136th Ave at





Group Activity: Evaluating an Initiative/Program

- **Divide into 3 groups – one group for each topic**
- **Inventory your sustainability benefits and concerns**
- **Identify the 3 most important and one surprise to share with the group**





What's next – how would you use this in your work?





What's next – how would you use this in your work?

- **Use as a tool to identify stakeholders**
- **Develop ways to scale the benefits and concerns**
- **Evaluate potential designs or solutions**
- **Identify appropriate enhancements and mitigation**



How does this apply to initiatives and programs?

- **Looking at community well-being let's look at a program for managing childhood obesity.**
- **What categories within community well-being are relevant?**

