

# **Evaluating the Economic and Environmental Sustainability of Large-Scale Infrastructure Projects**

**Jan Whittington**

Assistant Professor

Urban Design and Planning

University of Washington

**UCLA Lake Arrowhead Symposium**

October 17, 2010

My talk:

- Sustainability of large-scale projects

This panel:

- Seeking sustainable finance

My talk:

- Sustainability of large-scale projects

This panel:

- Seeking sustainable finance

## **Sustainability...**

- **Infrastructure**
- **Projects (large ones)**
- **Finance**

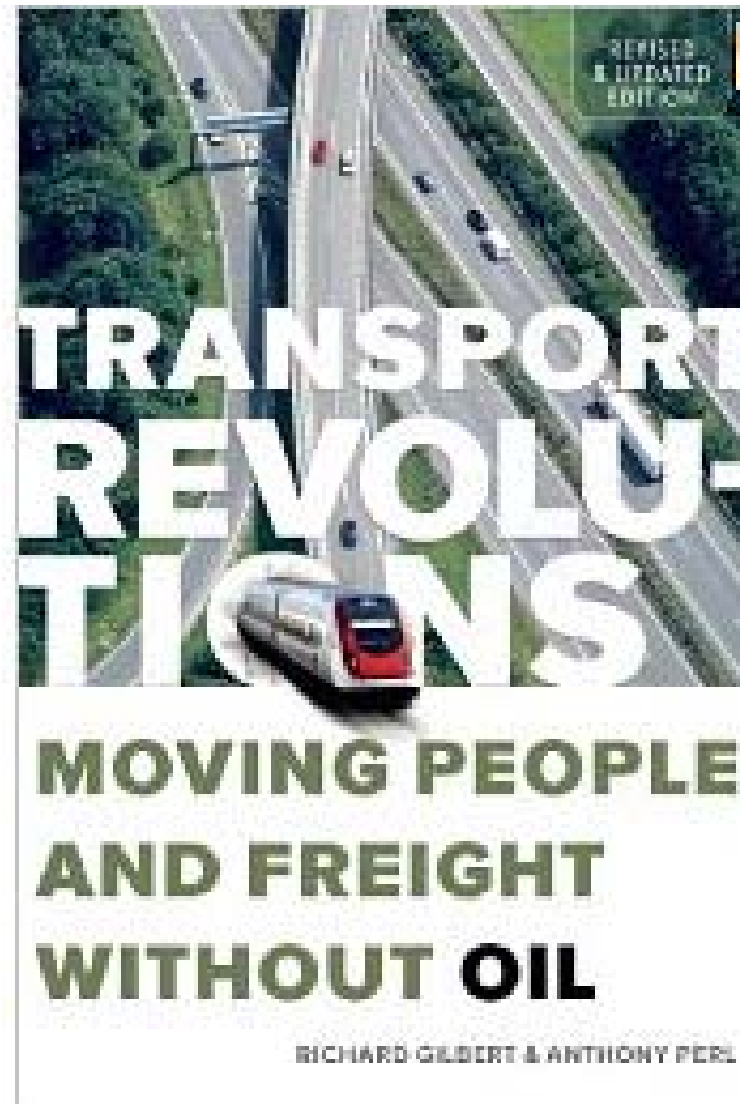
# Sustainability

... a malleable adjective?

- Future generations
- Climate change and peak oil
- Three Es
  - Economics
  - Environment
  - Social equity

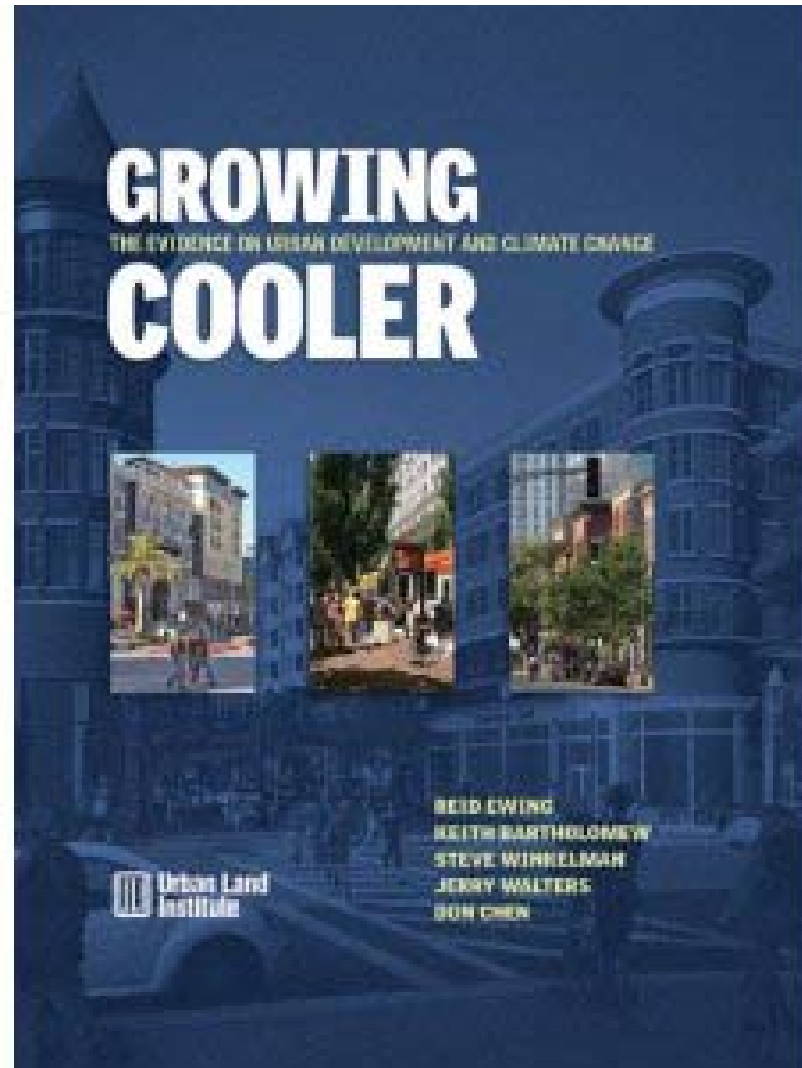
# Sustainability

How to reduce  
the use of oil



# Sustainability

How to grow –  
and drive less



# infrastructure

... how to prioritize?

- Signals from the marketplace
- Strategic
- Fit to scenarios
- Informed trade-offs
- Sunshine

# projects

... how to develop and deliver?

- Internal rate of return
- Environmental assessment
- Equitably designed, implemented
- Contractual hazards



# (large) projects

- Scale is determined by
  - Technology, contract, external imperative, programmatic review
- What does scale do? ...broadens
  - what is done (scope of interaction)
  - to whom (number of relationships)
  - when (time horizon of events)
  - and its impact (3Es)

# (large) projects

- How projects develop:
  - Problems meet solutions
  - Define scope of work
  - How (much) to finance?
  - Form of contract?
  - Select a contractor
  - Execute the contract
  - Manage the asset

# finance

... how to secure investment?

- Declining real gas tax
- (structural) recession
- Fiscal crisis
- Federal involvement?
- Private involvement?
- Productive investment?

# finance

... public finance

- Is the gas tax really dead?  
(or just sleeping?)

# finance

## ... public finance

- Is the gas tax really dead?  
(or just sleeping?)

### WSDOT

1998 – all time low

1999 and 2002 – defeat at polls

2003 – 5 cents

2005 – 9.5 cents

# finance

... private finance

- a tale of two financiers

# finance

... private finance

- a tale of two financiers

(e.g.) Goldman Sachs

Berkshire Hathaway

# finance

... private finance

- a tale of two financiers

(e.g.) Goldman Sachs

1.8, 3.8, 12.8 B (toll roads)

10-20% returns

“wedge” of value

Berkshire Hathaway

34 B (BNSF)

6% returns

“essential to society”



# Problem?

- Who will be the long-term manager?
  - Picture tolls, debt, payments to Wall Street
  - Stewards of the economy?
- What will we be managing?
  - Projects without lane-miles?
  - Networks that let us drive less
- How to evaluate?
  - Not like we currently do

# **Evaluating the Economic and Environmental Sustainability of Large-Scale Infrastructure Projects**

**Jan Whittington**

Assistant Professor

Urban Design and Planning

University of Washington

**UCLA Lake Arrowhead Symposium**

October 17, 2010