



THE OHIO STATE UNIVERSITY

Natural Infrastructure: The Importance of Public-Private Partnerships

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Natural infrastructure solutions can be the more cost-effective option...WHY?

Regulatory drivers:

Increasing compliance costs of environmental regulations make natural infrastructure solutions more economical



Photo: Rainforest Alliance

Example: Forest carbon offsets in California

(California EPA Air Resources Board)

Reduced costs relative to grey infrastructure:

Reduced equipment & installation costs, operation & maintenance costs



Photo: NYC Environmental Protection

Example: 90% of NYC's drinking water is drawn from 1,600 square miles of the Catskills watershed

(Chichilnisky and Heal 1998)

Social benefits: Natural infrastructure can produce additional ecosystem services (co-benefits) that generate social value



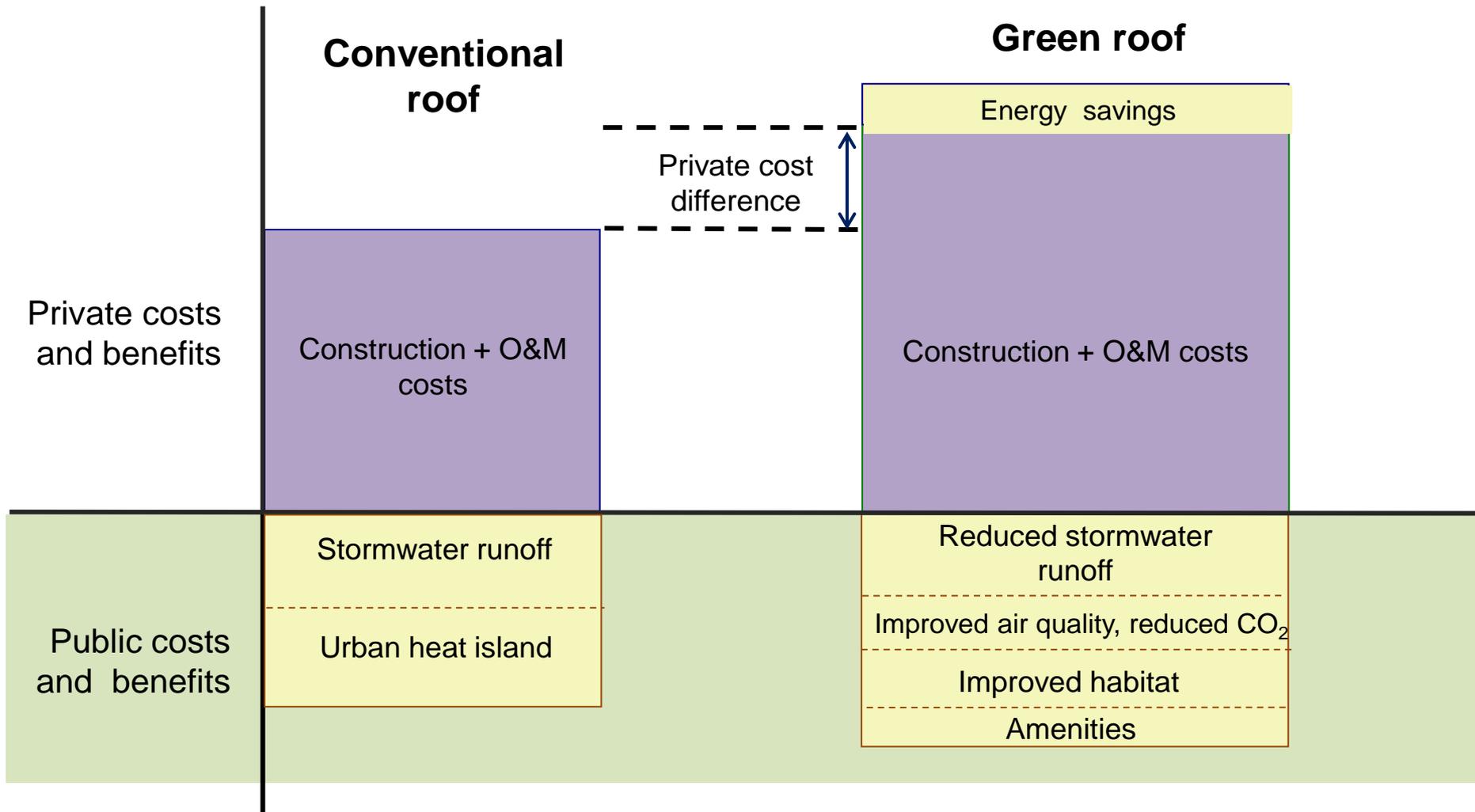
Flickr credit: Joel Mann

Example: Street trees add an average of \$8,870 to the sales price of a single-family residential home in Portland, OR

(Donovan and Butry, 2010)

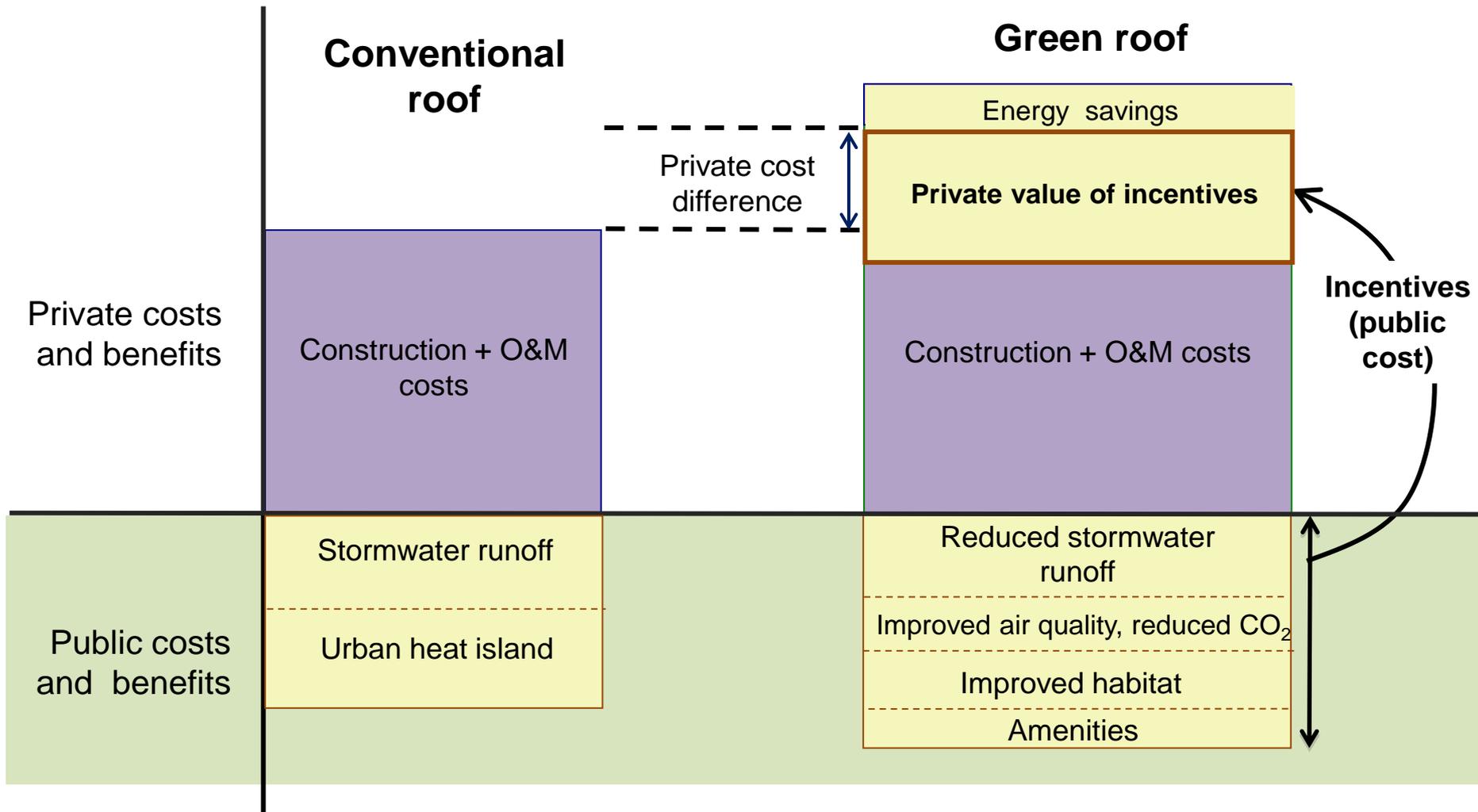
Public-private partnerships: the importance of incentives

Example: The economics of green roofs



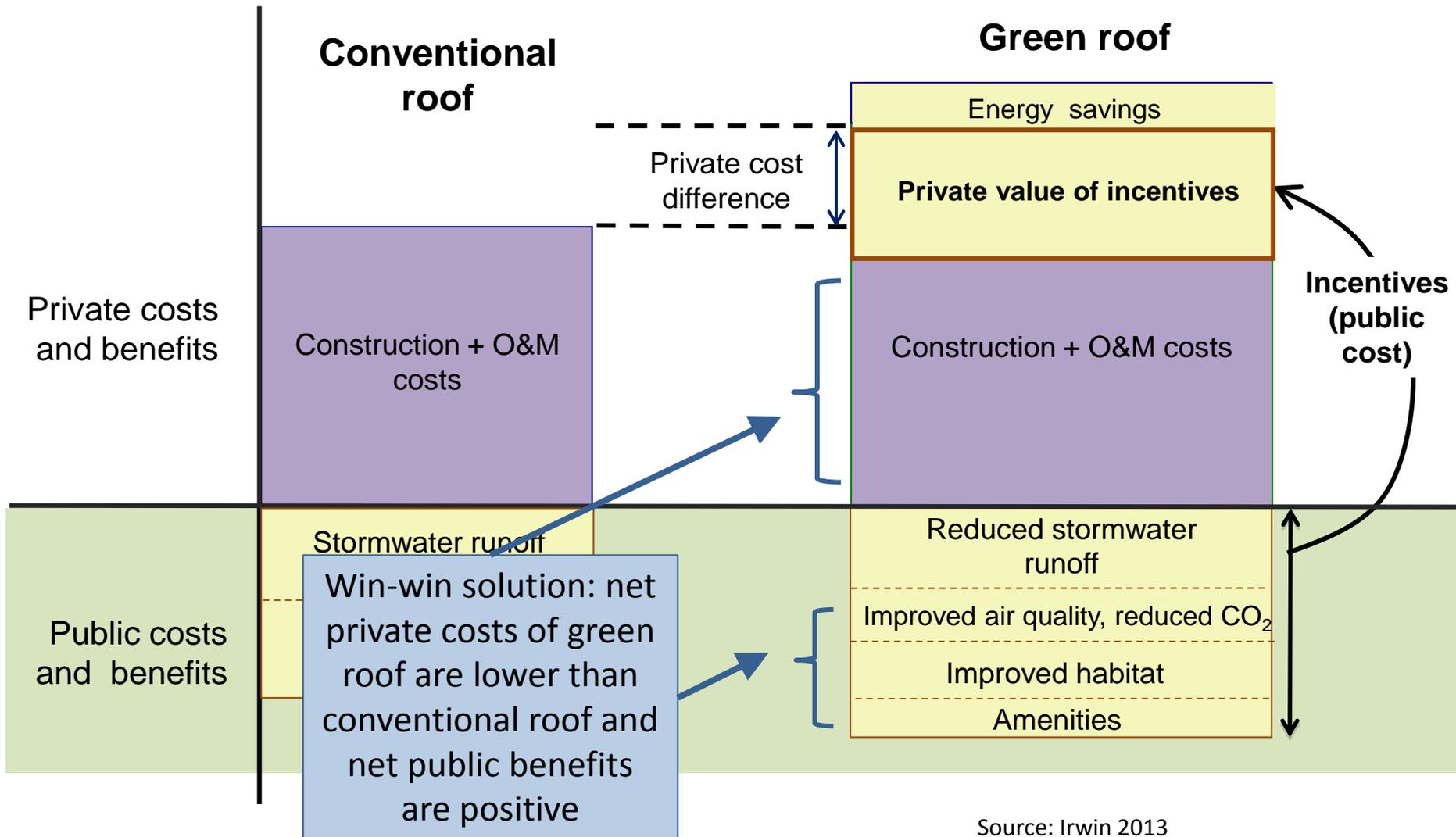
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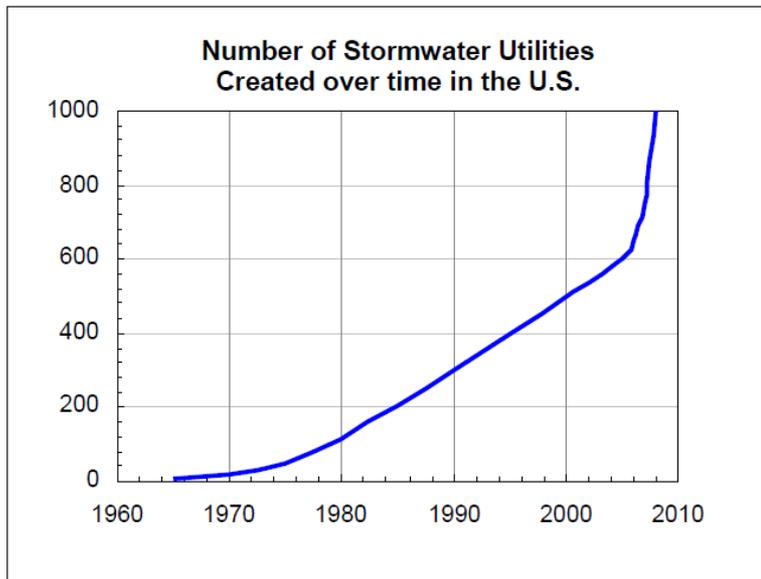


Public-private partnerships: the importance of incentives

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Municipal stormwater management programs: a mix of regulations and incentives



What is a stormwater utility?

A stormwater utility, operating much like an electric or water utility, may collect fees related to the control and treatment of stormwater that can be used to fund a municipal stormwater management program.

Source: EPA New England, "Funding Stormwater Programs," EPA 90-F-09-004 April 2009.

Example: City of Philadelphia implemented impervious-based stormwater billing in 2010



Gross Area = 488,893

Imperv Area = 336,120

Charge = \$ 1,759.59

City of Philadelphia Stormwater Fees

- Gross Area charge: \$0.526/mo per 500 sq ft
- Impervious Area charge: \$4.145/mo per 500 sq ft
- Credits offered for management of first inch of stormwater runoff using natural infrastructure (porous pavement, green roof, downspout disconnect, trees) → avoided public costs of \$170 million

Types of incentives and examples

- **Reduced fees:** By offering fee discounts to landowners who reduce runoff, the City of Philadelphia saves up to \$250,000 per acre of managed land in avoided infrastructure costs.
- **Avoided regulatory costs:** In San Jose, California, 87 percent of all development projects have less than 10,000 sq. feet of impervious surface to stay under the new water quality requirement threshold.
- **Development incentives:** Chicago's Green Permit Program expedites permit reviews for projects that meet certain LEED criteria.
- Portland's Floor Area Ratio (FAR) Bonus increases a building's allowable area in exchange for adding a green roof.
- **Rebates and financing:** Santa Monica, CA gives Landscape Grants to property owners that use native landscaping to reduce water consumption.
- **Awards & recognition:** BEST (Businesses for an Environmentally Sustainable Tomorrow) Awards by City of Portland

Example: Owens Corning facility parking lot retrofit (Portland, OR)

- Runoff from 31,000 square feet of impervious area is filtered and partially infiltrated, reducing pollutants entering the public stormwater system.
- 3,010 square feet of impervious area was removed and replaced with vegetated infiltration swales
- Total cost: \$125k; \$96k grant from Portland's Bureau of Environmental Services' Innovative Wet Weather Program (IWWP) Grant Funds
- A stormwater management charge discount was granted under Portland's Clean River Rewards program



Loading dock after construction



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