Funding The Proposed Lake Powell Pipeline

- Taxes (Property Tax)
- Fees
- Impact Fees
- OR ---- Some Combination of Each

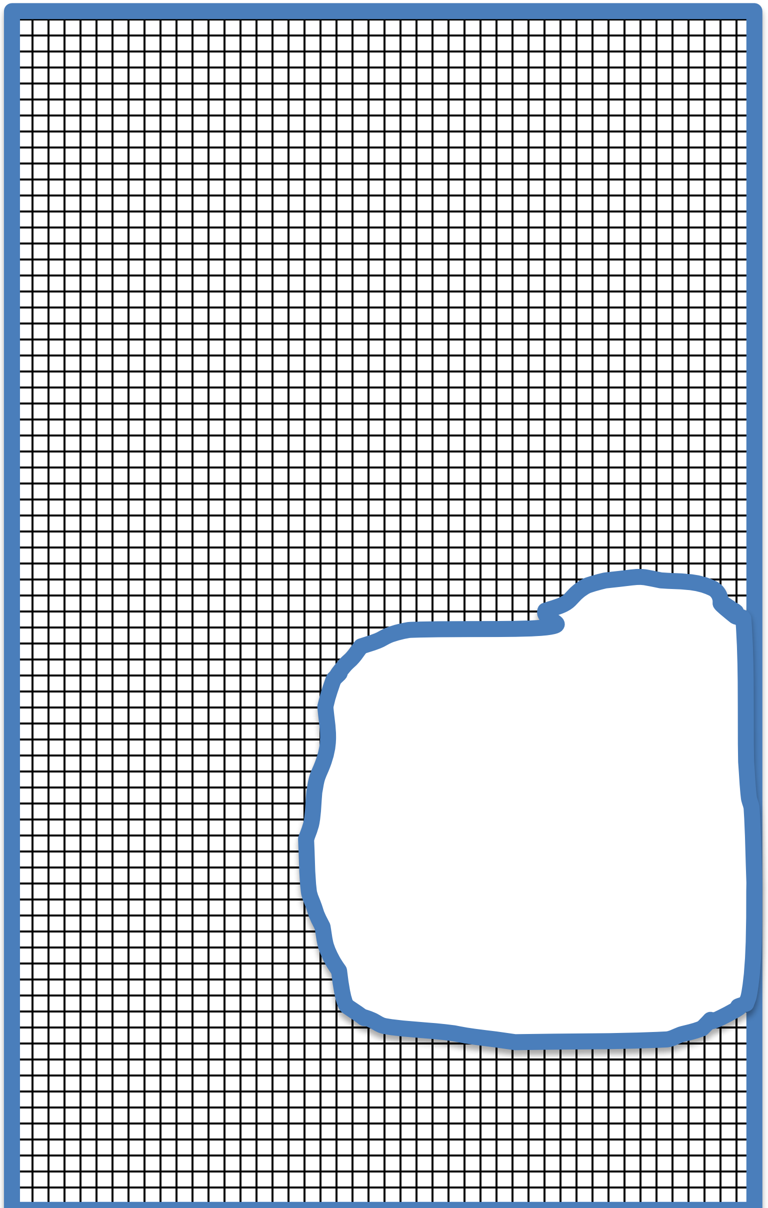
Property Tax

Presents Two Challenges to Public Policy:

1. **Tax Capitalization**
2. **Subsidized Prices**

Capitalization:
A Modest Example

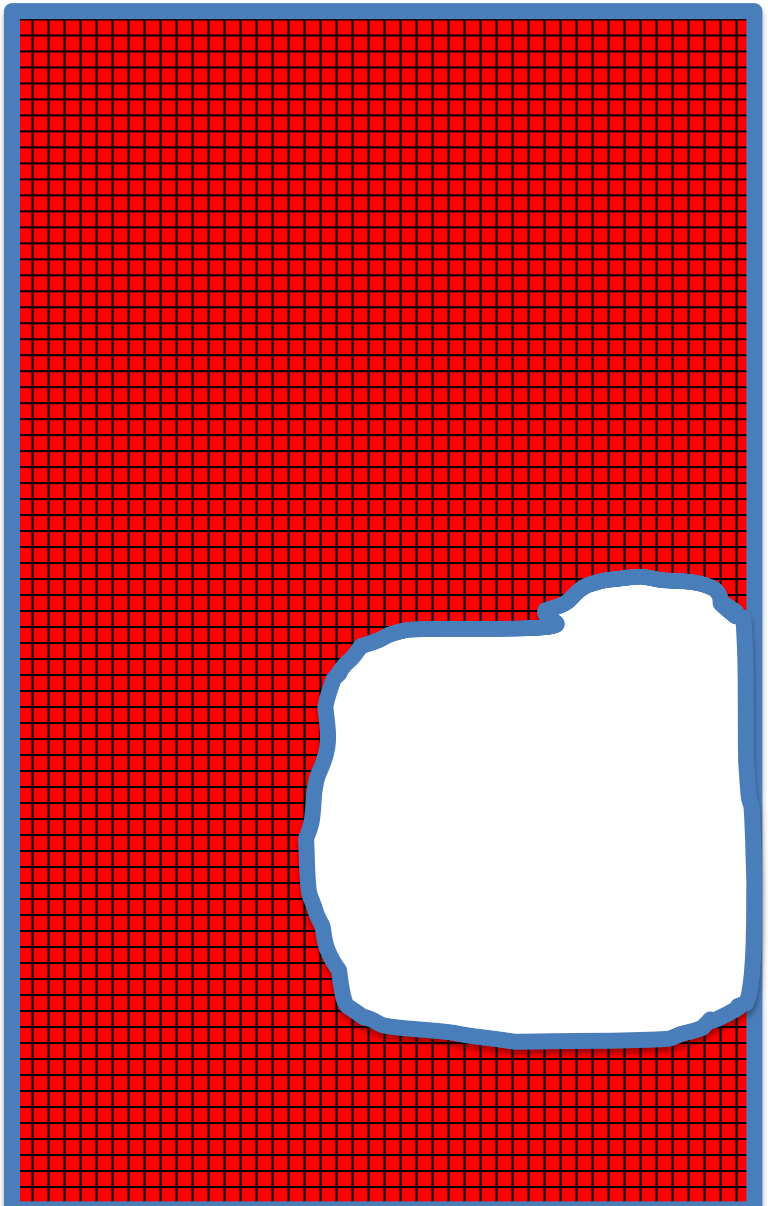
Property Tax Example: Burdens and Benefits



Developed Land: Existing Residents

Undeveloped Land: New Residents

Property Tax Example: Burdens and Benefits



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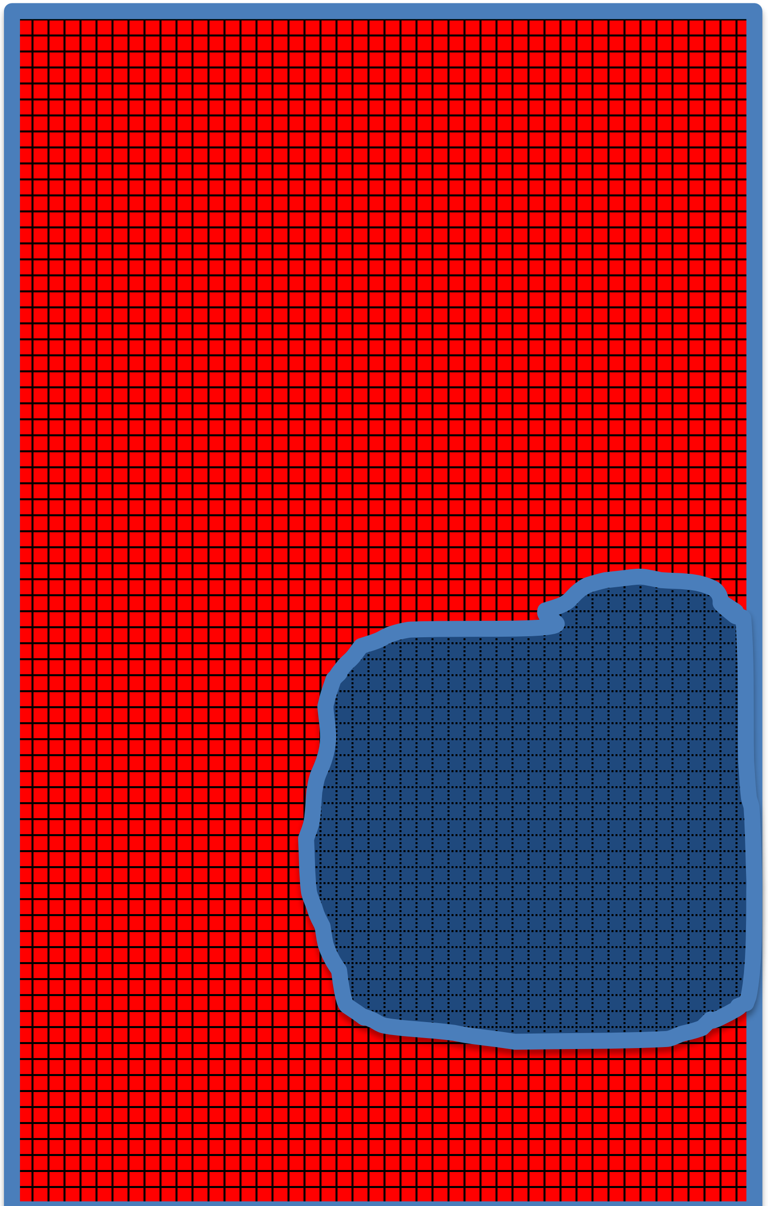
Capitalization of Property Tax Into Property Market Value: A Simple Example

- **How much will you pay for a business with a annual net income of $10,000?**
- **The required rate of return is 5%.**
- **You can invest $200,000 in a bond at 5% and make $10,000 annually.**
- **Or ---**
- **You can pay $200,000 for the business and earn $10,000 annually.**
- **If the property tax (or any expense) is increased by $5,000 annually the net income is now $5,000.**
- **How much do you need to invest to return $5,000?**
- **The amount at 5% return is now $100,000.**
- **The loss in income from the increase in the property tax has decreased the value of the firm by $100,000.**

$$V = \sum_{i=0}^{i=n} \frac{I_i - C_i}{(1+r)^i}$$

Property Tax Example: Burdens and Benefits



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Undeveloped Land: New Residents

This example of capitalization assumes few direct benefits accrue to the existing residents from the increase in the property tax.

Selected Empirical Evidence of Property Tax Capitalization

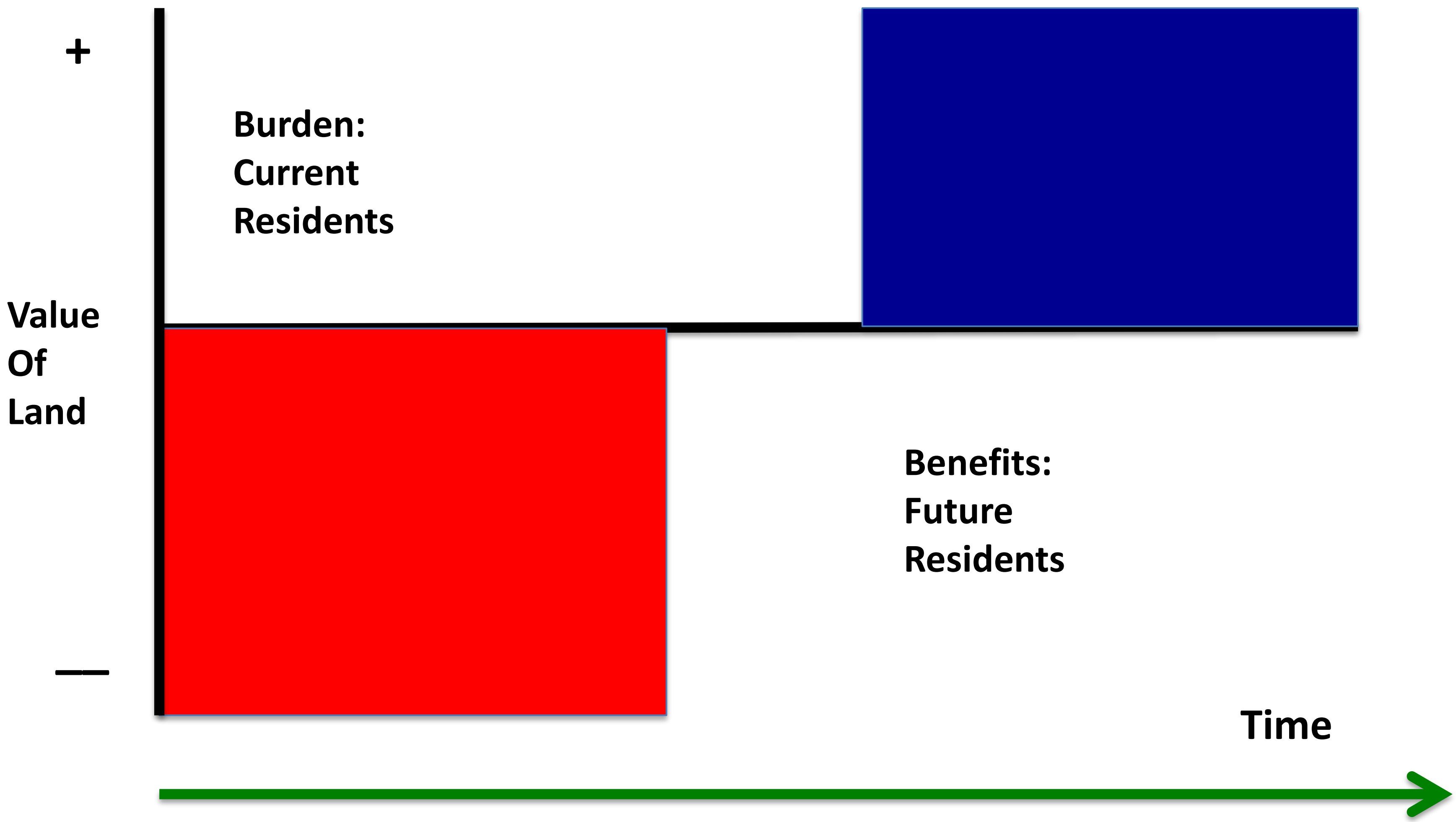
- W. Oates, *Journal of Political Economy*, 1969
- M. Feldstein, *Journal of Political Economy*, 1974
- C. Lewis & P. NcNutt, *AREUEA Journal*, 1979
- W. Wheaton, *National Tax Journal*, 1984
- J. Lillywhite, *Utah State University, M.S. Thesis*, 1979
- E. Glaser, *Public Choice*, 1996
- H. Ladd & K. Bradbury, *National Tax Journal*, 1998
- O. Palmon & B. Smith, *Journal of Political Economy*, 1998
- A. Rangel, *American Economic Review*, 2008
- D. Stadleman & R Eichenberger, *Southern Economic Journal,* 2012
- N. Kuminoff & J. Pope, *International Economic Review*, 2014

Property Tax: The Key Point of Capitalization

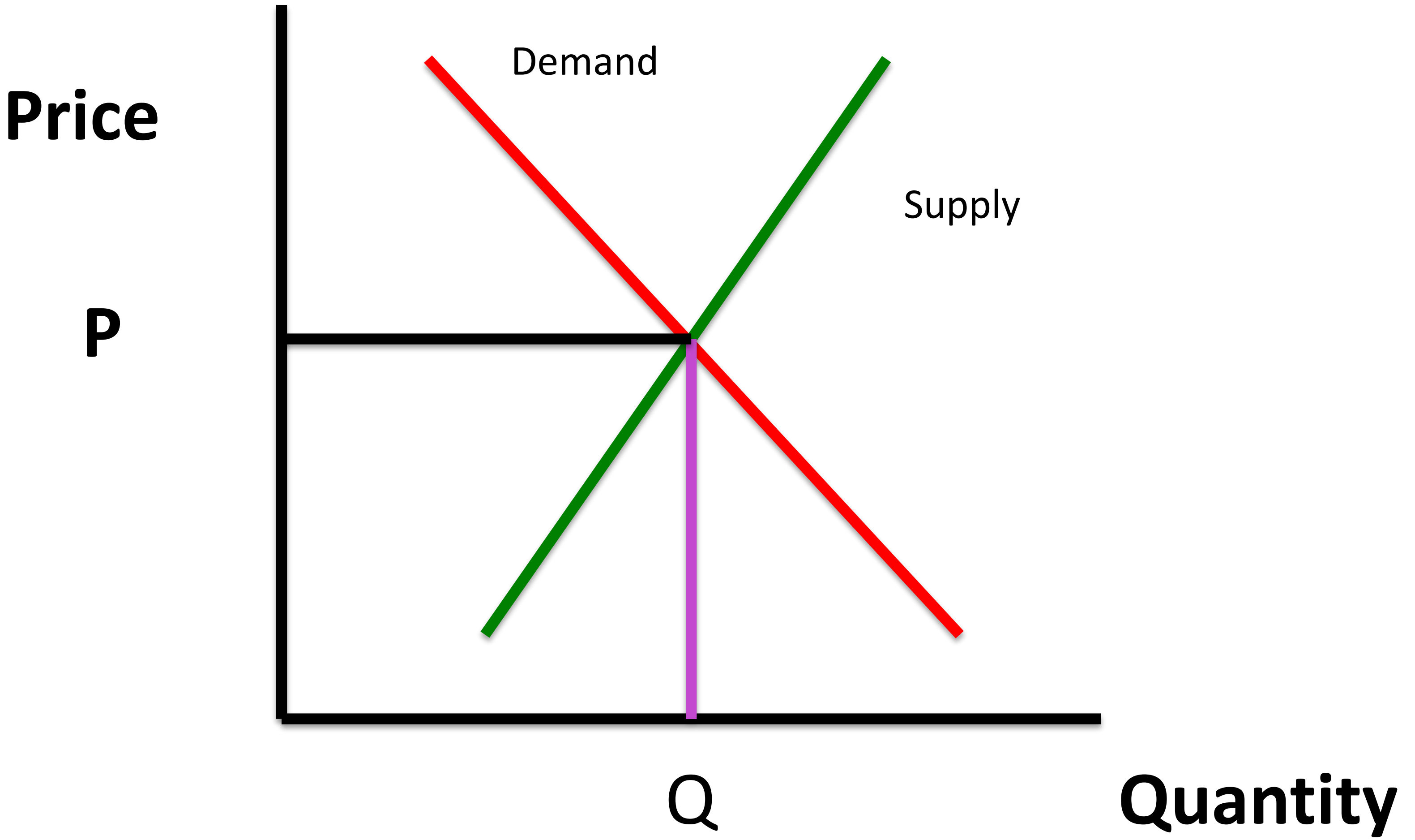
- If property taxes and the goods and services they fund are not properly aligned employing property taxes will reduce the value of existing properties.
- For example, research has demonstrated that quality K-12 schools contribute to residential home values.

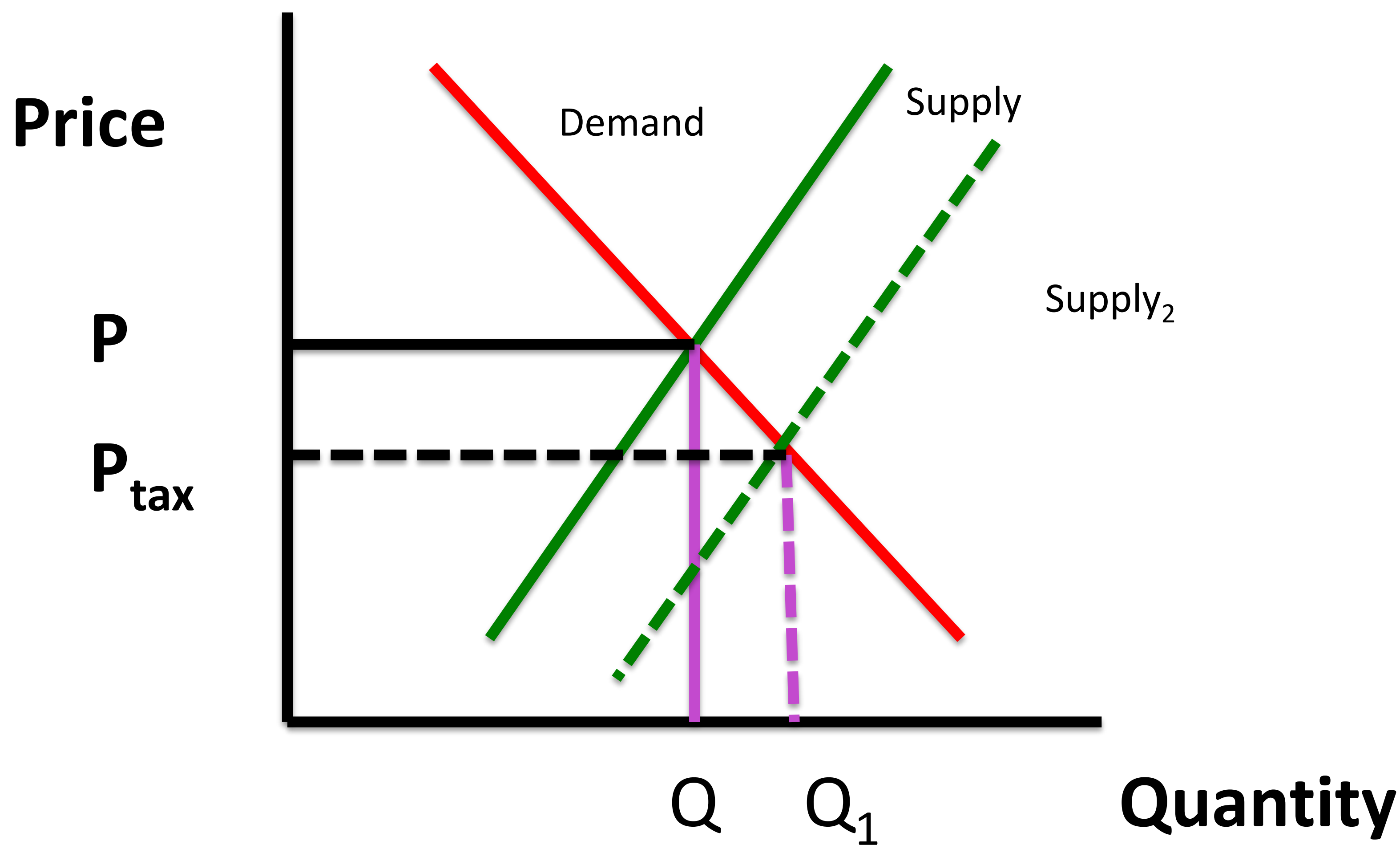
$$V = \sum_{i=0}^{i=n} \frac{B_i - C_i}{(1+r)^i}$$

Property Tax Capitalization



Subsidized Prices


Price
Demand
Supply
P
Q
Quantity


Price
Demand
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Supply₂
P
P tax
Q
Q₁
Quantity

Fees

Efficient Pricing: Market Allocation of Water

- Fees ---reflect Standard Economic Policy --- Whenever possible, local public services should be charged for…
- Fees --- if correctly imposed contribute to economic efficiency by revealing consumer choice. They allow a market resolution to satisfy both the demand and the supply of water.

The Market Allocation of Water

- **Fees --- insure that infrastructure costs are imposed on the consumers that benefit**
- **Fees --- remove the inequity issue between current residents an future residents**

Market Allocation of Water

- **The price elasticity (the rate of change in consumption when price changes) for residential water use has estimated by economists to be *inelastic*.**
- **Meta Analysis:**
  - **124 Studies, -.38 to -.51, Espey, *et al*, 1997**
  - **300 Studies, -.41, Dalhuisen, *et al*, 2003**
- **11 Cities, -.33, Olmstead, 2007**
- **10% increase reduces consumption by 3% to 4% -- Short Run**
- **10% increase reduces consumption by 6% -- Long Run**

Market Allocation of Water

- Fees --- fully inform consumers because they take away the subsidy that exists when property tax revenues are used to fund infrastructure
- Fees --- allow more freedom to use the property tax to fund activities where the use of fees is not feasible: K-12, Police, Fire, etc.
- Marginal cost pricing is the key to efficiency.
- Pricing based on the LRMC becomes significant when water becomes scarce

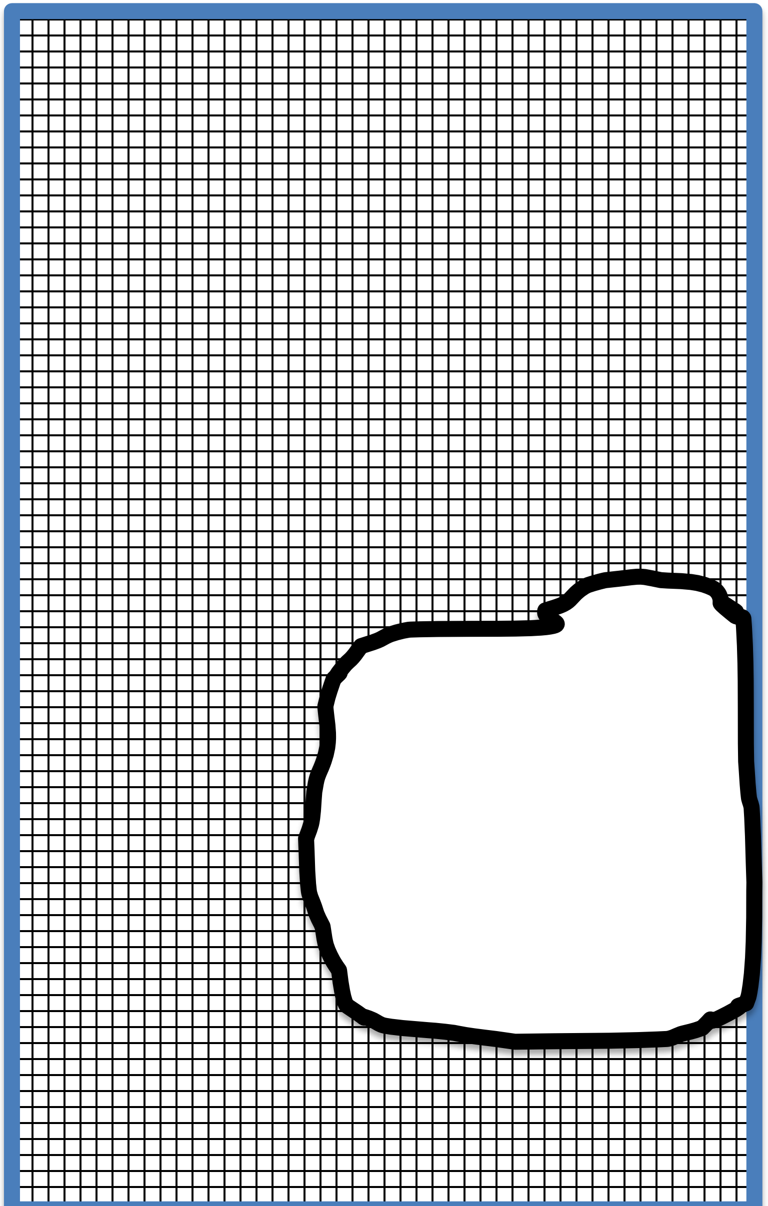
Impact Exactions

Impact Fees

- **Impact fees are one-time levies determined by a schedule/formula adopted by a local government that are assessed on developers during the land permitting process.**

- **Imposed on new development to fund the infrastructure**

Impact fee Example: Burdens and Benefits



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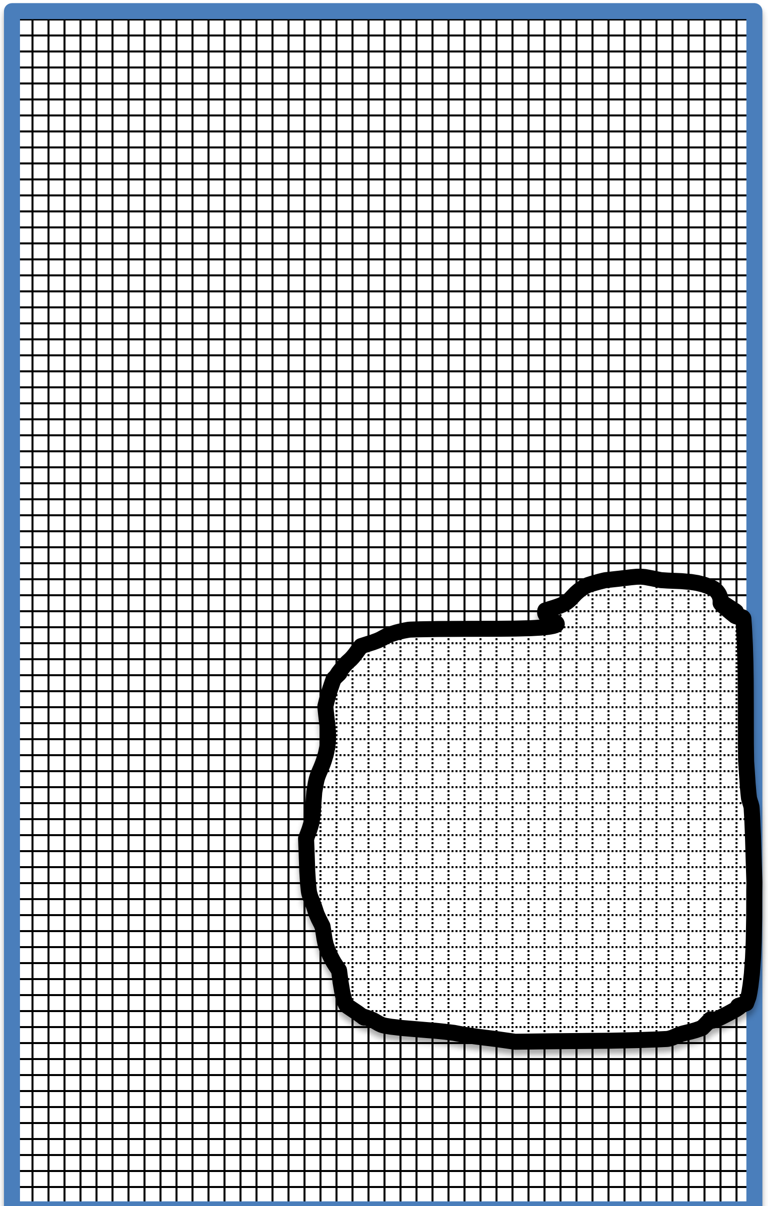
Impact Fee Example: Burdens and Benefits



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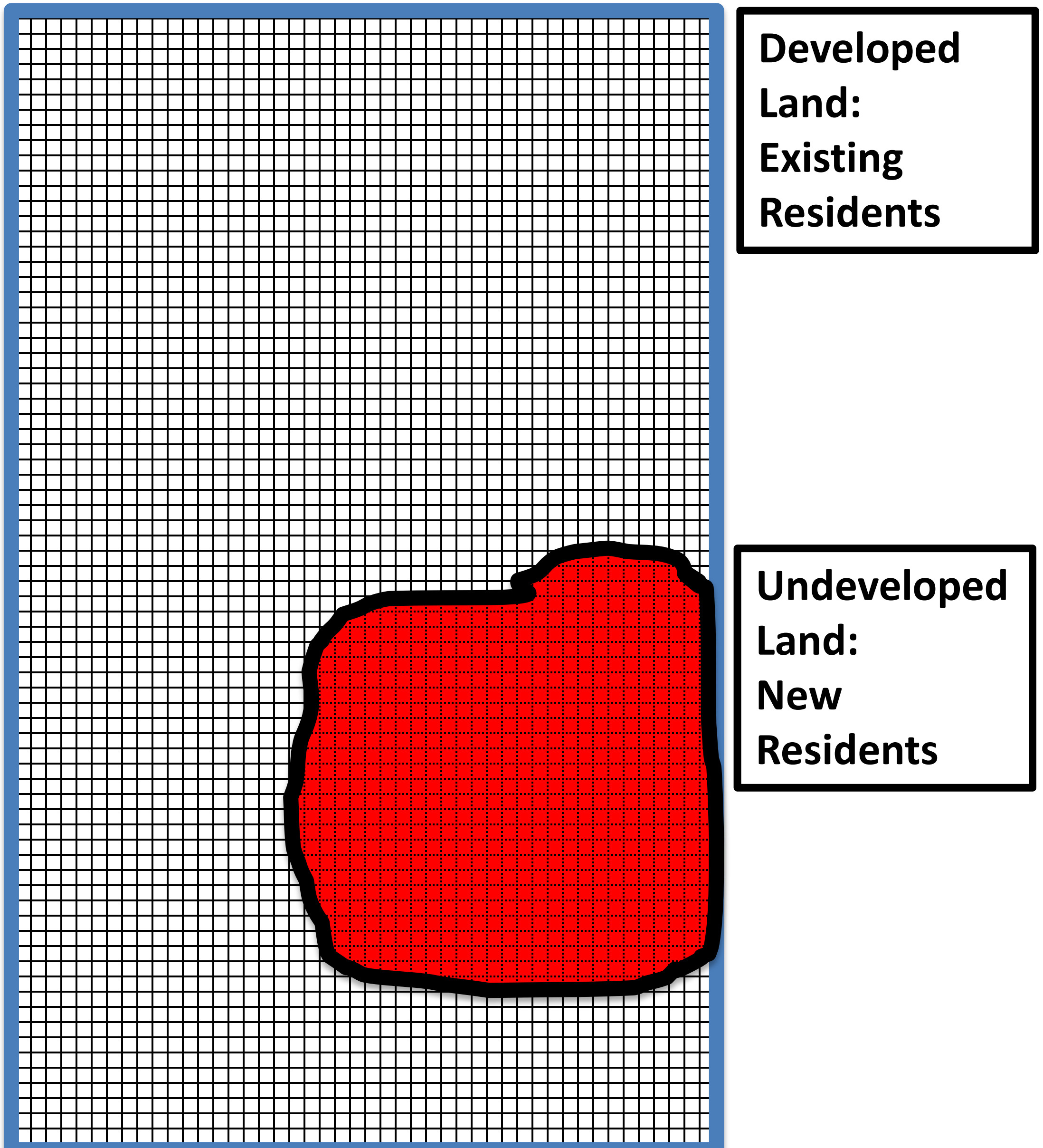
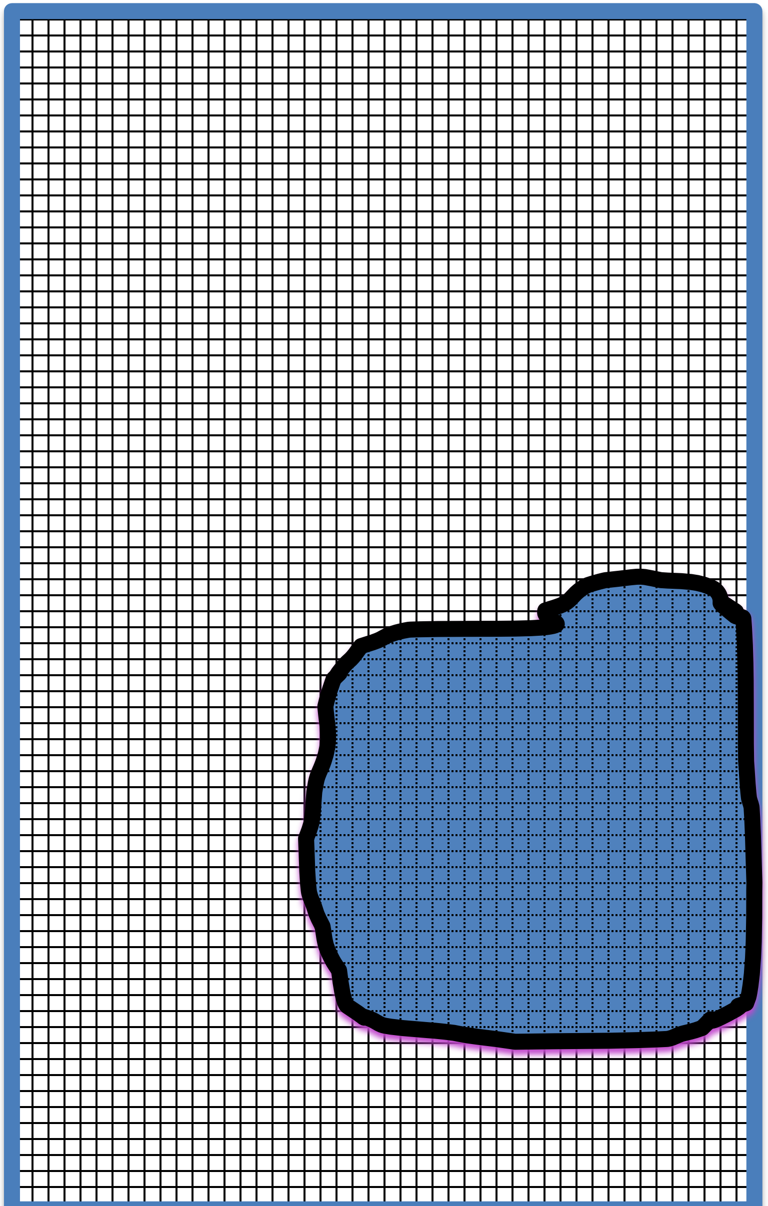


Impact Fee Example: Burdens and Benefits



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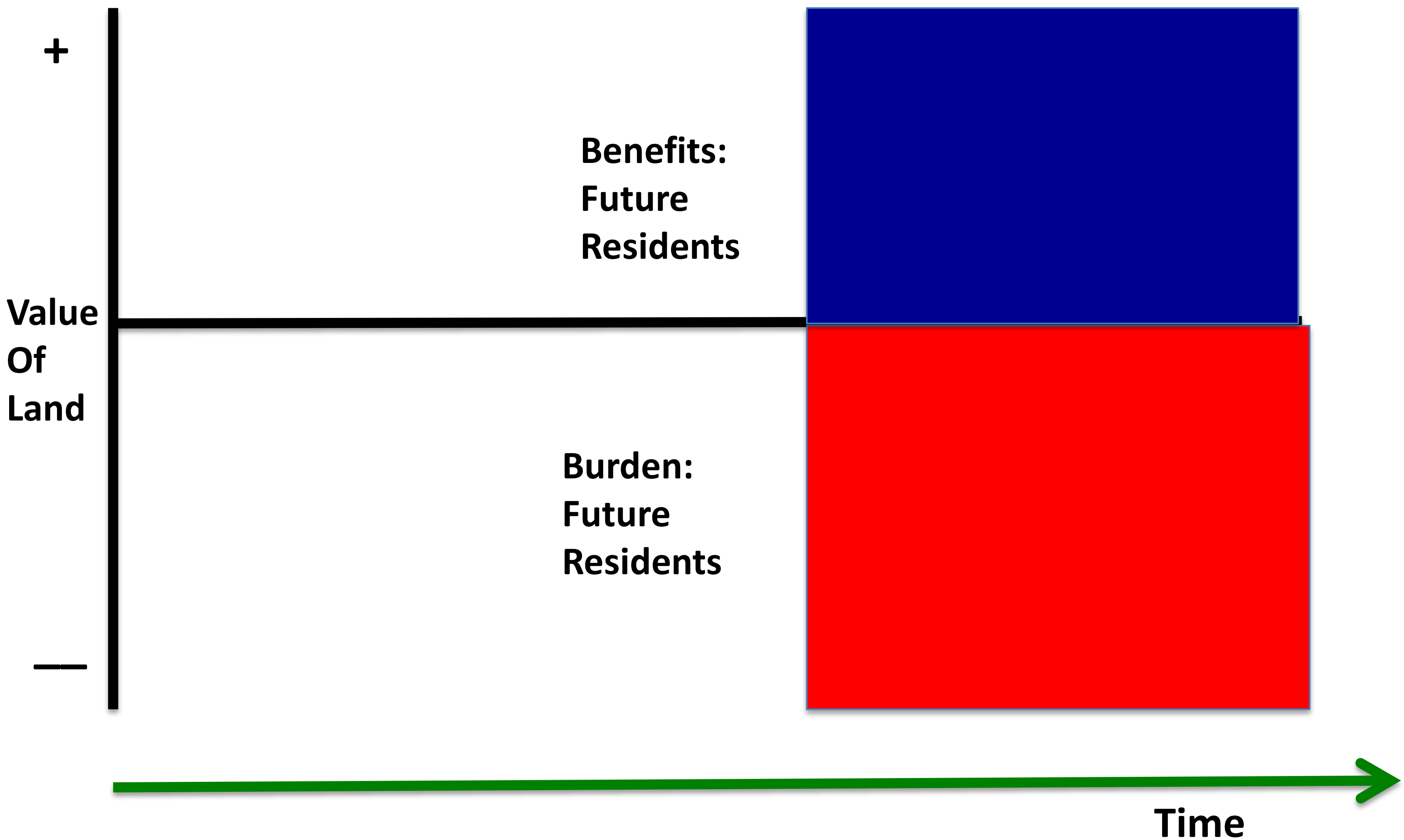
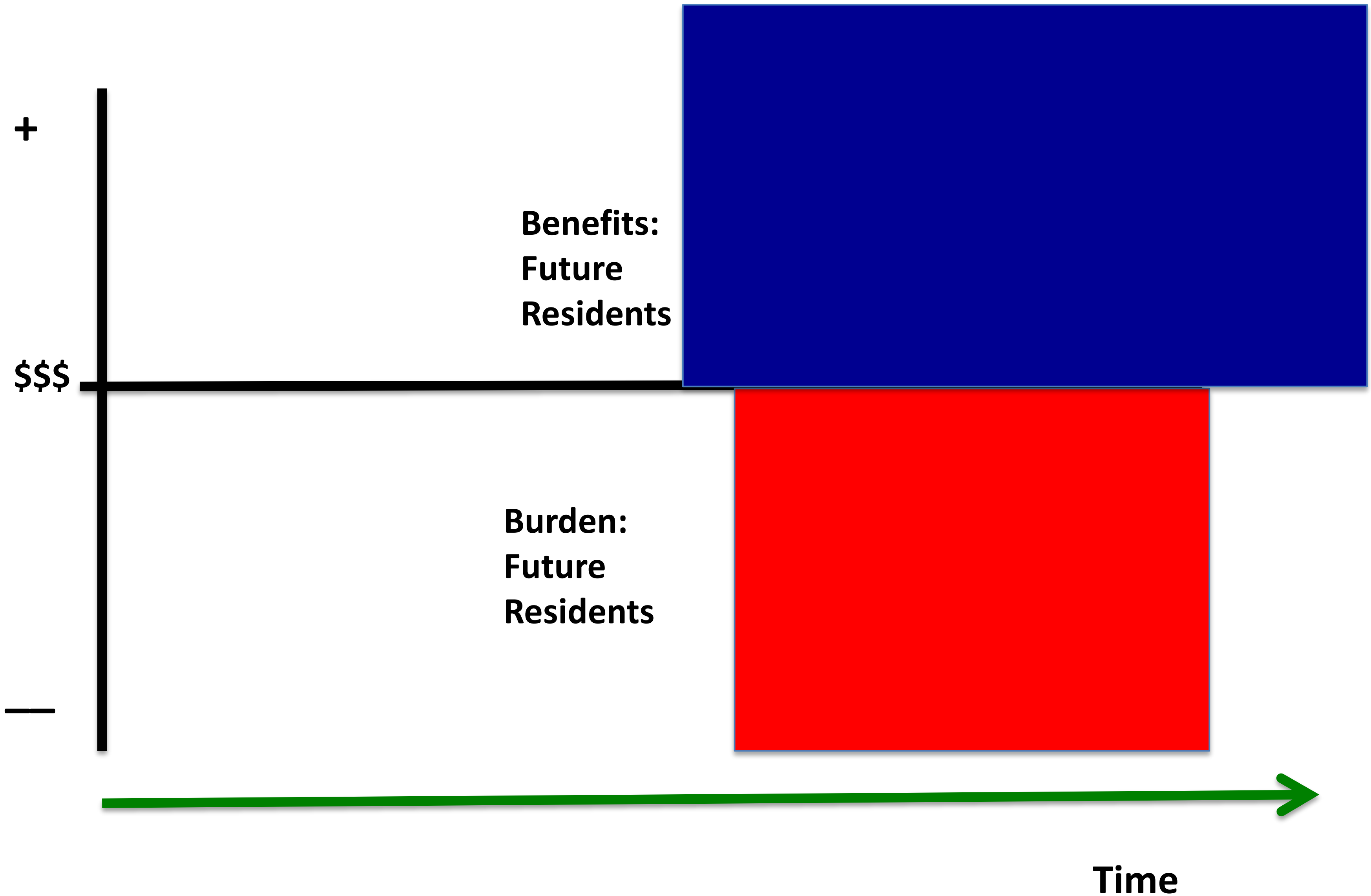
Property Tax Capitalization



Property Tax Capitalization



The Economics of Impact Fees

- Efficient outcomes occur when news residents and decision makers confront market prices that reflect the full costs and benefits of their actions.
- Impact fees that are predetermined reduce risk and make development decisions more predictable. (Preferable to a position of no growth.)
- Impact fees need to account for the marginal cost of development.

The Economics of Impact Fees

- Marginal cost and average cost impact fees
- Consider two distinct developments
  - One close to community center and one located far from the city center
  - The cost of providing water to the close development is lower than the cost of providing to the distant development
- Rational impact fees will account for the difference (marginal cost) of the distant development.

The Economics of Impact Fees

- **Who bears the burden?**
- **Depends on the relative elasticity of the supply and demand for housing**
  - **Buyers in exclusive areas are likely to bear the burden of the impact fee. However, if a buyer is not interested in the amenities of the exclusive area the options of other areas suggest that the landowner/developer will bear the cost of the impact fee.**
  - **Impact fee study in Contra Costa, California. Desirable area a $1 increase in impact fee added $1.88 increase in housing cost and a $1 increase in a less wealthy area increased housing cost by $.23. Dresch & Sheffrin (1997)**
- **Developer, buyer, or land owner?**
- **Research?**
- **Do they slow economic development?**

Summary

- Property tax to fund “lumpy” water infrastructure creates inequities in the distribution of the burden and the benefits
- Especially when the burden of the costs do not correspond to the distribution of the benefits
- Subsidized fees (because of support by property tax) creates inefficient outcomes
- Properly implemented fees create efficient outcomes in water demand
- Impact fess internalize the costs and the benefits of water infrastructure