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# Why Economists Advocate Tolling as Sustainability Policy

Graphics courtesy Puget Sound Regional Council


# Sustainability Principle #1: Pay for What You Use

- **Economics is the science of scarce resource management**
  - *A key principle: Paying for what you use*
- **We disobey this principle with highways**
  - **Peak capacity is scarce**
  - **But we do not charge for this scarcity, resulting in its overuse (“congestion”)**
- **Congestion wastes resources**
  - **Creates excessive time losses, exaggerated “needs” for more capacity, distortion of mode choices, and financial incontinence**
- **Tolling and technology can help**



# The Puget Sound Regional Tolling Experiment

- All major roads were tolled
  - Freeways + non-freeways
  - 6,000+ road segments
- Tolls varied to reflect user costs
  - Varied by time of day
  - Varied by type of road
- Large-scale operational test of
  - Behavioral responses
  - Central billing
  - Security and privacy
  - Rapid implementation

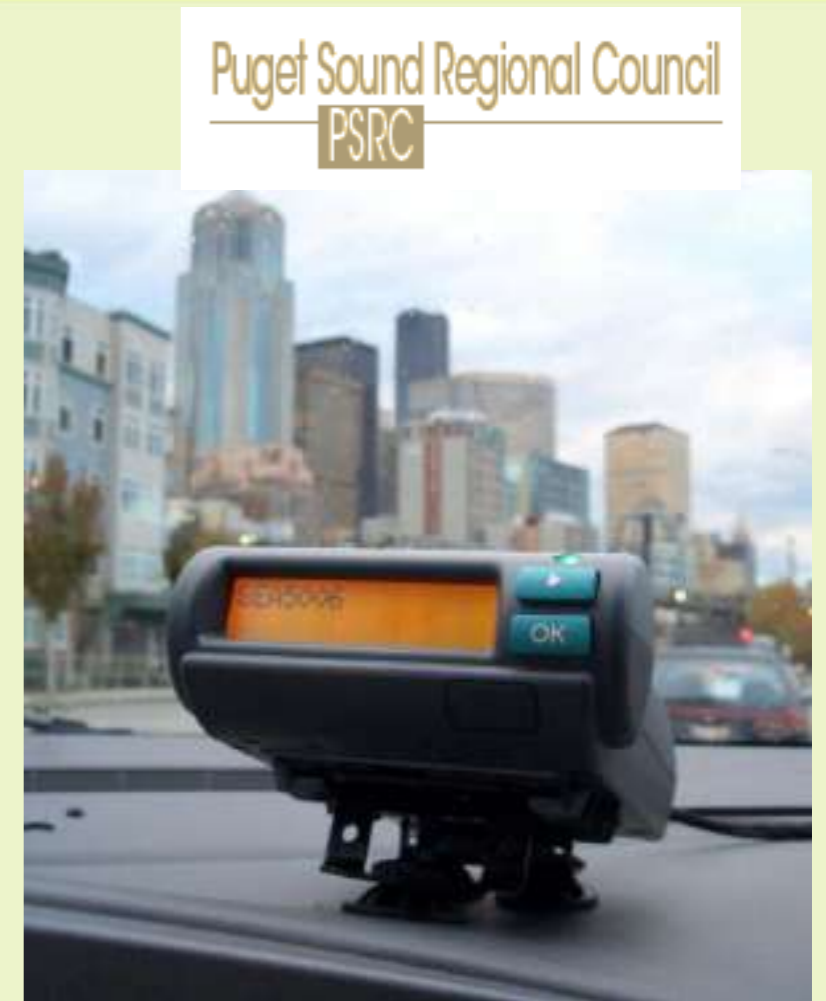


TOLL RATES PER MILE		
MONDAY — FRIDAY		
TIME	FREWAYS	NON-FREWAYS
6 AM	40¢	20¢
9 AM	15¢	7.5¢
4 PM	50¢	25¢
7 PM	10¢	5¢
10 PM	no charge	no charge
6 AM	no charge	no charge



# How the Experiment Worked

- Randomly selected households
  - 270+ participating households
  - 400+ vehicles
- In-vehicle pricing technology
  - Tells driver the toll rate and trip cost
  - GPS and cellular communications
- Households paid actual tolls to use roads
  - Tolls paid from “endowment”
  - Participants kept what they did not spend
- Produced rich dataset to study effect of tolls
  - 18 months of data
  - 750,000+ individual trip records
  - 150,000,000 location/time data points



# Results Support Pricing as a Beneficial Policy

- Even though just a *temporary* experiment, households responded
  - 7 percent reduction in vehicle-miles traveled
  - 5 percent reduction in vehicle-hours traveled
  - Reductions in tours per week, days of vehicle use, peak travel.
- Extrapolating the responses to all households in the Puget Sound:
  - User benefits exceed system costs by **\$28.2 billion** over 30 years
  - Benefit-cost ratio of over **6-to-1**
  - Gross revenues from tolls: **\$2.8 - \$3.2 billion** per year

