

The Models, Uncertainty, Decision Making Frameworks, and Going Beyond Markets

Panel II

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Rayburn 2186

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Key Points

- **Uncertainty**
 - It is unavoidable
 - It can be characterized
 - It can be dealt with
- **The models**
 - Provide useful insights
 - Provide useful benchmarks
 - In general they like markets and market based policy instruments
- **There is a need to go beyond the models**
 - No need to abandon the theory or the modelers
 - Sometimes policy implementation is not efficient
 - Sometimes markets are not perfect
 - Sometimes externalities are not being internalized
 - A few simple examples can illustrate these realities
- **How robust are those insights anyway?**

The Simple Rules Strategy

“When the business environment was simple, companies could afford to have complex strategies. But now that business is so complex, they need to simplify. Smart companies have done just that with a new approach: a few straightforward, hard and fast rules that define direction without confining it.”

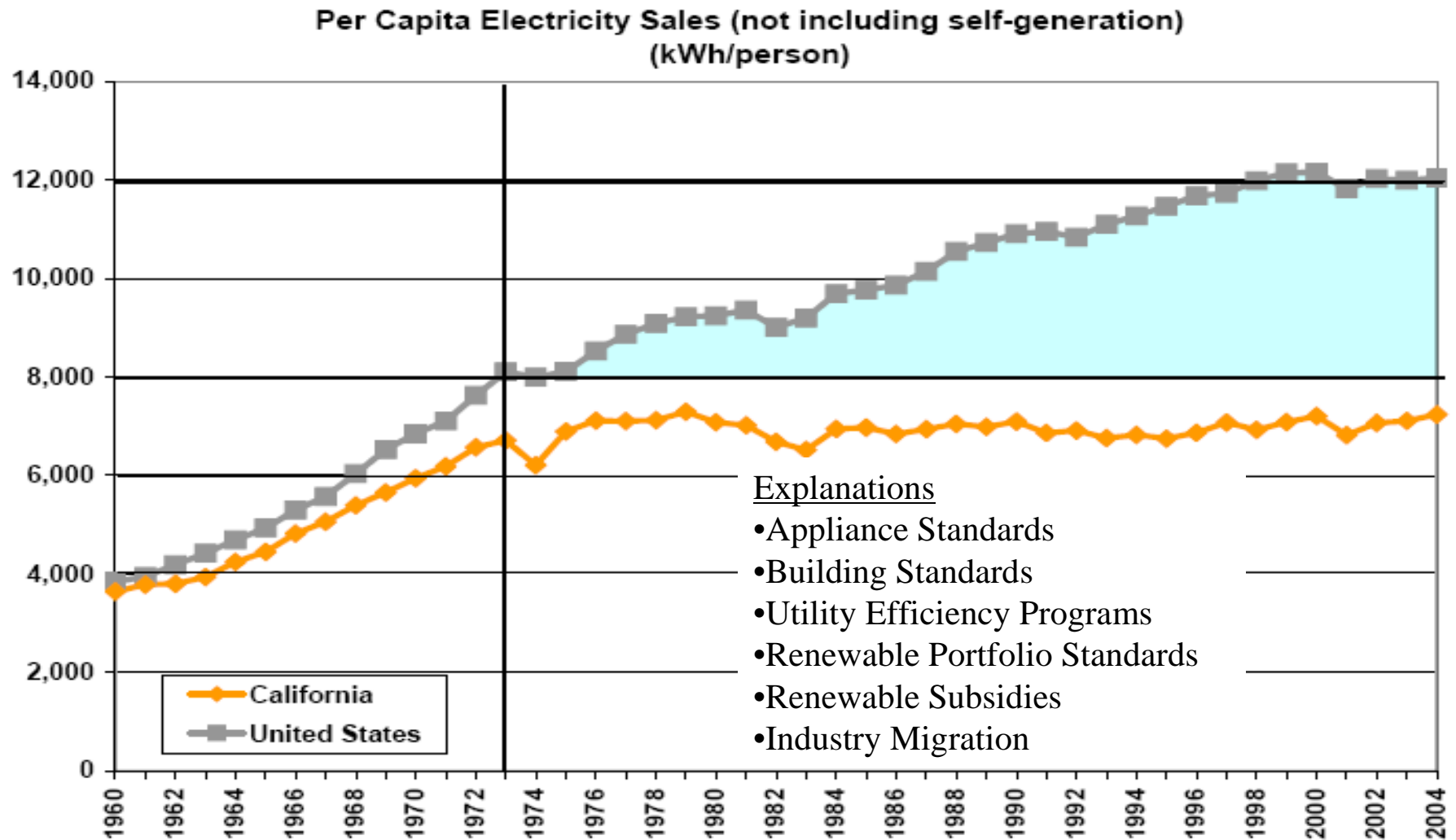
Eisenhardt and Sull, Harvard
Business Review, January 2001

Possible Climate Change Policy

Simple Rules

- Rely on markets as much as possible
- Correct market failures
 - Information
 - Decision making
 - Innovation
 - Demonstration
- Carefully factor in side benefits
 - Criteria Pollutants
 - Congestion
 - Economic development
 - Environmental justice
- Pay attention to states
- Don't let the perfect be the enemy of the good and useful
 - Adopt broad strategic framework
 - Experiment at small scale, preparing to accelerate or stop

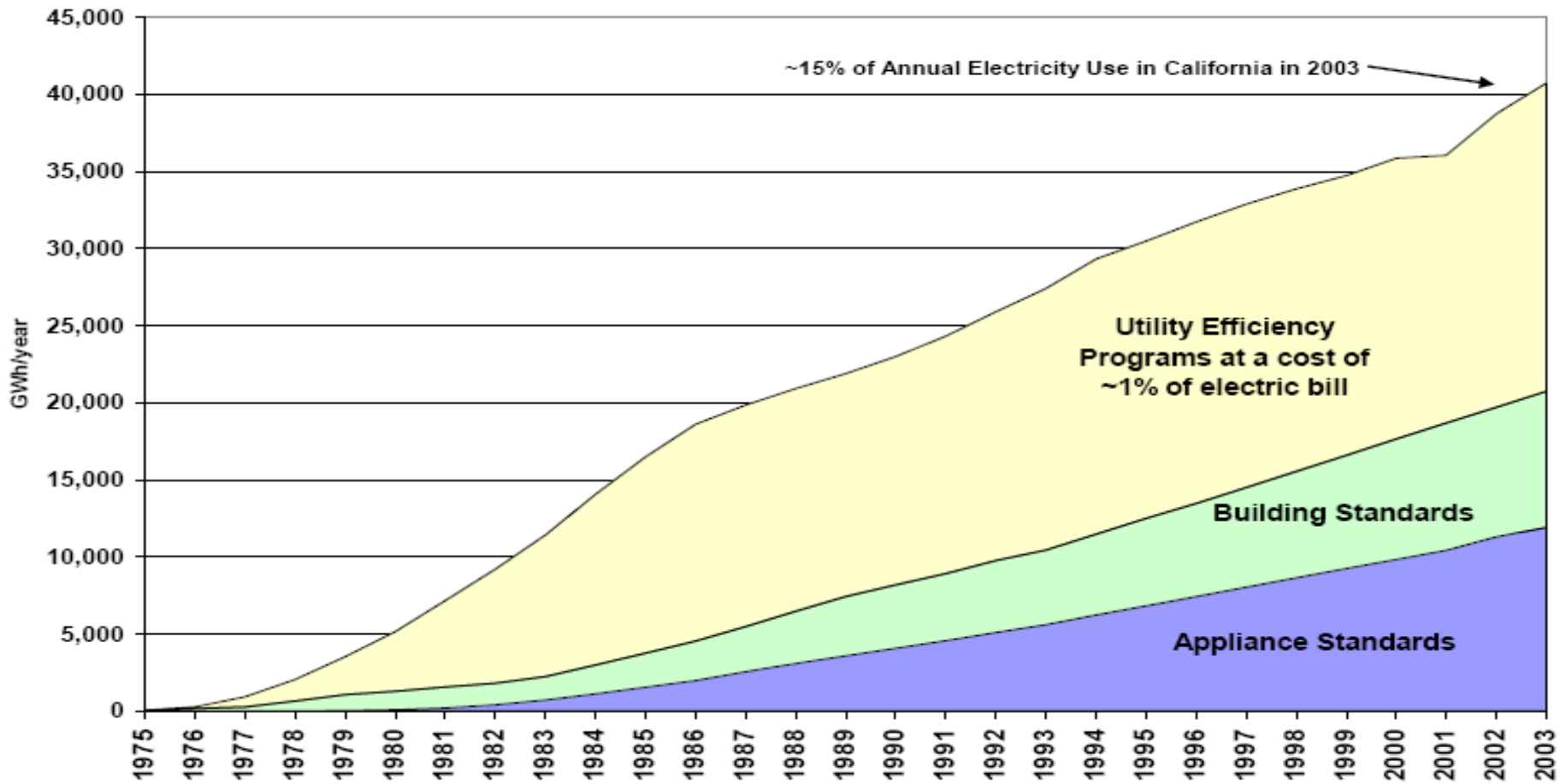
Example #1: California Electricity



Source: Martha Krebs - Deputy Director for R&D, California Energy Commission

California (Continued)

Annual Energy Savings from Efficiency Programs and Standards

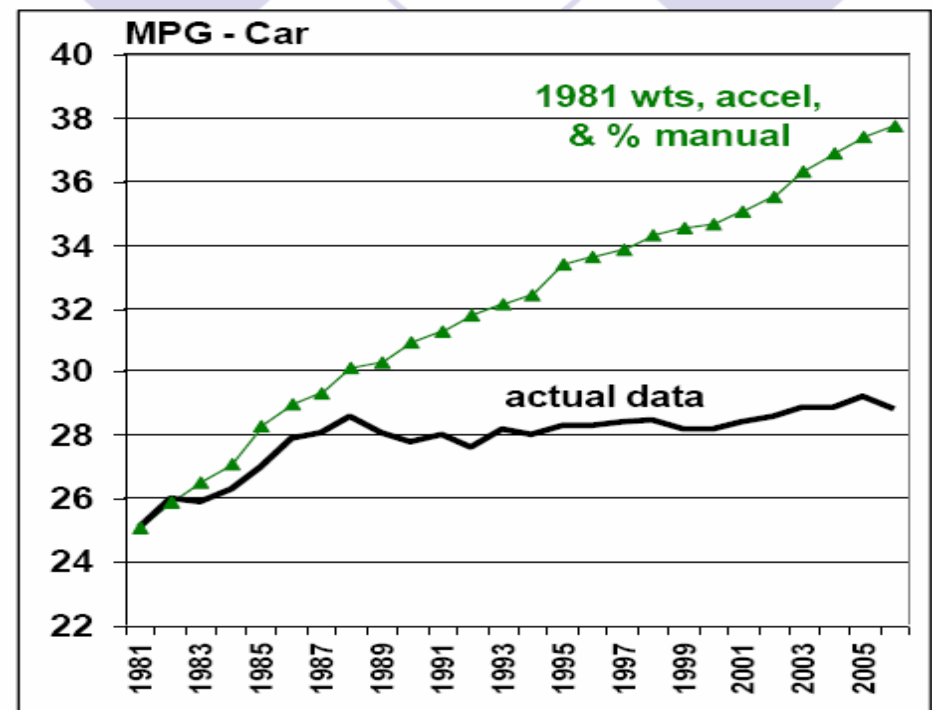
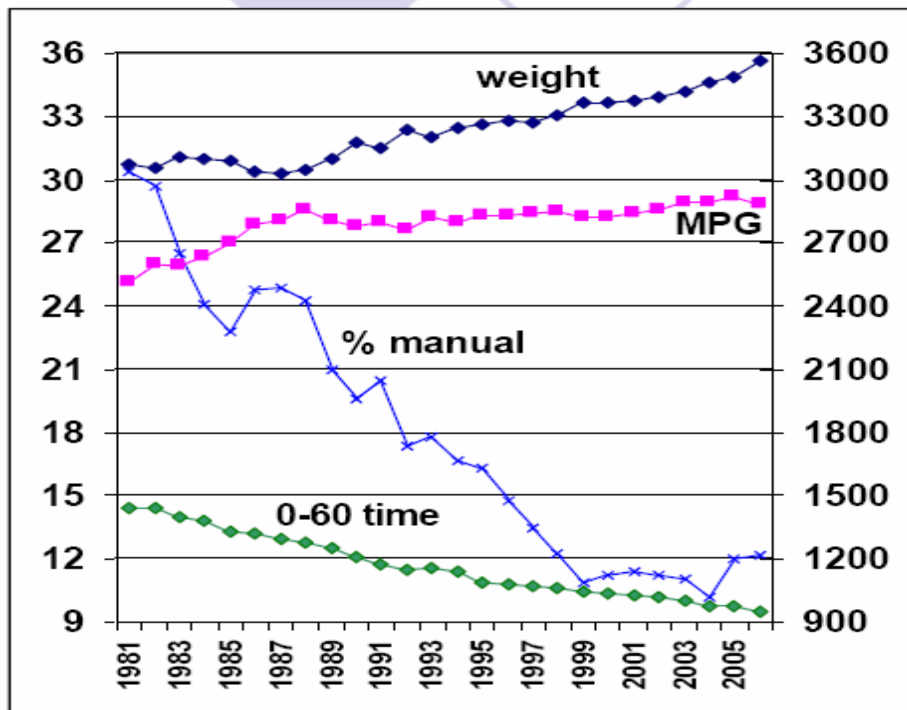


Source: Martha Krebs - Deputy Director for R&D, California Energy Commission

Example #2: Light Duty Vehicles

Since 1987 (CAFE standards constant since 1985) technological advances have been used to improve attributes other than fuel economy.

Car Data from EPA's 2006 FE Trends Report

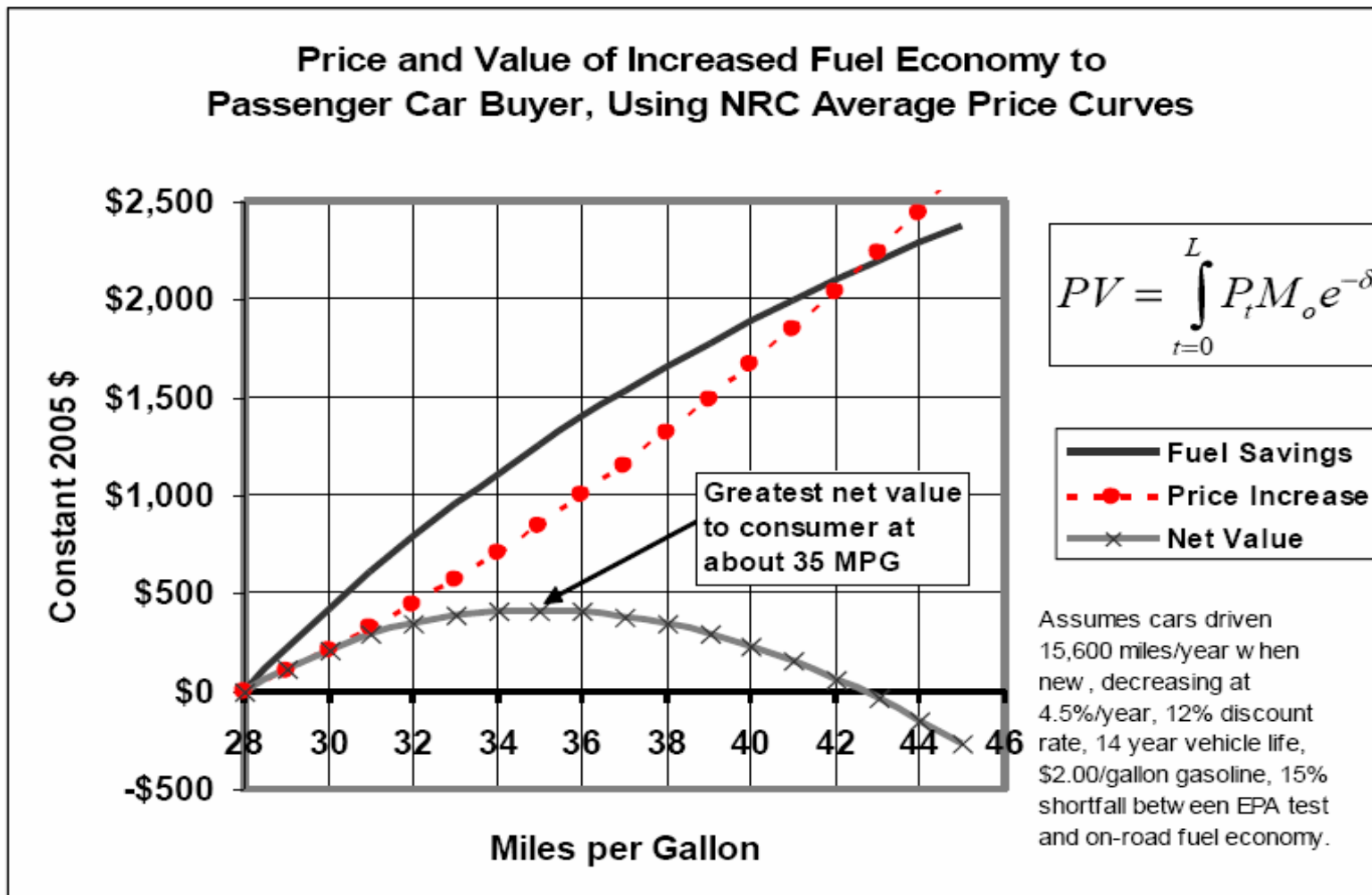


Fuel efficiency has increased by about 1.3% per year since 1987

However, this has all been used to increase other attributes more highly valued by the customer, such as performance, comfort, utility, and safety

Source: David Greene – Oak Ridge National Laboratory

Automobiles (Continued)



Source: David Greene – Oak Ridge National Laboratory

Robust Insights

Near-term responses to regulation (through 2025):

Energy demand responses are relatively modest; **Not Sure**

Domestic response tends to be dominated by fuel switching and technology shifts in electricity generation—away from coal and mainly toward natural gas and/or nuclear; **Yes**

Sequestration and international offsets could yield significant reductions at relatively modest cost, assuming moderate administration costs. **Many Institutional Challenges**

Long-term responses (after 2025):

Offsets become increasingly less important over time and most reductions come from the energy sector; **Not Sure**

Technology is critical, but no consensus on what technologies will dominate; **Yes**

There is likely to be a combination of responses: primarily carbon capture and sequestration, nuclear, and/or biofuels; other renewables and conservation appear to play relatively limited roles.

See Above – No Consensus