



Benefits of Going Green: If too good to be true, then what do we do?

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Outline

- Caveats & context
- Defining the problem we're trying to solve
- Public perception vs. reality
- Comparing benefits and costs
- What should we do?



Caveats & Context

- My direct experience related to renewable energy and energy efficiency
 - Solar Energy Research Institute 1978-1985.
 - 1981 SERI Solar/Conservation Study concluded:
 - Conventional energy consumption across all sectors could be reduced by 25% by the year 2000
 - Cost would be \$800 billion (but be much less than the projected \$1 trillion cost of coal and nuclear investment for the utility sector alone)
 - Demand-Side Planning 1985-1990
 - What types of programs are cost-effective?
 - How to integrate DSM into utility systems planning & operations?
 - How to design incentives to make reducing energy sales profitable?
 - Questions and issues are back



What's the problem we're trying to solve?

- Which goal is primary?
 - Energy independence
 - Reducing carbon emissions
 - Reducing the cost of energy
- Could have very different implications for:
 - How should we get there
 - How much it might cost
 - Who should pay

Public Perception: A recent survey indicates strong public support for a “green strategy” (U.S. Results)

Statement	Percent who agree/disagree
Should alternative energy be emphasized more ?	88% - support
Should utilities be required to use alternative energy, even if costs might be greater in the short run?	66% - support
Will alternative energy will be cheaper in the long-run than the cost of conventional fuels? Or will it cost so much that it will “hurt the economy?”	79% - cost less 18% - cost so much it hurts
Should government tax inefficient appliances?	43% - support 52% - oppose
Should nuclear power be emphasized more or less?	42% - more 31% - less 25% - same
Should new coal or oil-fired power plants be emphasized more or less?	25% - more 49% - less 22% - same

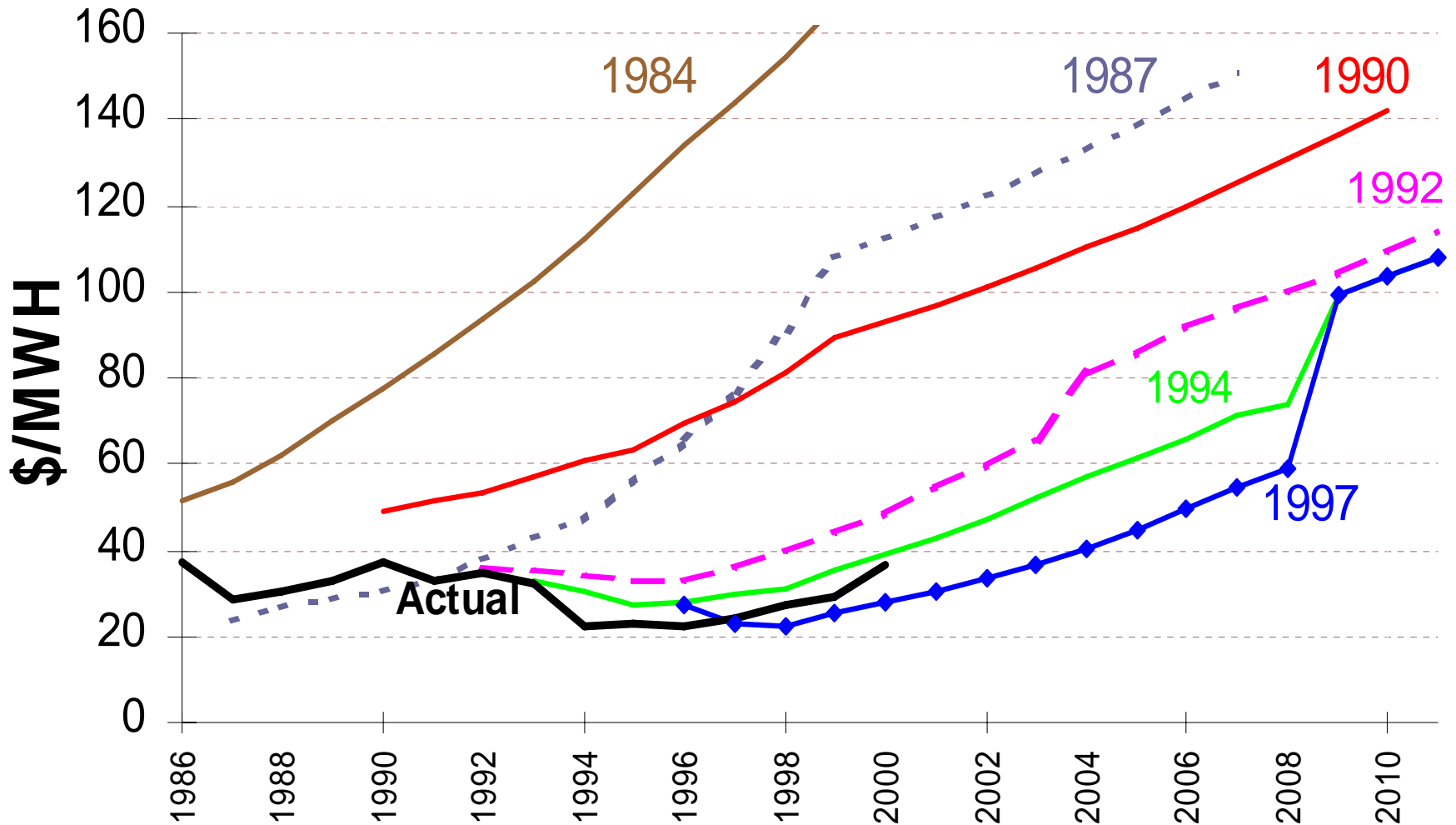
Source: World Public Opinion, “World Publics Strongly Favor Requiring More Wind and Solar Energy, More Efficiency, Even if it Increases Costs,” November 19, 2008. Available at www.worldpublicopinion.org.



Will the benefits of going green exceed the costs?

- Its hard to believe the net costs relative to conventional technologies could be zero (absent unforeseen technological change)
 - Factors driving up projected costs of conventional technologies will also affect the costs of renewable technologies
 - Some major known costs have yet to be estimated (ex: interconnection costs and regulation costs associated with large amounts of wind generation)
 - It's very likely that costs will be much greater than the general public appears to believe
- What are the costs and risks of not doing it?

Perils of long-term forecasting: 1987 forecast* of long-run avoided costs for the year 2000 were \$120/MWh vs. \$40/MWh actuals.



*New York Public Service Commission Approved forecasts of long-run avoided costs for Niagara Mohawk.



A few observations on what to do next

- A more thorough benefit/cost analysis needs to be undertaken
 - Such an analysis will be a daunting undertaking
 - Process would nevertheless greatly inform the debate
 - What's the alternative?
- We seem to have a better handle on the problem than we do the solution(s):
 - If the problem is global climate change
 - And the source of the problem is the consumption of fossil fuels
 - A carbon tax seems like a really good idea
- We can and should do more to promote efficient electricity pricing

In praise of high prices . . .

- In many debates about industry structure, high prices are used as evidence that markets “aren’t working”
- If our goal is to promote energy efficiency, prices that reflect marginal costs plus the cost of environmental externalities are helpful; prices that are too low are part of the problem

Own-price elasticities* of electricity demand

	Short Run			Long Run		
	Mean	Low	High	Mean	Low	High
Residential	-0.3	-0.2	-0.6	-0.9	-0.7	-1.4
Commercial	-0.3	-0.2	-0.7	-1.1	-0.8	-1.3
Industrial	-0.2	-0.1	-0.3	-1.2	-0.3	-1.4

*Percent change in demand associated with a 1% increase in the price of electricity. Residential estimates are from nine studies. Source: Neenan, B., Eom, J. January 2008. “Price Elasticity of Demand for Electricity: A Primer and Synthesis.” Electric Power Research Institute, Palo Alto, CA: 2007, 1016264. Available at: www.epri.com.



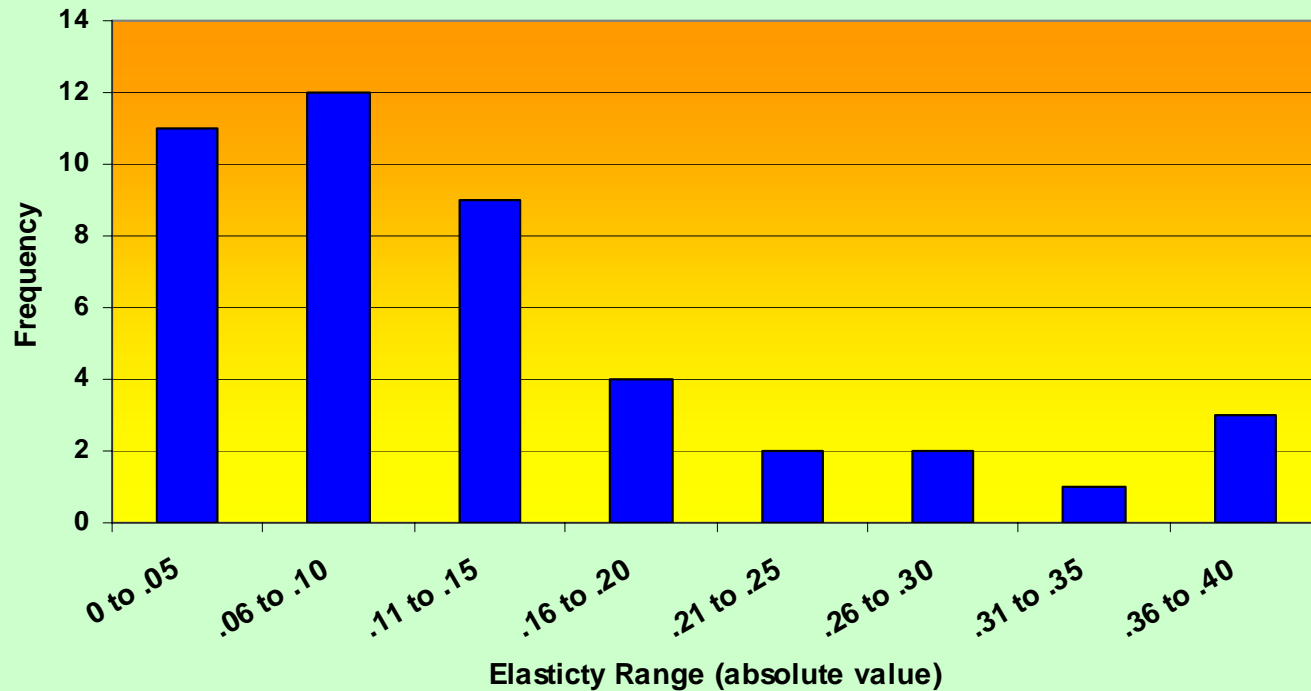
Appendix

Electricity Price Elasticity Estimates for Time-Differentiated Pricing

*Source: Source: Neenan, B., Eom, J. January 2008. "Price Elasticity of Demand for Electricity: A Primer and Synthesis." Electric Power Research Institute, Palo Alto, CA: 2007, 1016264. Available at: www.epri.com.

Distribution of Price Elasticity Estimates under time-varying rates

Distribution of Estimates of the Elasticity of Electricity Demand
under Time-Varying Pricing - 18 Studies



Synopsis of Price Elasticity Estimates

for time-varying rates, by sector and type of rate design

