

# **Demand-Side Management Programs Under Retail Electricity Competition**

Tim Brennan

Professor, Policy Sciences and Economics,  
University of Maryland-Baltimore County

Senior Fellow, Resources for the Future

email: [brennan@umbc2.umbc.edu](mailto:brennan@umbc2.umbc.edu)

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## Game plan

- Demand-side management: Programs to subsidize or encourage energy conservation
- Utility funding mechanisms unsustainable with open entry
- Explore whether regulation causes the problems DSM is designed to fix

Inflexible pricing that encourages on-peak consumption

Incentives to overbuild generation plant

Inability to bundle high-efficiency appliances

# Ineffective pollution controls (permit trading)

## What is DSM?

- Emphasis here: Explicit subsidy policies

- An automotive analogy

Not marketing of fuel-efficient cars

Not exactly CAFE standards or EPA mileage stickers

More like getting a check from oil companies if one buys a high mileage car

- Conservation and efficiency not the same

Efficiency may complement, not substitute for, fuel use

Will assume substitution

## Competition: Threat or Promise?

- DSM programs funded by utilities with monopoly franchises
- But retail competition coming  
PURPA, EPAct, Order 888 for wholesale  
State jurisdiction, initiatives for retail  
Some federal proposals (CECP)
- The threat to DSM funding  
Unsustainable, if users switch to entrants  
Encourage inefficient substitution at margin from incumbent to entrants

- But do we need to restructure funding mechanism to make it competitively neutral?

## DSM Under Regulation: The Wrong Direction?

- Model to see if price of high-energy appliances should be below cost in a regulated environment
- Summary of results

	Boost energy demand	DSM: Reduce energy demand
electricity $P > MC$	Subsidize	Tax
electricity $P < MC$	Tax	Subsidize

Consistent w/ theory of “second best”

Tax DSM in “normal” natural monopoly case:  
Profitability, scale economies  $\Rightarrow P > AC > MC$

Subsidy requires  $P < MC$

## Regulatory Pricing Below Marginal Cost

- When would one observe results counter to “natural monopoly” implications?

Average cost pricing over high marginal cost peaks

Averaging high MC with low MC generators  
under franchised power monopoly  
vertical integration with natural monopoly  
wires

External environmental costs (more below)

- Additional possibility: Overbuilding plant  
(Averch-Johnson effect)

## Competition's Effects

- Unsustainability, market distortions under current funding mechanisms
- Clinton Administration proposes a tax on all electricity to support state-funded programs
- But replacing power regulation with competition mitigates factors warranting DSM

Prices will tend toward marginal cost, more or less

Incentive to overbuild plant disappears  
(as it would under price-caps)

## Consumer “Myopia”

- Very high rates of return (energy savings) from investment in fuel-efficient appliances
- Indicate market failure to some
  - Myopia
  - Inadequate information
  - Could be rational response to risk of DSM investment from fuel price variability
- Regardless, competition can mitigate
  - Allow for flexible marketing plans, including bundling

Remove “regulatory evasion” justifications for prohibiting diversification into appliance mkts.

## Environmental Protection

- Energy use imposes external costs, primarily environmental
- Still present under competition
- But competition may help
  - “Green power” marketing (probably not strong)
  - Make permit trading, taxes more effective when firms bear costs, reap profits at margin
- DSM as “second best” response absent policy, but only that

- Get better mix of energy and equipment quality, but overconsumption of services they produce

## Conclusions

- Opening generation markets makes DSM more costly
- But also may make it less necessary

Better price signals

Reduced overbuilding incentive

Bundling to profit from “myopia,” with benefits passed along to consumers

Improve effectiveness of environmental regulation

- Getting stronger environmental regulation (e.g., carbon taxes) would reduce need for DSM