#95

TESTIMONY OF PAUL L. CHERNICK

BEFORE THE BUCKSPORT PLANNING BOARD

AES/HARRIMAN COVE SHORELAND ZONING APPLICATION

October 1, 1991

On behalf of:

The Conservation Law Foundation

and the

Natural Resources Council of Maine

PAUL CHERNICK TESTIMONY TO BUCKSPORT PLANNING BOARD RE: AES

1. Preparation for this testimony

- Relevant portions of AES application both to Bucksport Planning Board and DEP
- Moskovitz testimony in last Spring's hearings before Bucksport Planning Board
- Moskovitz report in Grahame testimony (from Department of Energy) in this round of Bucksport Planning Board hearings
- Planning documents of the New England Power Pool and individual utilities
- The "Contracts" between AES and Massachusetts utilities

2. Need for power

AES's proponents have argued that Harriman Cove is needed in order to meet NE electric demand. It is important to recall that even AES has agreed AES/Harriman Cove is not necessary to meet power supply requirements in NE (Buchsbaum paper, p. 33). Indeed, according to the most recent projections of the New England utilities themselves, no new capacity, beyond existing and licensed resources, is required for the rest of this decade. This results from several considerations:

- New England currently has a considerable surplus of capacity, equivalent to 16 times AES/Harriman Cove, or 3 Seabrooks.
- Demand is expected to be flat for the next few years, and only slowly increase through the 1990's. This is due to a combination of the recession and utility conservation programs.
- Substantial additional capacity exists in current utility contracts and projects that are now in the licensing process. The 1991 NEPOOL forecast identifies about 600 MW available as of 1/1/91.
- Hundreds of MW of additional projects are licensed or are near the end of the licensing process, and/or have utility contracts. Even since the AES/Harriman Cove application was filed, over 800 MW (over 4 AES/Harriman Coves) of new facilities have been licensed in Massachusetts alone. New England Electric has a 400 MW project in Providence with essentially all approvals; the

major regulatory decision on Boston Edison's 300 MW project is pending.

3. AES is too expensive to build early

Let's look at why AES/Harriman Cove would not be built to back out existing generation. Figure 1 displays the relative costs of AES/Harriman Cove and the mix of mostly oil-fired units which will be turned down by the addition of new energy supplies. Since New England electric utilities operate their plants to produce the lowest total cost, through the New England Power Pool (NEPOOL), the actual existing plants turned down by NEPOOL will be the same, regardless of which NEPOOL member adds the new supply.

In the late 1990s, the average running cost of the swing units on the NEPOOL system will be about 3.5¢/kWh in 1991$. Since the plants have been paid for, and since they will generally have to be maintained and staffed anyway, the only avoidable cost is the cost of fuel. AES/Harriman Cove is expected to cost over 6¢/kWh in today's dollars. AES's contract with Boston Edison for its cancelled Riverside plant charged about 11¢ in the year 2000. Clearly, no utility is going to buy power from AES/Harriman Cove to back out existing oil plants, if its objective is to lower its power costs.

As far as I have been able to determine, no utilities are contractually obligated to purchase the power from AES/Harriman Cove. I understand that AES witnesses have conceded that the contracts AES signed for sales from other plants, in Massachusetts and in Rhode Island, which have since been cancelled, do not obligate the utilities to purchase power from AES/Harriman Cove. Neither of the intended purchasers from the earlier plants, New England Electric or Boston Edison, is now planning on any purchase from AES, nor have they proposed such purchases. NEPOOL's 1991 report on power supplies does not list any proposals for purchases from AES/Harriman Cove, other than a "Contingency Non-Utility Generation" purchase by Central Maine Power. The Massachusetts Department of Public Utilities, which would have to approve any purchase by its utilities, considers AES/Riverside to be cancelled. No utility appears to be obligated to take any power from AES/Harriman Cove prior to need.

Because regional capacity need is so distant, and because AES/Harriman Cove is more expensive than alternative resources, it is quite possible that the Planning Board is reviewing the environmental impact of a plant that will not be built for many years, if at all.

4. AES would be built to serve new need

Figure 2 shows schematically what resources AES/Harriman Cove would compete with. The vertical axis show the amount of power required or supplied. Down at the bottom, we see the existing units with low running costs, which will be run as much as possible to minimize total costs. Above that, we see the mostly oil-fired swing plants. Over time, as load grows, some additional gas and coal-fired baseload plants are added to the mix. Most of the increase in load over time is served by increased use of the existing swing units. In about 2005, additional resources (conservation or new plants) would be needed.

AES/Harriman Cove might be able to get a contract to come on line a few years prior to the date at which new resources are required. Here, I have shown AES/Harriman Cove coming on line in 1997. Thus, for a few years, all else equal, AES/Harriman Cove would reduce the usage of the swing oil units. In 2005, however, the existence of AES/Harriman Cove reduces the need for some other new resource, which would probably be gas combined-cycle or conservation. Thus, for most of its life, AES/Harriman Cove will replace cheaper new resources.

5. AES will not replace existing plants

AES argues that, even if AES/Harriman Cove is not needed to keep the lights on, and even if it is expensive, it will help clean up the air in Bucksport by "displacing" dirtier plants already in place. There are at least five major flaws in this argument.

- First, AES/Harriman Cove is so expensive that it is not likely to be built much before it is needed to meet load growth. Hence, AES/Harriman Cove will not replace the existing units. Both AES/Harriman Cove and the existing dirty units will operate.

- Second, AES/Harriman Cove will tend to replace cleaner new sources, such as gas plants and conservation, more than the existing dirty sources.

- Third, if a utility or regulator wanted to reduce air pollution in New England, there are many cheaper ways of achieving this goal, other than building new plants.

- Fourth, AES/Harriman Cove is neither the lowest-cost new supply, nor the cleanest of new supplies, if one wanted to reduce the existing dirty plants.

- Fifth, while AES/Harriman Cove produces less of some air pollutants than do the existing units, it releases more

carbon dioxide, the most important man-made greenhouse gas.

6. Alternatives to AES

When the demand for electricity starts to bump up against supply, other options appear to offer the lowest-cost supplies to New England utilities. The major contenders are additional conservation and gas-fired combined-cycle plants. As Figure 3 shows, conservation programs tend to be less expensive than new gas-fired plants, which are less expensive than AES/Harriman Cove. The cost of AES/Harriman Cove and the gas plant are from a study for New England Electric of the costs of recent purchased-power contracts.

There is considerable room for additional conservation development in New England, beyond current plans. The two largest New England utilities, Northeast Utilities and New England Electric, have capped or reduced their 1992 conservation programs because of the capacity glut. Other utilities have threatened to follow suit. If all New England utilities pursued conservation programs as ambitious as those outlined by New England Electric earlier this year, the region would free up over 3000 MW of capacity, or about 18 AES/Harriman Coves.

There is also room for more development of gas-fired combined cycle plants. These are the most efficient utility powerplants. There is currently a surplus of gas supply capacity available to New England; additional sources, such as the Portland Pipeline and expansions of existing lines, are on the drawing boards. The costs of recent gas plants include the costs of building new pipelines, such as the Iroquois line now under construction from Canada, so future costs are not likely to be any higher. If their gas is required to help gas utilities meet load on the coldest days of the winter, gas-fired power plants can burn relatively clean oil during those days.

Recent studies have consistently reached the same conclusion. Figure 4 is reproduced from a 1991 report by a working group at MIT. It shows that utility costs will be lowest if future loads are met by conservation (called "DSM" in utility jargon). Natural gas, power purchases, and a mix of sources (the "Base" case) are more expensive. The most expensive expansion option is coal.

Figure 5 is from a report to Massachusetts Electric on the cost of power purchased from independent power producers, such as AES/Harriman Cove. The bids accepted from coal-fired plants have been considerably higher than those from gas-fired plants.

If AES/Harriman Cove can get all of its siting licenses, AES may eventually be able to sell the power from the plant to some

utility. However, it is clear that the plant will not be a bargain in the foreseeable future.

Figure 6 shows the pollutants released by conservation, new gas plants, and AES/Harriman Cove. Notice that AES/Harriman Cove is the most polluting option.

AES/Harriman Cove releases less of the regional pollutants than does the existing system, but more than gas or conservation. AES/Harriman Cove also produces more CO_2, and is thus a more important contributor to global warming, than other alternatives, including existing system.

The same result is shown in Figure 7, from the MIT study group. Conservation (DSM) is the cheapest source, and the cleanest in terms of sulfur emissions. Gas plants are more expensive and produce a slightly dirtier system, while coal is the most expensive and dirtiest. AES/Harriman Cove would release less sulfur than the typical new coal plant, so a power supply plan relying on units like AES/Harriman Cove would be cleaner but more expensive than the MIT coal case (up and to the left).

Figure 8 is also from the MIT group. It shows that switching to low-sulfur oil at existing units has a big effect on reducing sulfur emissions, at a very low costs.

Looking back at these last three graphs, it is clear that AES/Harriman Cove is not a very effective or economical way to clean up the general quality of air in New England. It is too expensive and too dirty to compete with either existing plants or other new sources.

Also, looking back at Figure 2, a commitment to AES/Harriman Cove will result in the displacement of the alternative cleaner new resources, such as conservation, gas, or renewables (wind, in particular, may be competitive with new gas plants, considering both direct and environmental costs).

Expensive and/or dirty resources really do interfere with the development of less expensive and cleaner resources. In New England, there is no question that expensive and/or dirty resources can squeeze out competing, cleaner resources such as DSM, natural gas, and renewables.

- Utilities have acknowledged that commitments to expensive and/or environmentally damaging resources (HQ purchase in Vt, Boston Edison Edgar plant) will reduce the amount of conservation they can undertake.

- The current capacity glut has caused commissions and utilities to cap conservation expenditures, and even roll them back.

Figure 1

The Cost of Energy:
AES Harriman Cove v. Existing Sources

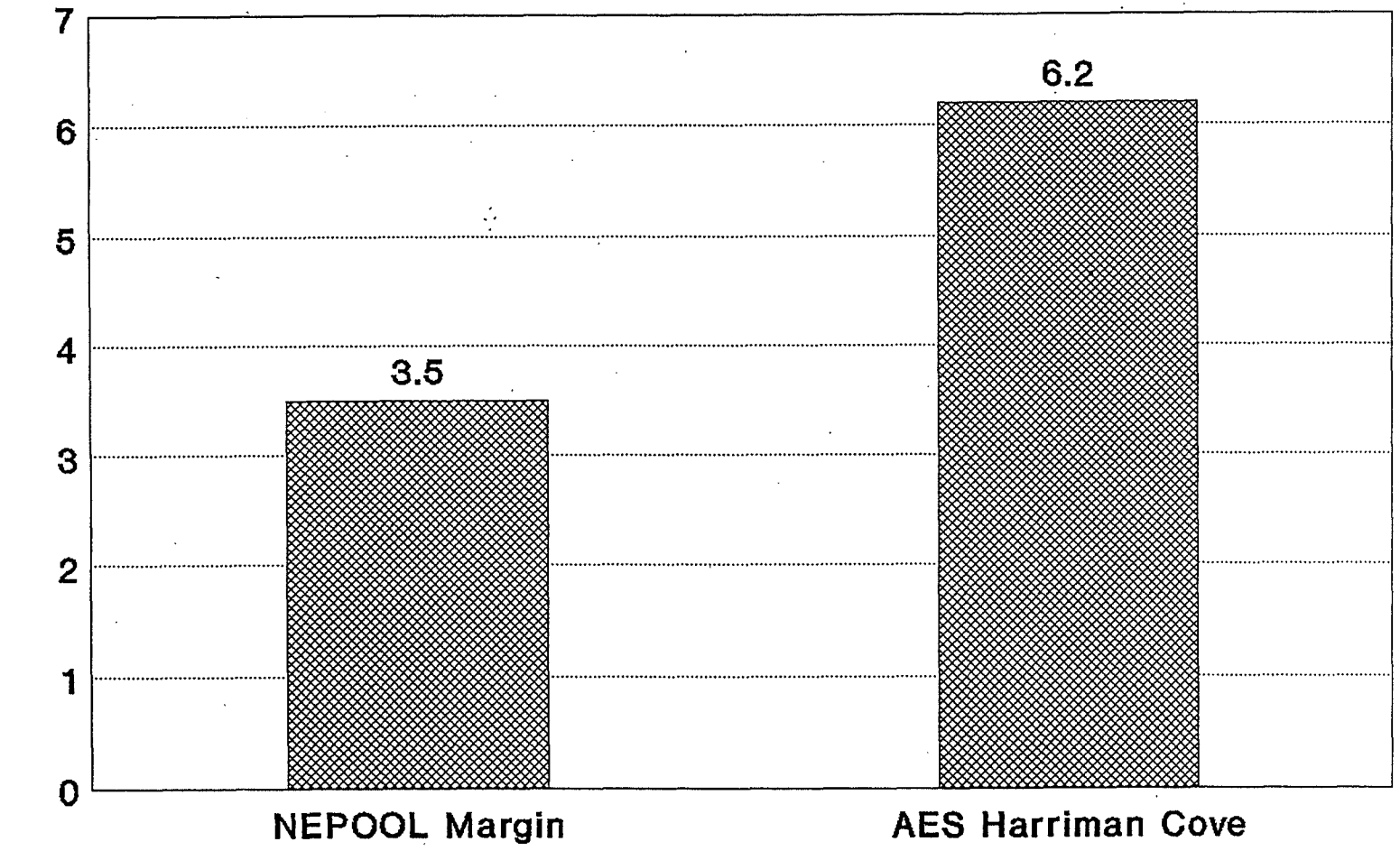
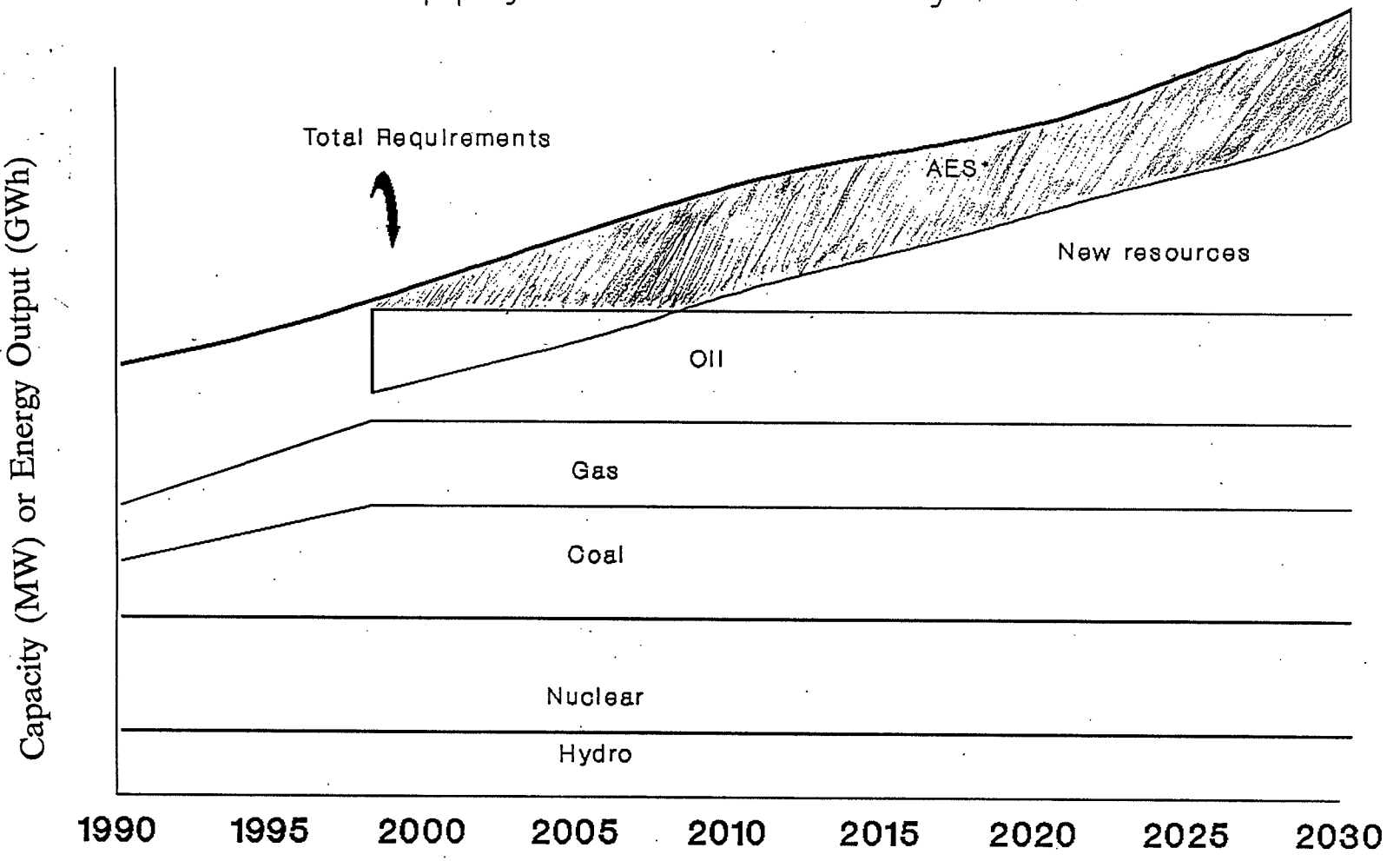


Figure 2
Supply Backed Out by AES



* or alternatives, such as gas combined cycle, cogeneration, renewables, or conservation

Figure 3

Costs of Various New Power Sources

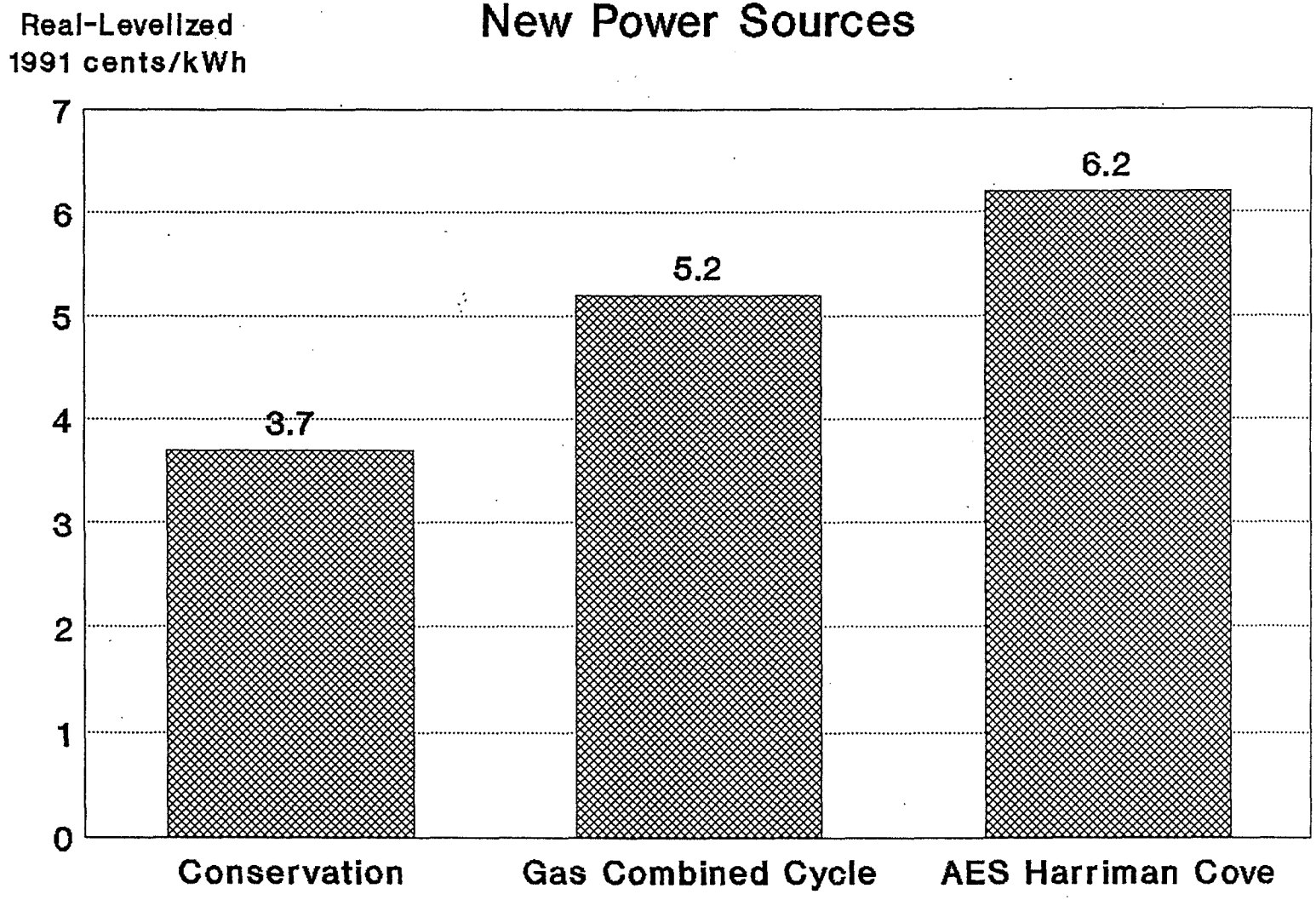


Figure 4

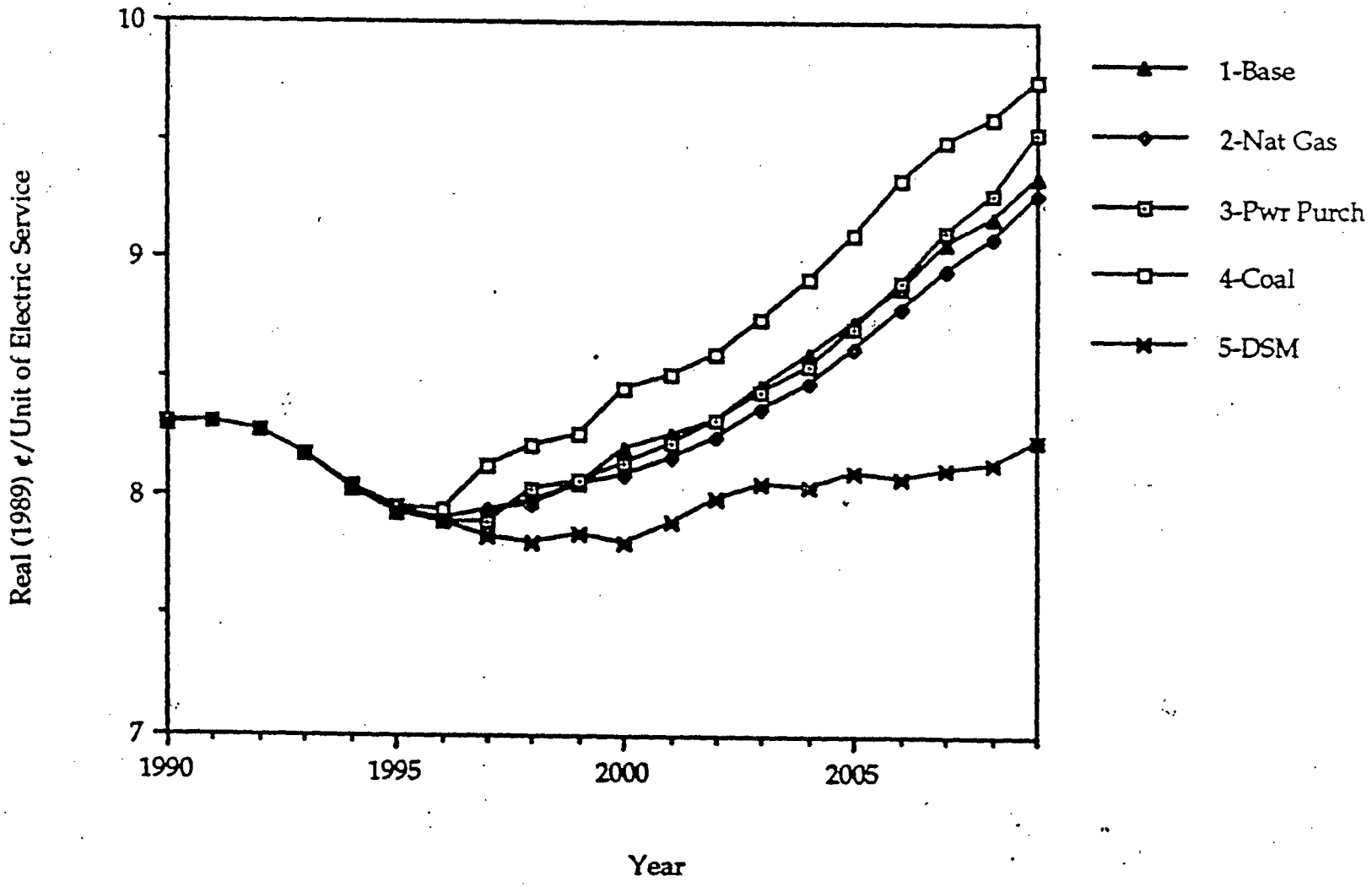
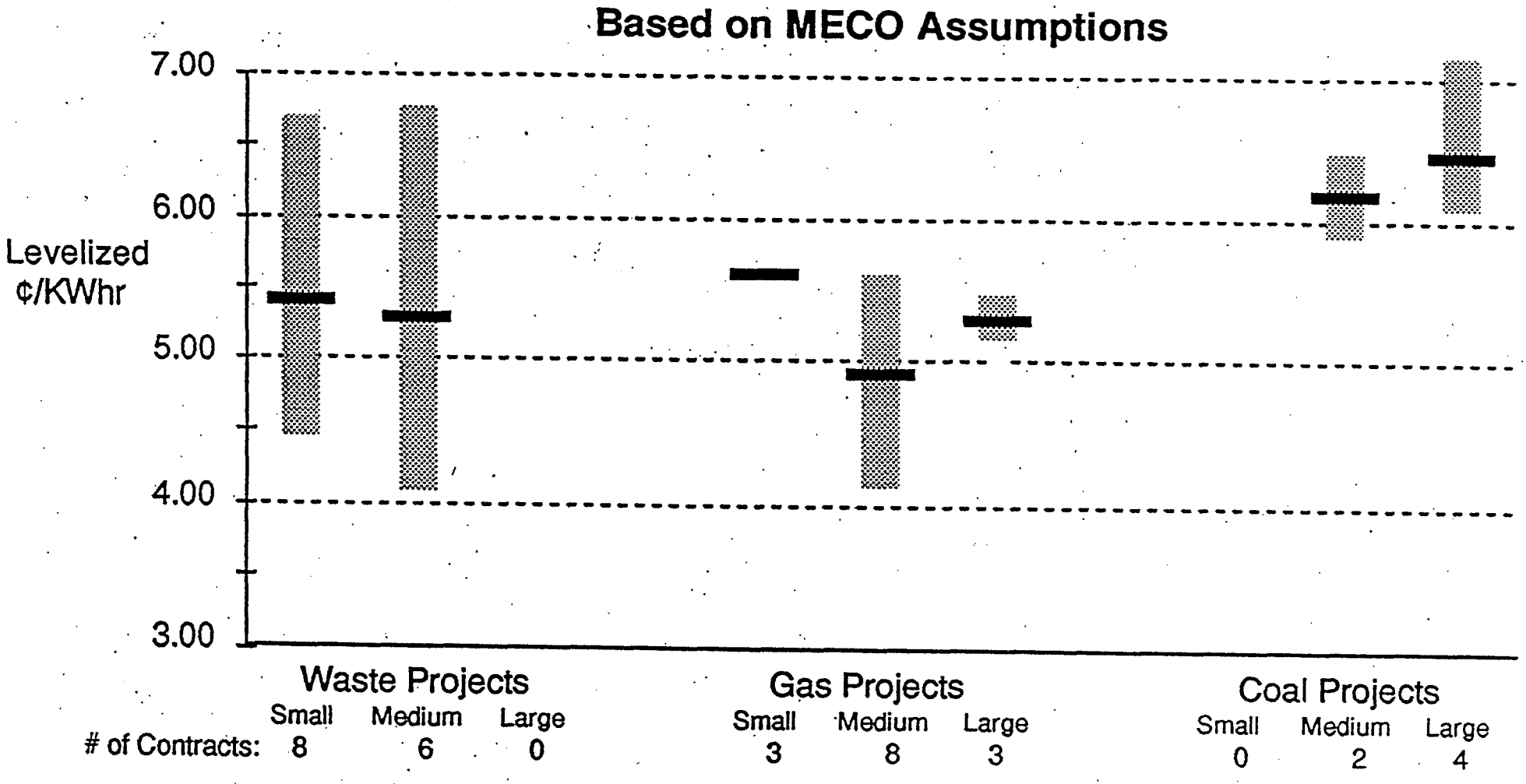

NEGC Runs – ¢/Unit of Service Trajectories
Real (1989) ¢/Unit of Electric Service
10
9
8
7
1990
1995
2000
2005
Year
1-Base
2-Nat Gas
3-Pwr Purch
4-Coal
5-DSM

Figure 5

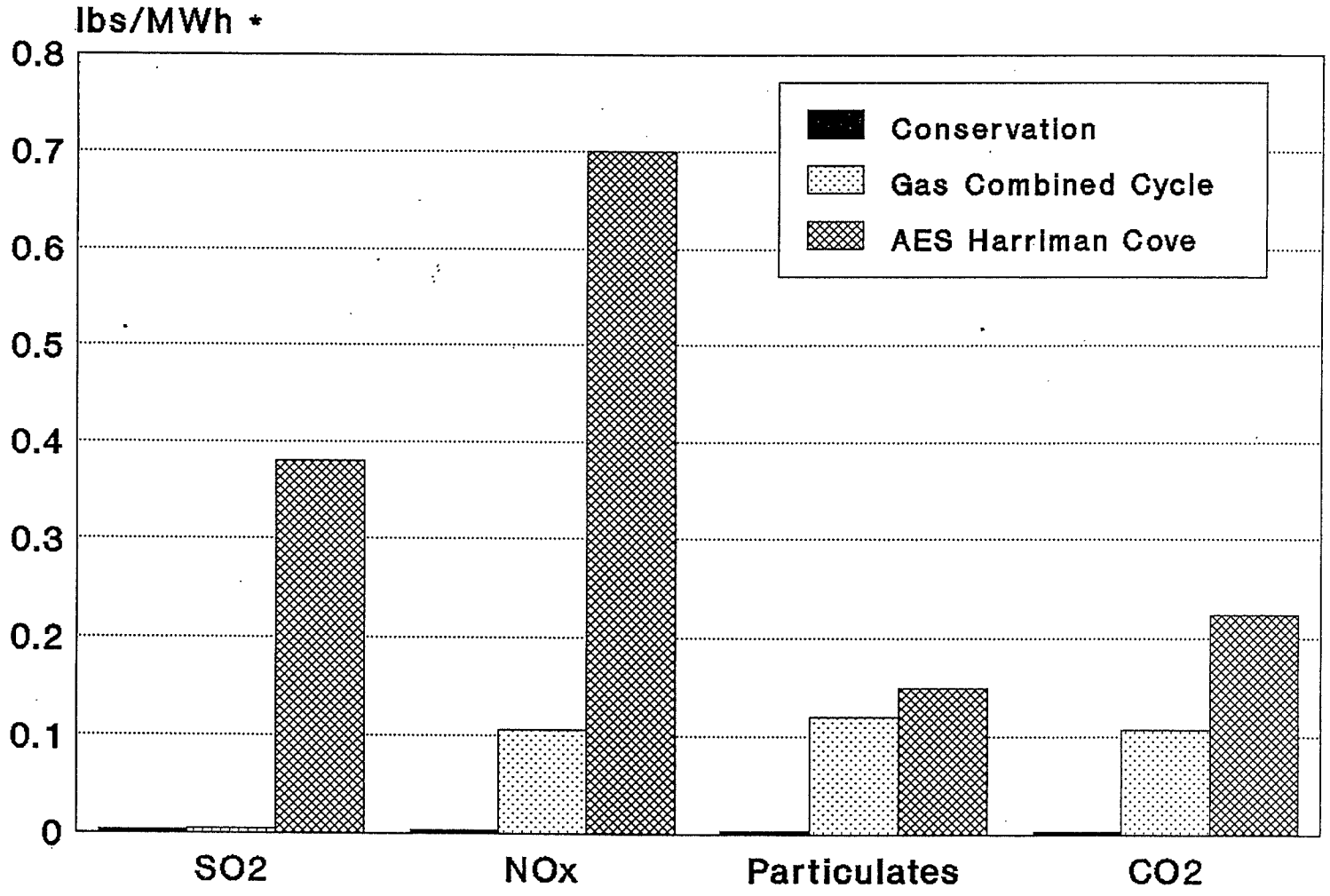
Comparison of NUG Contracts by Size and Fuel Type



From Massachusetts Electric Company, Alternative Energy Negotiation - Bidding Experiment: 1990 Report.

Figure 6

Emissions From New Power Sources



* CO2 emissions are in ten thousands

Figure 7

NEGC Cases – Average Unit Cost of Service vs Cumulative SO2 Emissions

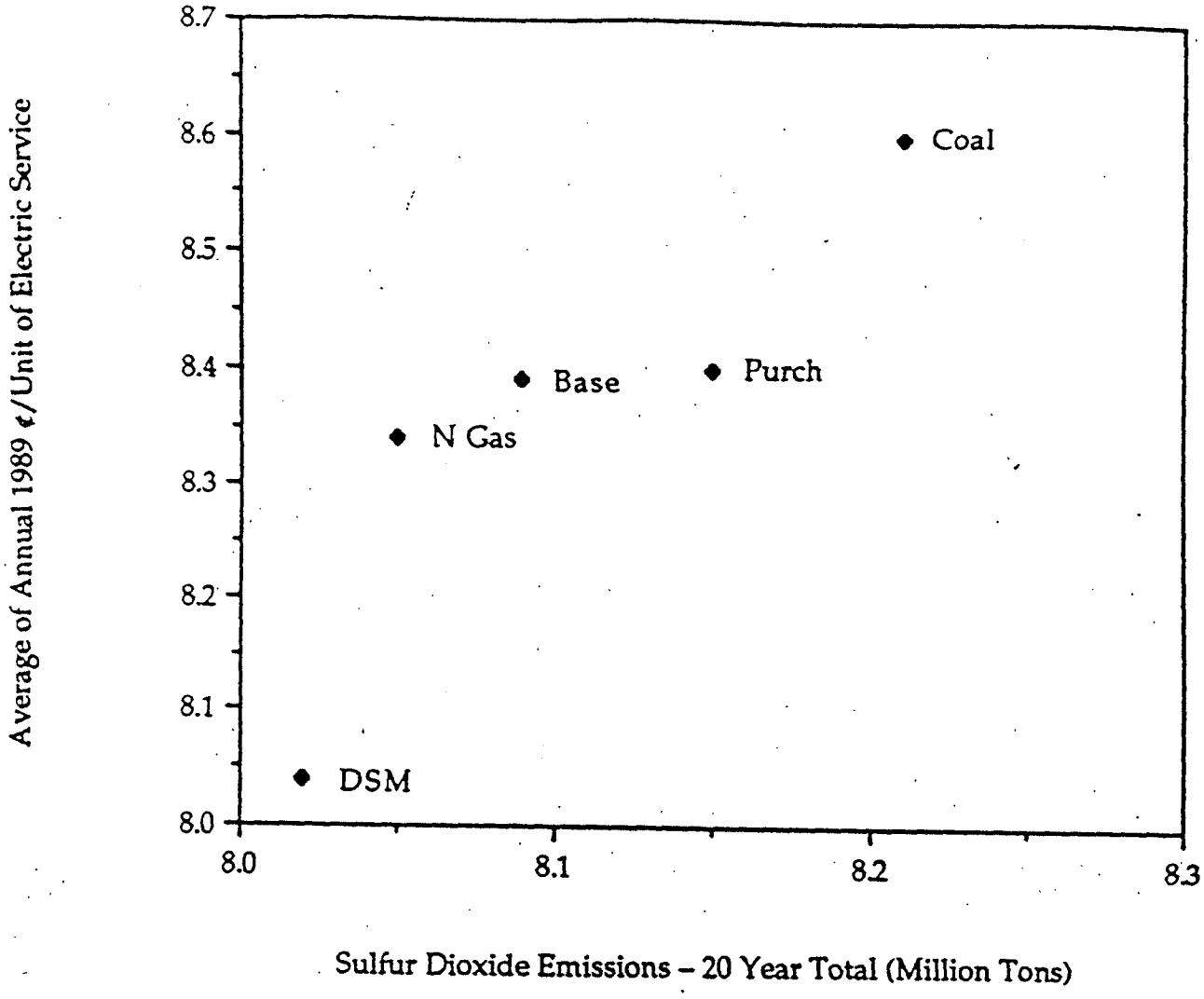


Figure 8: Electric Service Cost and SO_2 Emissions Tradeoff for New England