



GREEN PRICING OF ELECTRICITY: THE CHIMERA OF EFFICIENCY, THE REALITY OF POLITICS*

Consumers of electricity should get their checkbooks ready; environmentalists have discovered economic theory. The latest trend in environmental policy and the regulation of public utilities is the market-based approach called "green pricing." It has been reported that 29 state public utility commissions (PUCs) have either adopted or are considering the adoption of some form of "green pricing" policy toward electric utilities.¹ In true Orwellian fashion, though, this entire approach has little to do with actual markets or prices and a great deal to do with the use of taxation and the power of public utility commissions to promote a "green" agenda that may be rooted more in ideology than science.

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For decades environmentalists have shunned the use of economic analysis in pursuing their political agenda. Their view has been that economics supports free markets and economic growth, both of which allegedly lead to environmental degradation. But in recent years these same advocates have discovered an ally buried in the pages of every principles of economics textbook. It is the chapter devoted to "externalities and market failure." This discovery has led to a costly marriage of

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¹ Ballal Butraw, Winston Harrington, et. al., "Some Simple Analytics of Social Costing in a Regulated Industry," Discussion Paper, QE93-13-REV (Washington, DC: Resources For The Future, 1993), p. 1.

controversial advocacy science and unworkable, or, in economists' jargon, "non-operational" economic theory.

I. What is Green Pricing?

As suggested, what is being labeled as a "price"—often called a "green price" but also referred to by technical sounding names like the "full cost price," the "externality price," or the "social cost" price—is not a price at all. With regards to the cost of electricity, the "green price" for a kilowatt would include a non-negotiable dollar amount that the public utility commission would add onto either existing rates or, more commonly, electricity generating costs. Indeed, in the economics literature this additional amount is universally described as a "tax" and its effects are discussed using the same technical apparatus that is used to analyze other similar taxes, such as excise taxes and tariffs. But since no kind of tax increase is very popular these days, the advocates of these "environmentally correct" taxes have camouflaged their tax increases by calling them "prices," "fees," and "charges."

As noted, the proponents of these taxes on consumers and producers of electricity find intellectual support for their policies in economic theory, or, more specifically, in what is called "externalities" theory. Indeed the term externalities, once the province of economics classes and academic journals, is now commonly invoked in public debates over how to regulate electric utilities. An externality is a cost or a benefit associated with the production or consumption of a product that is borne by someone other than the product's consumers and producers. Consequently, it is not incorporated into the product's market price. Therefore, this cost is said to be "external" to the market for the product.

The negative consequences of pollution fit this definition. They represent an external cost that is not incorporated into the regular production costs that are considered by the firm in its output and pricing decisions. The economic theory of externalities argues that if pollution costs were included in the price of the product whose production process were generating them—referred to as "internalizing" the externality—efficiency and social welfare would be improved. To accomplish this, it is typically argued that a tax equal to the external costs should be added to the market price of the pollution generating product. Different energy sources used in the generation of electricity—oil, coal, hydroelectric, etc.—have different externality costs associated with their use. The goal then for public utility commissions would be to adopt a policy that would force electric utilities to incorporate all the costs of generating electricity into their decisions about what kinds of energy sources to draw on.

The advocates of "green pricing" for electric utilities have invoked this theory to justify the imposition of new taxes or, in some cases, a proxy for taxes called "adders" (discussed below), onto the costs of generating electricity. The level of the tax would differ with the energy source used to generate the electricity. Tax differentials would, at least theoretically, be based on the amount of "external" costs that the particular energy source generates. This would "insure" that the electric utility and its customers bear the full costs, private costs plus the pollution "damage costs,"

associated with the generation of the electricity. Hence, the expressions "full cost pricing," "social costing," or "environmental costing" are often applied to such policies. The stated goal of the policy is "to minimize the social costs of electricity generation"² which, according to the economic theory, will enhance overall economic efficiency.

While even advocates recognize that policy makers must overcome some difficult obstacles in order to implement such policies, none of these obstacles are thought to be fundamentally insurmountable. The most important problems with "green pricing," though, are indeed fundamental and go to the heart of the economic theory that is presented as its justification. Typically these problems go unnoted. None of the policies, in reality, would accomplish the economic goals that are suggested by the theory invoked to justify them. This is because the most crucial assumptions of the economic theory are not present in the real world. This fact makes the predicted outcomes of the economic theory merely chimerical.

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There are two basic approaches to implementing green pricing for electric utilities. The first, emissions taxes, is a straightforward application of the economic theory. The second, ranking energy sources by social costs, so called adders, theoretically would have the same consequences for consumers, the utility, and economic efficiency.³ The difference is that with adders there would be no direct transfer of revenues from the electric company to the public utility commission. In other words, adders would achieve the effects of a tax in terms of the utility's decisions about which energy source to use and the prices that consumers pay for electricity. An advantage of adders for local politicians and public utility commissioners is that they do not carry the negative political connotations of directly imposing a tax.

A. The Economics of Emission Charges

The same economic analysis supports both approaches. The economics of "adders" is simply an application of the more established economics of pollution or emission charges, which has typically argued for an excise tax. As a general rule excise taxes are unsupportable on economic

² Karen Palmer and Hadi Dowlatabadi, "Implementing Environmental Costing in the Electric Utility Industry," Discussion Paper QE-91-REV (Washington, DC: Resources for the Future, 1991), p. 6.

³ These are the two approaches that have the most credibility in terms of the economic theory. There are other approaches which admittedly divorce themselves from the economic theory of externalities and make no attempt to directly measure the damage costs of emissions. See "Incorporating Environmental Externalities Into Utility Planning" (Washington, DC: Consumer Energy Council of America Research Foundation, July 1993), pp. 92-93.

efficiency grounds. Indeed, the only exception is when external costs are present, as is often the case when a production process generates pollution. In such cases, the economic theory of externalities argues that if the polluting firm is forced to bear the costs that are being imposed on others, overall economic efficiency will be improved through imposition of a tax. As an aside, the mere fact that a production process is emitting a by-product into the air or a body of water does not constitute proof that there is an externality problem. The emissions must be imposing costs on others, i.e., they must be doing damage to persons or their property. This point turns out to be important because many advocates are calling for green pricing policies for some emissions, such as CO₂, that may not be generating any external costs and ultimately could be giving rise to external benefits.⁴

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It is clear why environmentalists, who have traditionally shunned economic analysis, would be anxious to embrace such a theory. It argues that certain kinds of government interventions meant to curb pollution will actually be good for the economy. At least rhetorically, the economic analysis of externalities allows environmentalists, who are often accused of being anti-economic growth, to have their cake and eat it too. The problem is that when the theory is matched up with real world policy implementation, its implications for overall economic efficiency disappear. There is no valid way of demonstrating, empirically or theoretically, that the any specific tax policy will lead to the intended result.

The problem for green pricing advocates, assuming that a real externality problem has indeed been identified, comes in implementing the policy in a way that is consistent with the economic theory. Only when the conditions postulated by the theory are met in the real world will the policy accomplish its stated purpose, which is not only to reduce the level of some emission but to increase the economic well-being of society.

In the theory of externalities, strictly because of the way in which the model is constructed, the tax results in improvements in economic welfare because higher prices and reduced outputs in the taxed market are more than compensated for by lower prices and expanded production in other markets. As related to the generation of electricity, a tax would be placed on the use of different energy sources—coal, oil, natural gas, solar, nuclear, etc.—based on the amount of the damage costs to society associated with use of the particular fuel. The greater are the damage costs, the higher is

⁴ Many have argued that enhanced carbon dioxide in the atmosphere could lead to longer growing seasons and greater crop yields. See Elizabeth Culotta, "Will Plants Profit From High CO₂?" *Science*, Vol. 268, May 5, 1995. Also see Patrick J. Michaels, *Sound and Fury: The Science and Politics of Global Warming* (Washington, DC: Cato Institute, 1992), pp. 105-10.

the tax. This, allegedly, would bring about more efficient decision making on the part of utilities. Their choice of fuel would then reflect both the direct, private costs of using a particular energy source plus the damage costs to society.

The thought behind this is that utilities may be choosing coal, for example, rather than some other, "cleaner" energy source, such as solar or wind, as the least cost method of generating electricity. Allegedly this occurs only because the full costs of using coal (private costs plus externality costs) are not being considered in the choice. With the tax, when all costs are fully considered, the alternative energy sources would look more economical and would therefore be chosen more frequently by electric utility companies.

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As noted, though, this cannot be the end of the story if overall economic efficiency is to be enhanced. If the goal is strictly to encourage the use of one, "cleaner" energy source relative to a "dirtier" energy source, then a tax that alters relative prices, if made large enough, will cause the switch. In other words, if the sole purpose of the tax is to reduce the generation of one or another kind of emission, carbon dioxide, sulphur dioxide, etc., then there is no controversy. Taxes can always be used to alter behavior. But the purpose of this tax is to enhance overall economic efficiency.

How do we get from imposing a tax on someone, which at least in a direct sense makes that person worse off, i.e., it raises the price he or she has to pay for electricity, to concluding that the economy as a whole is made better off? The economic theory argues that when externalities are present, the good whose production or consumption is generating the externality is being both "underpriced" and "overconsumed." In the case of electricity, if indeed the green pricing advocates are correct in their assessment of the situation, consumers' electric bills are too low and they are using more electricity than they should be. The tax causes the price to rise and the amount of electricity generated to fall. This implies that resources of all kinds—labor, capital, and natural resources—that were going into the production of electricity will now flow into the production of other goods and services. The implicit, but rarely stated, assumption behind both the economic theory and the assertion of those who advocate green pricing policies, is that consumers will place a higher value on the "other things" that get produced than on the lost outputs of electricity. More specifically, consumers will be happier in a world where electricity is scarcer and higher priced but the air is cleaner, on the one hand, and other unspecified goods and services are more abundant and lower priced. The leap into this assumption will be assessed below. For now it is important to note that this has to be the result if economic arguments for green pricing of any kind are to be sustained.

B. Adders

The most prominent alternative to imposing an excise tax is the use of what are called "adders" or "ranking units by social cost." This is a system that forces utilities to "rank" energy sources according to what the public utility commission determines are the full costs associated with its use. As described by Palmer and Dowlatabadi, "under social cost ranking the utility must select new generating units in order of increasing social cost, thereby frustrating the utility's efforts to minimize private costs."⁵

Such a program would have the same effects as a tax, but without a transfer of resources from the electric company to the public utility commission or the state. The PUC would determine a dollar amount that reflects the pollution damage costs associated with various energy sources. For ranking purposes, this dollar amount is added to the private market cost of the energy source. The electric company would then have to make its decisions based on cost calculations which include both the market cost of the energy source plus the adder. The idea is that alternative energy sources such as wind or hydroelectric would have small or no adders while traditional sources such as coal and oil would have relatively large adders.

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The result from the perspective of consumers and producers of electricity would be the same as the tax. Presumably the utility would, in many circumstances, be forced to choose, due to this social cost ranking, energy sources that have higher private costs. Like the tax, this would result in higher outlays per kilowatt of electricity production and therefore higher electricity rates for consumers. The arguments concerning positive changes in economic efficiency and improved allocation of resources overall are also the same. The electric company's "choices," based on private costs plus externality adders, would supposedly result in an overall reallocation of resources that will enhance the well-being of society.

II. The Theory vs. Reality: Intractable Measurement Problems

The problem with this analysis is that it assumes the theory can simply be lifted out of the pages of an economics textbook and applied to the real world. Advocates of green pricing implicitly accept

⁵ Palmer and Dowlatabadi, *op. cit.*, p.7.

assumptions at the basis of the economic theory that, if acknowledged, would expose the model as irrelevant.

To begin with, the ability to measure pollution damage costs in a way that is relevant to the economic theory depends on one's willingness to make wholly unrealistic assumptions about both markets and policy makers. Furthermore, even assuming that the damage costs can be measured, the idea that an adder or tax results in an overall improvement in resource allocation must, in the final analysis, be accepted completely on faith. This is because the costs and benefits associated with alternative but unspecifiable resource allocations must also be assessed. This task, which would need to be based on pure speculation, is never even attempted.

A. Opportunity Costs and the Problem of Quantification.

In order for a tax or adder to be calculated, the damage costs associated with using one or another energy source must be accurately assessed. Conveniently ignored by green pricing advocates, the economic theory that they want to invoke has a strict definition of what constitutes costs and more importantly what constitutes an accurate assessment of those costs. The dollar value of damages that might be caused by the use of alternative energy sources does not constitute an economically relevant measure of the costs.⁶ For purposes of economic analysis, costs relate solely to opportunities that are unrealized, what economists call "opportunity costs." In other words, the economically relevant damage costs relate to foregone satisfaction from choices that people would have made, but were prevented from making because of the damage that was inflicted upon them. These costs relate to courses of action that are not taken and are therefore experienced only subjectively. By definition, they are unmeasurable. Nobel laureate James Buchanan, one of the leading scholars in both the theory of externalities⁷ and the theory of social costs⁸ points out that, "in order to estimate the size of the corrective tax...some objective measurement must be placed on these external costs. But the analyst has no benchmark from which plausible estimates can be made."⁹

Buchanan's insight is particularly true with respect to calculating adders for use by public utilities. First of all, the opportunity costs associated with different emissions are never acted upon. This means that even if market prices were an acceptable proxy for these costs, which they are not,

⁶ If the purpose of the calculation was strictly to compensate the victim, such a measure might be useful and appropriate. The purpose of this calculation is different; it is to affect a reallocation of resources that will improve overall economic efficiency.

⁷ See James Buchanan and Craig Stubblebine, "Externality," *Economica*, 1962.

⁸ James Buchanan, *Cost and Choice* (Chicago: Markham Press, 1969).

⁹ *Ibid.*, p. 72. This entire issue is finessed in both the economics literature in general and, by implication, in the literature discussing and advocating emission taxes and adders. A broad and false assumption is made, that all observed prices are what economists call "general equilibrium prices" (see footnote 13). By definition, such prices are an accurate reflection of opportunity costs.

the people who are bearing the costs are not using them as a basis for exchange and therefore no market values exist (the use of questionnaires will be discussed below).

Furthermore, an important aspect of the costs that are supposed to be measured by PUCs relate to alleged damages associated with the highly controversial global warming hypothesis. Even if one accepts the hypothesis that increased carbon dioxide in the atmosphere caused by burning fossil fuels, such as oil and coal, will eventually warm the globe and inflict damages on future generations, it makes little sense to try to measure these damages for the purpose of constructing an efficient externality tax. First, there is no evidence that people currently living are bearing any costs associated with global warming¹⁰; so all damage costs, if indeed they materialize, relate to future generations. If, as Buchanan points out, the measurement of currently existing opportunity costs does not make sense, then it should be clear that any measurement of future opportunity costs to unborn people, associated with yet to materialize global warming, must be completely meaningless.

[I]mplementation of such policies has little to do with meaningful economics or science and a lot to do with special interest advocacy and politics.

This, of course, is further confounded by scientific disputes concerning the extent to which global warming will even occur. Even those who have traditionally supported environmentalist's claims are skeptical. For example, Michael Brower, Former Director of Research at the Union of Concerned Scientists recently acknowledged, "I don't know, I can't predict what's going to happen with global climate."¹¹ There is even disagreement about whether the effects of warming would be damaging or beneficial. If taxes or adders are invoked to offset damage costs that would never have occurred, then the entire policy represents nothing more than a wealth transfer from consumers of electricity to politically favored industries associated with certain alternative energy sources. As an aside, if increased atmospheric CO₂ has net beneficial effects in the form of increased agricultural production, as some scientists predict, the economic theory of externalities would suggest that fossil fuels be subsidized. In other words, the adders for coal and oil in the generation of electricity would have to be negative amounts.

In spite of these uncertainties, PUCs in New York, Massachusetts, Wisconsin, and other states are basing their green pricing policies in large part on an acceptance of the global warming hypothesis and "estimates" of "costs" associated with greenhouse gas emissions.¹² This fact alone should suggest that the implementation of such policies has little to do with meaningful economics

¹⁰ See Michaels, *op. cit.*

¹¹ Interview on National Public Radio, September 11, 1994.

¹² See *Incorporating Environmental Externalities into Utility Planning: Seeking a Cost-Effective Means of Assuring Environmental Quality* (Washington: DC: Consumer Energy Council of America Research Foundation, July, 1993).

or science and a lot to do with special interest advocacy and politics. In Wisconsin, for example, it has been argued that the "Public Service Commission issued monetized adders for greenhouse emissions...in part to hedge against the risk of future regulation which would require retrofitting of facilities to control greenhouse gas emissions."¹³ It is argued below that all such decisions will necessarily be based on political concerns.

Having an accurate measure of the damage costs is essential to implementation of the policy. Yet, such measurements, in terms of economically relevant opportunity costs, are impossible to obtain. In order to argue that society is made better off, an accurate assessment of net social benefits must be made. As noted, it must be shown that the costs to society of higher electricity prices and lower rates of electricity usage are less than the benefits of a reduction in emissions plus increased productions and lower prices for some unspecified other products. Obviously, if any aspect of this assessment is unmeasurable or undefinable, then there is no way of assessing the net benefits of the policy. In other words, the fact that the relevant costs are unmeasurable dooms the analysis from the start.

B. Improving Resource Allocation: Impossible Information Requirements

Even if the problems associated with measuring the opportunity costs could be overcome, only part of the problem would be solved. As already noted, in order to show that society's economic well-being is improved by the prescribed policy, it must be shown that the new allocation of resources is preferred to the old allocation of resources. This task would be so overwhelming, even to conceptualize, that the advocates of adders and other green pricing policies do not even mention its necessity, let alone attempt to make the argument.

The critical, underlying assumption is that once the PUC implements the adders or the externality tax, the resulting shift of some of the resources that were once used for higher levels of electricity generation into the production of other goods and services will be preferred by consumers.¹⁴

¹³ *Ibid.*, p. 96.

¹⁴ In the standard theory of externalities, this proposition does not have to be empirically demonstrated because it is automatically implied in the assumptions that are made in constructing the theory. Except for the market experiencing the externality problem, all other markets are assumed to be in "general equilibrium." This is a highly stylized, unrealistic state of affairs that has certain "laboratory" uses in economics but has little to do with the kinds of real world economic problems faced by market participants and policy makers. Most importantly, it is a world where all market participants are assumed to possess perfect information regarding the markets that they participate in. In addition, time, as most people understand the concept, does not pass, which means costs, benefits, and market scarcities do not change. Those analysts who accept the idea that green pricing policies can be invoked in a way that is consistent with the economic theory are implicitly accepting this wholly unrealistic view of the world. (For a detailed discussion of this issue as it relates to externalities analysis, see Roy E. Cordato, *Welfare Economics and Externalities in an Open Ended Universe* (Boston and London: Kluwer Academic Publishers, 1992) and Cordato, "Subjective Value, Time Passage, and the Economics of Harmful Effects," *The Hamline Law Review*, Vol. 12, No. 2, 1989.

First, there is no way of knowing in advance what the new allocation of goods and services will look like. For example, if less oil is used in the generation of electricity, there will be more for use in the production of other things, such as gasoline, plastics, or automobile tires.¹⁵ Also, since overall electricity production will be less than it otherwise would be, electricity-intensive industries would grow less rapidly than otherwise, and the prices for the products that involve the intensive use of electricity will be higher. Industries that might be more dependent on other forms of energy may expand more rapidly and the prices for their products may be lower.

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The point is that this new pattern of prices and outputs will be impossible to determine. It will depend on consumer preferences and entrepreneurial insights as they respond to higher electricity prices and on the course of future technological change. If the new allocation of resources cannot be identified, then there certainly is no way of deciding whether consumers and producers in general would prefer it to the existing state of affairs. This fact, combined with the impossibility of measuring the true opportunity costs of externalities from different kinds of emissions, eliminates the possibility of there being any meaningful social cost-benefit analysis of the policy.

An additional fact that further complicates an already impossible task is that "things change." As obvious a point as this is, it is typically ignored when invoking the kind of externalities analysis discussed here. As noted (see footnote 13), a static world of no change is assumed in the standard economic model of externalities, and this assumption is implicitly adopted by those invoking the theory to support green pricing policies. Yet, as time passes, costs and benefits change and are reconfigured. Changes in population imply that different people's preferences come to bear on the situation. Changing scarcities and technologies will also alter the calculations and, therefore, the dollar amounts of the appropriate taxes or adders. Any cost-benefit analysis implies costs and benefits for a particular point in time. Therefore, even ideally, the analysis would only provide historical information. This information would be relevant only by coincidence at the time the policy is actually implemented. Indeed, real change and real time passage are completely inconsistent with the implementation of green pricing policies in the way suggested by the economic theory.¹⁶

¹⁵ It should be noted that these activities also have externality problems associated with them. Green pricing policies in one area may simply lead to greater externality problems in other areas.

¹⁶ Cordato, *op. cit.*, 1989.

C. Lack of Information: The Real Problem With Questionnaires

The discussion above suggests that even the most ideal methods for determining the efficient tax or adder, none of which are practicable, fail to capture the complexities of the problem. They do not even attempt to address the resource reallocation issue.

Typically, it is recognized that everything depends on the policy maker's ability to accurately "monetize" the damage costs of emissions.¹⁷ In other words, it is necessary to come up with a dollar amount that would reflect how much people would be willing to pay to mitigate the harm. Theoretically, this amount would reflect the opportunity costs that they are incurring from the damage.

There are serious practical problems with making such estimates that are widely recognized, even by advocates of green pricing policies. For example, it is frequently suggested that questionnaires be used to ascertain the dollar amount people would be willing to pay in order to rid themselves of the damages being imposed by one or another emission. Most advocates acknowledge that these dollar amounts can at best be only speculative, because consumer and producer evaluations are not actually being made in the marketplace. Furthermore, it is also recognized that, in the absence of actually being forced to put their money behind their estimates, the analyst cannot be certain about the truthfulness of the respondents' answers.

However, assuming that these problems were not insurmountable and that questionnaires circulated throughout the relevant population could yield accurate damage cost calculations, the real problem would still not be solved. The fundamental question that would have to be answered by those participating in the questionnaire is this: would you prefer the world that you'd face with the tax or adders to the world that you do face without the policy change. In other words, it is not enough to approach someone and ask them "how much would you be willing to pay to remove the damages associated with certain emissions?" even if you could get an honest and otherwise meaningful answer to that question. To accurately answer this question, the respondent would have to know what the array of prices would be for products in his or her consumption basket after the policy is implemented. In other words, the information requirements both for a complete asking of the appropriate questions and answering of the appropriate questions are prohibitive.

For example, let's assume that someone with asthma has his condition exacerbated because of air pollution. From the perspective of constructing an adder or emissions tax that would enhance overall economic efficiency, a very complex question would have to be posed to this person. He would have to be asked how much he would be willing to pay to remove the irritant given that a policy would be implemented that would raise the cost of electricity to everyone, resulting not only in higher electric bills but also higher prices for a whole range of products. In order to complete the questionnaire, the respondent would also have to be informed that the policy may end up reducing

¹⁷ *Incorporating Environmental Externalities Into Utility Planning, op. cit.*, p. 90.

the price of some other products that may benefit from the overall reallocation of resources. Since each consumer's market basket is different, the questionnaire would have to specify the new pattern of production and prices in order for an informed and economically meaningful answer to be given. Furthermore, if we remove ourselves from the timeless world assumption of the economic model, the question would have to specify how this new allocation of resources would unfold through time. Ultimately, not only could the question not be answered, the information requirements for simply asking it make the entire exercise futile, if not absurd.

III. Conclusion: Politics Not Economics

"...because there is no procedure available for determining precisely what people are willing to pay to avoid, judgement is required. The result is the political decision made by the Commission contained in the adopted rule."

*Commissioner Stephen Wiel
Nevada Public Service Commission¹⁸*

"We assume the PUC has perfect information...The PUC strives to maximize social welfare...subject to the relevant constraints."

*Assumption made by policy analysts,
Resources for the Future.¹⁹*

The analysis thus far suggests that any emissions tax or adders meant to adjust for externalities associated with the generation of electricity must be arbitrary from the standpoint of economic efficiency. But this does not mean that the policy will be totally arbitrary. As noted by Commissioner Wiel, ultimately the choice of policies will be based on political concerns. As suggested by the second quote above, this point tends to go unrecognized by economists and most environmental policy analysts. Typically, the naive assumption is made that politicians and bureaucrats are benevolent, using only the maximization of social welfare as a guide to decision making. But this goal is a chimera. It has already been made clear in the case of CO₂ emissions and the global warming hypothesis, that PUCs are perfectly willing to ignore controversies in the scientific community in order to arrive at the politically appropriate solution.

A realistic view suggests that ultimately any policy proposal in this area will be the result of a typical political process that is dominated by the influence of special business interests and environmental advocacy groups. This does not mean that there will be no assessment of damage costs that takes on the appearance of being rigorous. The problem is that these kinds of analyses typically can arrive at any result that the analyst would like to produce. For example, if the analyst assumes that CO₂ emissions generate only costs for society, then sure enough the damage cost assessment ends up being positive and a tax or adder that discourages the use of coal generated electricity is "justified." As one economist recently pointed out "One of the great blessings of being

¹⁸ As quoted in *Incorporating Environmental Externalities Into Utility Planning*, *op. cit.*, p. 95.

¹⁹ Burtraw, et. al., *op. cit.*, p. 7.

a social scientist...is that there are rarely any penalties for being wrong."²⁰ This is particularly true when conjuring up green pricing policies, where there is no meaningful way of verifying the correctness of one's results. In a twist on the old cliché, there are lies, damn lies, and cost-benefit analyses.

A realistic view suggests that any policy proposal in this area will be the result of a political process that is dominated by the influence of special business interests and environmental advocacy groups.

These kinds of problems are particularly true with regards to the green pricing policies discussed here. This is because there is no way of knowing, either before or after the fact, that the policy has moved markets or private decision making in the direction of greater efficiency. In other words, because of the complexity of the problem, there is no benchmark from which to determine whether one set of estimates is "better" than another. In order to know whether a particular green pricing policy is efficiency enhancing, one must have access to all the information concerning opportunity costs and resource allocation discussed above. Without this information no such determination is possible.²¹ This leaves the door wide open for political manipulation of both the results and the policy that is ultimately invoked. Of course, if one assumes that the political decision makers are motivated by only the purest of motives and at the same time possess or are able to obtain "perfect information," then this entire issue will never be considered, even in the face of candid admissions by bureaucrats to the contrary.

Even though the idea that public utility commissions cannot contrive green pricing policies that will, in a verifiable way, enhance overall economic efficiency, there are predictable consequences to such policies. First, the result, if not the purpose, of such policies is to transfer decision making authority about what is and what isn't efficient energy source usage from a market setting to a

²⁰ Charles Wolf, Jr., "The Fine Art of the False Alarm," *The Wall Street Journal*, November 1, 1994, p. A20.

²¹ Because of this and other problems with analyzing what is called "allocative efficiency," many economists have argued that this entire concept of efficiency is vacuous and not useful as a guide to public policy. (See Cordato, *op. cit.*, 1992; Murray Rothbard, "A Reconstruction of Utility and Welfare Economics," in Mary Sennholz, ed. *On Freedom and Free Enterprise* (Princeton, N.J.: Van Nostrand, 1956); and Mario Rizzo, "The Mirage of Efficiency," *Hofstra Law Review*, 1980, Vol 8, No. 3.). It has been argued that the concept of "institutional efficiency" is a more appropriate standard (See Rizzo, "Law Amid Flux: The Economics of Negligence and Strict Liability," *The Journal of Legal Studies*, 1980, Vol. 9, No. 2, and Cordato, *op. cit.*, 1992). An extensive discussion of this concept would take us well beyond the scope of this paper. The general approach, though, is to identify legal institutions and property rights arrangements that would allow market processes to proceed as efficiently as possible. From this perspective, actual damage caused by pollution of any kind is seen as either a property rights violation or a problem of poorly defined property rights. The issue, then, is one of enforcing or defining property rights, problems typically handled in the courts. In any case there is no role for the kinds of "green pricing" policies discussed here.

political setting. It should be noted that the entire approach is premised on the idea that market participants, if left alone, will make inefficient decisions and that public utility commissioners will know better. Furthermore, it can be said for certain that the policies under consideration will generate winners and losers. These policies, whether in the form of adders or direct taxes, will result in a wealth transfer from electricity users and producers of disfavored energy sources, such as coal and oil, to producers of favored energy sources such as solar, wind, hydroelectric plants, etc.. In the case of effluent taxes, the state treasury is also a beneficiary.²² In other words the pursuit of green pricing policies will set up a situation where politicians, while not being able to enhance social welfare, will be able to enhance the well-being of specially favored industries or advance the agenda of especially influential advocacy groups. The idea that this scenario could possibly generate good public policy is naive at best.

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²² It should be noted that none of these plans ever suggest that the funds collected through such plans should be used to compensate the victims of pollution. Part of this could be due to the fact that real victims, not just speculative victims, would have to be identified.