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## Responsible Regulation: Incentive Rates for Natural Gas Pipelines

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# RESPONSIBLE REGULATION: INCENTIVE RATES FOR NATURAL GAS PIPELINES

Alexander J. Black\*

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## I. INTRODUCTION

Transaction costs are the nuts and bolts of any business, including the natural gas distribution industry. But despite alleged defects, rate-of-return regulation remains the predominant means of exerting regulatory control over costs and preventing the abuse of monopoly power in North America. Ironically, however, traditional rate-of-return (ROR) regulation discourages incentives to become more efficient. Alternatively, incentive rate regulation<sup>1</sup> could potentially benefit pipelines as

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1. In the electricity industry, these rates, when properly structured, "foster larger purchases of

they restructure in the 1990s to adjust to direct sales, capacity brokering, and transition cost concerns. Recently, both the United States Federal Energy Regulatory Commission (FERC) and the National Energy Board of Canada (NEB or the Board) have announced reviews of this regulatory tool.<sup>2</sup> This paper identifies some of the major issues. It begins with a survey of regulatory methodology, including toll methodology for new facilities, traditional rate-of-return regulation, and the alternative price cap regulation model. These familiar topics are followed by a discussion of regulatory lag and the rationales for incentive rate regulation. The article concludes with some tentative suggestions for regulators.

## II. THE NATURE OF REGULATION

### A. Gas Distribution as a Public Utility

Heuristically, the natural gas distribution industry in Canada may be broadly thought of as a public utility. Such entities have been the subject of considerable study in Canada and *a fortiori*, in the United States, given its huge and dynamic economy. Many of the concepts pertaining to this subject are essential to an understanding of the related concepts existing in Canada, including those of definitional and structural categories. Hence, a preliminary characteristic of a public utility has been described as the established right of the public to provide a special regulatory scheme for particular industries.<sup>3</sup>

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electricity, particularly from large industrial customers, in non-peak hours; thus increasing a utility's profitability without requiring it to add additional capacity." WILLIAM FOX & GUNTHER KÜHNE, COMPETITION IN NETWORK-BOUND ENERGY SYSTEMS, in LEIGH HANCHER & ALASTAIR LUCAS, MONOPOLY AND COMPETITION IN ENERGY SUPPLY, in INTERNATIONAL BAR ASSOCIATION, ENERGY LAW '90: CHANGING ENERGY MARKETS—THE LEGAL CONSEQUENCES 237 (1990) [hereinafter ENERGY '90].

2. The FERC proposed policy statement dated March 13, 1992. Patrick Crow, *Watching Washington*, OIL & GAS J., Feb. 24, 1992, at 42. FERC Commissioner Branko Terzik is proposing a draft document concerning incentive regulation that he says is "the second best alternative to workable competitive markets." He hopes to avoid a rigid approach by adopting a policy based on specific standards, which is prospective in nature, providing progress reviews and requiring a finding of quantifiable benefits for each pipeline's customers. Regulators "must be willing to recognize success and allow pipelines higher returns if they earn them." Previously, the FERC published a draft comprehensive incentive plan. See 1 RESOURCES CONSULTING GROUP, INCENTIVE REGULATION IN THE ELECTRIC UTILITY INDUSTRY, FINAL REPORT (1983) (prepared for the Federal Energy Regulatory Commission).

The NEB held 1992 Public Consultation on Incentive Regulation, National Energy Board of Canada file no. 4500-A000-9, notice of proceedings dated 23 March 1992 and 22 June 1992, in Calgary on December 8-10, 1992. Among the issues discussed were (i) existing methodologies and (ii) alternatives to traditional cost of service regulation. The latter includes, for instance, new methodologies for promoting and rewarding efficiency in pipeline companies' operations.

3. JOHN BAUER, EFFECTIVE REGULATION OF PUBLIC UTILITIES 1 (1925). A lucid Canadian account of public utility regulation and natural gas contractual obligations in Ontario can be found

Public utilities involve necessary public services and often result in a monopoly of the particular enterprise.<sup>4</sup> Theoretically, monopolies are the opposite of markets, which enjoy perfect competition or the optimum efficiency brought about by competitive behavior and performance. In a free market system, competition benefits consumers by creating an efficient distribution of resources among individuals, thereby inhibiting the skewed realization of profits by a business without rivals. Occasionally, the theory of competition is susceptible to failure. Sometimes it cannot work in practice due to the effects of industry costs and the size of the market. These factors permit the existence of only a single firm. This latter phenomenon is better known as a natural monopoly.<sup>5</sup>

The distinction between pure competition and a monopolistic enterprise has been criticized as an oversimplification. While it is rare to find absolute "perfect" competition in the free market, public utilities may conversely experience forms of competition, such as the alternative or substitute fuels available to natural gas users. Nevertheless, the notion of natural monopolies is basically sound. Certain types of business, such as a natural gas pipeline, are frequently affected by technical exigencies that would induce economic inefficiency if it were not for a monopoly of the market. Accordingly, nationalization of the industry is one way to cope with the politically perceived failure of a market economy.<sup>6</sup> This study addresses another "substitute for competition,"<sup>7</sup> namely that of natural gas utilities regulation.

Natural monopolies are associated with economies of scale, where the duplication of services by competitors is uneconomic because of the business' high fixed costs and where one business can operate more effectively than those in a competitive environment could.<sup>8</sup> Although Canada does not have many natural monopolies, the downstream natural gas industry forms part of this category, at both the local distribution level and at the long distance pipeline level. For instance, the enormous size of the country and relatively small population are some of the factors that prevent the entry of a competitor for TransCanada Pipelines Ltd. (TCPL), the monopolistic interprovincial natural gas pipeline. Therefore, direct

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in ONTARIO ENERGY BOARD, EBRO No. 410-1,411-1,412-1 (Dec. 12, 1986), *reprinted in*, CANADA ENERGY LAW SERVICE 1-1511 (C.D. Hunt & A.R. Lucas, eds. 1991).

4. ELI W. CLEMENS, *ECONOMICS AND PUBLIC UTILITIES* 25 (1950).

5. ERNEST GELLHORN & RICHARD J. PIERCE, *REGULATED INDUSTRIES IN A NUTSHELL* 44-49 (2d ed. 1987).

6. JAMES C. BONBRIGHT, *PRINCIPLES OF PUBLIC UTILITY RATES* 10-11 (1961).

7. *Id.* at 10.

8. GELLHORN & PIERCE, *supra* note 5, at 9-10.

governmental regulation of natural monopolies in general,<sup>9</sup> and of the natural gas transmission industry in particular, appears necessary for a variety of reasons.

Regulation can inhibit the excess profits of a monopolist by providing a restraint on the rates that it charges, as well as on the type of activities in which it engages. Without regulation, an inefficient allocation of resources could result from the higher prices paid by consumers to the monopolist.<sup>10</sup> Invariably, public utilities are monopolies or partial monopolies that are controlled by statutory regulatory bodies which determine, *inter alia*, charges for services as well as the type of services to be made available. Their enabling legislation tends to require "non-discriminatory" contractual provisions with customers, and that the rates charged be "just and reasonable."<sup>11</sup>

One of the most compelling reasons in support of utilities regulation is the prevention of discrimination in pricing and provision of services. Broadly speaking, "Social norms of fairness may be violated when individuals are subject to different (discriminatory) treatment. Price discrimination, in effect, is a form of income redistribution resulting from the ability of the seller to separate consumers into different classes based on different intensities of preference (elasticity of demand)."<sup>12</sup>

The extent of discrimination in the provision of services by Canadian natural gas utilities is believed to be a controversial question. It is also a problematic one which deserves a larger treatment than this overview of utilities regulation can provide. Hence its ramifications are elaborated below, both in a philosophical sense and later, with application to changes in the industry.

Another rationale for regulation is its use "as a proxy for fiscal policy."<sup>13</sup> This frequently occurs in the cross-subsidization of services, where regulators allow certain prices to be offered below their actual cost, only to be offset by other services provided above cost.<sup>14</sup> An analogy to this latter reason may be seen with the system of uniform postage stamp rates, which charge the same price regardless of whether a letter is

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9. ECONOMIC COUNCIL OF CANADA, RESPONSIBLE REGULATION: AN INTERIM REPORT 46 (1979) [hereinafter RESPONSIBLE REGULATION].

10. ECONOMIC COUNCIL OF CANADA, REGULATION REFERENCE: A PRELIMINARY REPORT 20 (1978) [hereinafter REGULATION REFERENCE].

11. T.G. KANE, THE INSTITUTE FOR RESEARCH ON PUBLIC POLICY, CONSUMERS AND THE REGULATORS 3 (1980); See Railway Act, § 321 R.S.C. Ch. R-2 (1970).

12. See REGULATION REFERENCE, *supra* note 10.

13. G.B. DOERN, REGULATORY PROCESSES AND REGULATORY AGENCIES, *in* PUBLIC POLICY IN CANADA 158, 164 (G.B. Doern & Paul Aucoin, eds., 1979).

14. *Id.*

intended for a nearby location or for a distant one. Cross-subsidization is an effective tool that provides a basic level of service to all persons within a particular jurisdiction, having been described by one commentator to be "taxation by regulation."<sup>15</sup>

Thus it is well recognized that a combination of investment tax credits and accelerated depreciation can result in a rate of return that is higher after tax has been computed than before, particularly when the taxpayer has income from other sources or when some mechanism exists for transferring those tax incentives that cannot currently be used by the taxpayer.<sup>16</sup>

Furthermore, regulatory agencies are borne from politics, and their actions have an impact upon politics. They can dispose of matters with least cost than the legislature yet should be reasonably stable, and not mercurially bend to every new political wind.<sup>17</sup> Types of regulatory programs include: (i) cost-of-service rate making,<sup>18</sup> which is predominant when monopoly prices are at issue; (ii) historically based price controls, which are used typically for economy-price regulation (such as hospitals); (iii) allocation, such as natural gas allocation or the issue on some T.V. licenses, which can be made under a public interest standard. Some allocation is made historically, such as oil allocation or the rationing of food in time of war. Sometimes products are individually screened, which is a notional form of licensing (including drugs and work place carcinogens). Standard setting involves the requiring or prohibiting of certain conduct by certain persons.<sup>19</sup>

#### B. *Toll Methodology for New Facilities*

Economic reasons for regulation are not necessarily the sole criteria, and Canada has committed itself to well known regulatory measures for non-economic reasons such as cultural or social concerns. Historically,

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15. Richard A. Posner, *Taxation By Regulation*, 2 BELL J. ECON. & MGMT. SCI. 22-50 (1971).

16. Bryan R. Eymes, *Financing Resource Facilities: The Case Of Natural Gas*,—CAN. TAX J. 1095 (1986); see E. CARY BROWN, BUSINESS INCOME TAXATION AND INVESTMENT INCENTIVES, in INCOME, EMPLOYMENT, AND PUBLIC POLICY 300 (1948).

17. Alfred C. Aman, Jr., *Administrative Law in a Global Era: Progress, Deregulatory Change, and the Rise of the Administrative Presidency*, 73 CORNELL L. REV. 1101, 1108 (1988) (citing THEODORE J. LOWI, THE END OF LIBERALISM: THE SECOND REPUBLIC OF THE UNITED STATES 92-126 (2d ed. 1979)).

18. STEPHEN G. BREYER & RICHARD B. STEWART, ADMINISTRATIVE LAW AND REGULATORY POLICY 11-12 (3d ed. 1992). Cost-of-service rate making is the most commonly used method for regulating prices in a wide variety of industries, including trucking, natural gas production, and hospitals.

19. *Id.* at 12.

the building of this nation was at least partly achieved through regulatory support for the Canadian Pacific Railway to create a transcontinental railroad, and the implementation of protective trade tariffs to foster the nascent manufacturing industry. In contemporary Canada these objectives may be illustrated in the broadcasting industry. The Canadian Radio and Television Commission has a mandate to promote creative Canadian content there,<sup>20</sup> even though its success in preserving the elusive Canadian identity remains doubtful.

Other industries have been subjected to social policy objectives besides the communication industry. These objectives are not static but can change over time, as is shown by the case of railway rates in Canada. From 1886 until the Railway Act of 1903, control over rates was vested in a federal cabinet sub-committee which was called the Railway Committee of the Privy Council. The Act created the Board of Railway Commissioners as the body with the requisite "detached professionalism"<sup>21</sup> necessary for the daily supervision of the railways.

The Board of Railway Commissioners was consumed in turn by the Canadian Transport Commission (CTC) pursuant to the 1967 National Transportation Act, which recognized the diversity and growth in the various national transportation systems. The CTC was accorded extensive advisory and policy functions to complement its strict regulatory capacity.<sup>22</sup> Attention was shifted to the national transportation system as a viable economic enterprise from the previous emphasis on it as an instrument used primarily to promote national policy objectives.<sup>23</sup> Hence the function of regulation is subject to change with the passage of time and with social, economic and political vicissitudes.

For instance, concern over trade and commerce, foreign take-overs of Canadian businesses, and new businesses controlled by non-Canadians, resulted in the creation of the Foreign Investment Review Agency (FIRA) in 1973 by the former Liberal government led by Pierre Trudeau. The relative economic nationalism and stringent criteria of that federal agency was superseded by a new agency, Investment Canada, created in 1985 by the Progressive Conservative government headed by Mr. Mulroney. Parliamentary attitudes concerning the direct regulation of

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20. RESPONSIBLE REGULATION, *supra* note 9, at 52.

21. Hudson N. Janisch, *The Role of the Independent Regulatory Agency in Canada*, 27 U. NEW BRUNSWICK L.J. 83, 89-94 (1978).

22. *Id.*

23. RESPONSIBLE REGULATION, *supra* note 9, at 52.

foreign investments had been affected, *inter alia*, by an economic recession, as well as by criticism from international financiers and the United States government.<sup>24</sup> Under the capitalist ideology of the present government, "Canada is open for business again,"<sup>25</sup> tacitly implying that previous regulatory measures had inhibited business.

Changes in the political composition of the government thus tend to involve tinkering with the regulatory framework. Politically, it is a legitimate way in which to directly coerce desired behavior from individuals. After all, regulation is "one instrument of governing from a range of other instruments."<sup>26</sup> It is a powerful instrument whose process can include the rendering of policy advice, the resolution of disputes, the conduct of specialized research, and the administration of subsidies. Advantages may be obtained from the delegation of responsibilities to a so-called quasi-independent regulatory board instead of having the same functions performed by regular government departments. The government can control the regulatory body's mandate without being as closely bound by the doctrine of ministerial responsibility for the regulatory decisions.<sup>27</sup>

The doctrine is one of accountability to Parliament based upon non-legal political conventions. Canadian regulatory history displays "a constant process of working out the tensions inherent to our commitment to parliamentary responsibility and the need for regulatory tribunals which fall to some degree outside the sphere of immediate political control."<sup>28</sup>

In the United States, regulatory agencies seem to be more independent than their Canadian counterparts. Although the Congress oversees their function and may frame legislation to reverse their decisions, the agencies are otherwise distanced from congressional control. Moreover, the agencies are outside the ambit of the President's control or direction since they are not part of the executive branch of government.<sup>29</sup> More public accountability accrues to the Canadian cabinet for their behavior than to the American cabinet because of the different government hierarchies.

Despite the benefits of utilities regulation, certain problems have been identified by critics of the process. The benefits may be outweighed

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24. E. James Arnett, *From FIRA to Investment Canada*, 24 ALBERTA. L. REV. 1, 1-3 (1985).

25. See Notes for a speech by the Prime Minister Brian Mulroney to the members of the Economic Club of New York (Dec. 10, 1984).

26. Doern, *supra* note 13, at 160.

27. *Id.* at 172-74.

28. Janisch, *supra* note 21, at 87.

29. *Id.* at 87-91.



by the costs related to the administration of regulatory programs. Cost analysis and effective regulation are said to be impracticable due to the enormous size of some utilities. Adaptation to market or technological changes has caused problems in addition to the concern that private interests may unduly influence their nominal regulators.<sup>30</sup> Furthermore, some public finance commentators allege that government intervention in general, and regulatory agencies in particular, will not fare better in the event of the competitive market failing.<sup>31</sup> A pernicious aspect of regulation has been identified as its inclination to stifle the competition that could otherwise challenge the regulated monopolies. An American commentator suggests that the detriments of a natural monopoly are exaggerated and that regulation has an adverse social and economic impact.<sup>32</sup> It is nevertheless submitted that the regulatory process is worthwhile despite its deficiencies, especially in Canada, which has a more limited economy than its neighboring economic leviathan. Perhaps one of the leading problems with public utility regulation lies in its attempt to levy equitable prices to customers for services rendered.

### III. RATE DETERMINATION AND DISCRIMINATION

Natural gas utilities regulation is thought to be a substitute for the invisible hand and competitive prices of the free market. The regulatory process normally achieves this goal by determining the cost of the service to be provided by the regulated firm. These costs are estimated for a particular period, and they may comprise the expenses inherent in running the business, such as depreciation, plant, financing, labor, and other operating costs. A maximum rate scale is then set which simultaneously allows enough revenue to be generated from the utility's customers plus a reasonable profit.<sup>33</sup>

Public utility rates have several important functions. Their role includes the setting of charges that allow a fair rate of return from the venture so that the company can attract further capital for expansion. These charges try to promote an efficient price through lower production

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30. G. B. Reschenthaler, *Regulatory Failure and Competition*, 19 CAN. PUB. ADMIN. 466, 470-71 (1976).

31. B. Lesser, *Comments on "Regulatory Failure and Competition" by G.B. Reschenathaler*, 20 CAN. PUB. ADMIN. 389 (1977).

32. Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 STAN. L. REV. 548, 635-36 (1969).

33. STEPHEN G. BREYER & RICHARD B. STEWART, *ADMINISTRATIVE LAW AND REGULATORY POLICY* 223-24 (2d ed. 1985).

costs, in substitution for the way in which competition encourages efficient pricing. Consumer demand may be purposefully influenced by the design of rates. A well structured design adjusts the prices and imitates the adjustment in a competitive market where demand is generally expected to increase with lower rates or conversely to lessen with higher rates.<sup>34</sup>

Inherent to these functions is the desire to provide a community with adequate utility service economically. An additional and distinct function of utilities rates has the goal of transferring purchasing power or redistributing income from the consumers to the utility company, and eventually to its shareholders and creditors.<sup>35</sup> However, the standard used to determine this function is not entirely based on fiscal criteria since customers do not pay solely for what they consume. Various socio-economic and political factors tend to influence the process and induce one class of utility users to subsidize the costs of another class. For example, income redistribution may occur when residential rates are more inelastic than those of industrial users. Although the cost of service for industrial users as a class may be less than for residential users, it has been argued that the former class should pay higher rates.<sup>36</sup>

Accordingly, it is the duty of regulatory tribunals to determine whether this type of bias constitutes undue or unjust discrimination. One way of answering this question is to consider the social and economic effects of various rate designs that set discriminatory prices. It is possible to give a price advantage to a certain customer class and inhibit customers in that class from switching to another energy source while at the same time contributing to the overall maintenance of the system, thereby benefitting those who pay higher prices. Discrimination in rate making is popularly thought to be an odious term. However, some degree of price discrimination among different customer classes is inevitable due to the problems inherent in coordinating sales and service. Efficient distribution of natural gas requires that supply and demand be coordinated over both the short and long terms.<sup>37</sup> This coordination process is broadly controlled by general principles of public utility regulation. This process is also affected by the U.S.-Canada Free Trade Agreement (FTA)<sup>38</sup> and

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34. BONBRIGHT, *supra* note 6, at 49-58.

35. *Id.* at 59.

36. JOSEPH P. TOMAIN, *ENERGY LAW IN A NUTSHELL* 111, 116 (1981).

37. Deborah Cohn & Robert Means, *Common Carriage of Natural Gas*, 59 TUL. L. REV. 529, 539-40 (1985). Storage, an important part of the co-ordination function, is commonly offered as a separate service.

38. Alexander J. Black, *Economic and Environmental Regulatory Relations: U.S.-Canada Free-*

deregulation, which have encouraged "open access," or in other words, third party (direct sales) carriage.

In North America, pipeline companies have traditionally operated as transporters as well as brokers of the commodity. In this traditional structure, gas "flows from producer to pipeline to distributor to consumer, with the title passing at each change of possession."<sup>39</sup> Typically, pipelines purchase gas from producers, transport it, and resell it to local distributor companies (LDCs). These bargains require considerable forecasting of market conditions. Pipelines attempt to balance supply and demand fluctuations in three main ways: (1) elimination of random fluctuations in supply and demand; (2) moderation of non-random fluctuations caused by weather and the business cycle; and (3) assurance of a balance some years into the future.<sup>40</sup> Most pipeline companies serve enough producers and consumers that small fluctuations in supply and demand balance each other out. A widely used technique is line-packing, or pipeline storage.<sup>41</sup> This method involves adjusting gas pressure, drawing on it when demand temporarily exceeds supply, and adding to it when supply temporarily exceeds demand, thus using the line as inventory without interrupting service.<sup>42</sup> But the gas transportation industry is invariably a monopoly.<sup>43</sup> Natural monopolies are associated with economies of scale, where the duplication of services by competitors is uneconomical because of the business' high fixed costs, and where one business can operate more effectively than those in a competitive environment could. Hence there is a compelling need to regulate the industry in order to prevent windfall or excessive profits and undue discrimination in

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*Trade in Energy*, — CONN. J. INT'L L. — (1993) (forthcoming in spring of 1993). For example, the FTA prohibits minimum export prices.

39. Richard J. Pierce, *Reconsidering the Roles of Regulation and Competition in the Natural Gas Industry*, 97 HARV. L. REV. 345, 348 (1983).

40. Robert S. Angyal & Roberta C. Means, *The Regulation and Future Role of Direct Producer Sales*, 5 ENERGY L.J. 1, 39 (1984).

41. Unlike other energy commodities, electricity cannot be stored: Electrical generation and transmission must be constantly matched with demand.

42. Jon Bernhardt, Note, *Is Natural Gas Pipeline Regulation Worth the Fuss?*, 40 STAN. L. REV. 753, 765-66 (1988).

43. Although the term "monopoly" has a spurious connotation, some economists have said that monopolies produce a net benefit. See JOSEPH A. SCHUMPETER, *THE THEORY OF ECONOMIC DEVELOPMENT* (1934). Schumpeter stressed the creative benefits of monopoly and justified it to the extent that it added incentive to innovate. He picturesquely analogized innovative competition to "gales of creative destruction." See also ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* (1970). Professor Kahn defined a natural monopoly as "an industry in which the economies of scale—that is, the tendency for average costs to decrease the larger the producing firm—are continuous up to the point that one company supplies the entire demand." *Id.* at 123-24.

rates.<sup>44</sup>

A common carrier must generally uphold four duties: the duty to serve, the duty to deliver, the duty to charge reasonable rates, and the duty to avoid discrimination. In the U.S., there does not appear to be a specific statutory definition of a common carrier's obligations except as it applies to particular industries (railroads, trucking and oil pipelines). Yet the natural gas industry is different from these others, and their analogies do not constitute an exact fit. Natural gas utilities have invariably faced a conundrum concerning the obligations of a "common carrier" to serve in the face of a capacity constraint.<sup>45</sup>

In *Little Rock & F.T.S. Railway Co. v. Oppenheimer*,<sup>46</sup> the plaintiff shipper claimed undue and unjust discrimination by the railway company, and alleged that the railway facilities for transporting cotton in his part of the state were inferior to those in other areas. Arkansas legislation provided that "[a]ll individuals, associations and corporations shall have equal rights to have persons and property transported over railways in this state, and no unjust or undue discrimination shall be made in charges for, and facilities for, transportation of freight or passengers within the state."<sup>47</sup> The Supreme Court of Arkansas held that providing different facilities at different stations was not discriminatory because of the difference in their size and traffic. The court stated that

cars and trains are not the only facilities within the meaning of this Act. A depot, a house for freight, or a waiting room for passengers is a facility for the transportation of passengers and freight, within the meaning of this statute. If a railway company should at one of its stations permit the use of its depot, yard, pen or station facility to one shipper and refuse them to other shippers, under the same conditions and circumstances, I think that there could be no doubt that it

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44. For a brief treatment of marginal costs, rate-of-return, and utilities regulation, see Alexander J. Black, *Public Utilities and Regulatory Theory*, 1 OGTLR 12-16 (1989/1990).

45. PAUL R. CARPENTER ET AL., CENTER FOR ENERGY POLICY RESEARCH, NATURAL GAS PIPELINE REGULATION AFTER FIELD PRICE DECONTROL (Sept. 1983):

There is no specific statutory definition of the obligations of a "common carrier" outside its application to particular industries (railroads, trucking and oil pipelines). Traditionally though, a common carrier must uphold four duties: the duty to serve, the duty to deliver, the duty to charge reasonable rates, [and] the duty to avoid discrimination . . . . Other industries do not provide good analogies for how the concept may be applied to gas pipelines. The central problem involves the duty to serve under a capacity constraint.

By way of example, taverns are not subject to the common law based rule akin to the hotelier's duty to provide accommodation to travellers unless there is a reasonable cause to refuse. See *Christie v. The York Corp.* [1940] S.C.R. 139.

46. 43 S.W. 150 (Ark. 1897).

47. *Id.* at 150.

would become liable for a penalty.<sup>48</sup>

Legislation now occupies the field in Canada and the U.S., although regulation of rates was originally conducted by common law courts.

A common carrier's duty to serve all of its customers equally (albeit imposing reasonable conditions) in the carriage of goods or persons goes back in English law to at least 1683.<sup>49</sup> In Canada the rule goes back as far as 1867.<sup>50</sup> When railroads were incorporated in England, so-called "equality clauses" were inserted into the private Parliamentary Acts of incorporation. These provided for uniformity of treatment of customers' relations with the railroad.<sup>51</sup> In one early English case it was said that "I know no common law reason why a carrier may not charge less than what is reasonable to one person, or even carry for him free of all charge."<sup>52</sup>

Thus, the doctrine of unjust discrimination does not pertain primarily to the intrinsic reasonableness of rates. Rather, it addresses questions of relative equality and the fact that a benefit to one results in injury to another.<sup>53</sup> In other words, a regulatory board's legislative mandate obliges it to determine whether the particular consumer rates applied for are just and reasonable, *not* whether the underlying producer-transporter supply contracts are prudent.

In Canada, licensing and rate-making are quasi-judicial functions.<sup>54</sup> The NEB has the authority to issue licenses in order to export gas from

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48. *Id.* at 155; *see also* Knoll Golf Club v. United States, 179 F. Supp. 377 (D.N.J. 1959); *Montana v. Cave*, 52 P. 200 (Mont. 1898).

49. *See* Jackson v. Rogers, 89 Eng. Rep. 968 (1683).

50. *See* WALTER S. TARNOPOLSKY, *DISCRIMINATION AND THE LAW IN CANADA* (1982); Leonard v. American Express Co., (1867) 26 U CAN. QBR 533, *aff'd*, Jones v. Gran, 5 O.W.R. 611 (1905); Graham & Strang v. Dominion Express Company, 55 D.L.R. 39 (1920), *aff'd*, Ludditt v. Ginger Cote Airways Ltd., [1942] S.C.R. 406, *aff'd*, [1947] A.C. 233 (P.C.); Garton v. Bristol & Exeter Ry. Co., 121 Eng. Rep. 656 (1861).

51. Benjamin Kline, *The Origin of the Rule Against Unjust Discrimination*, 66 U. PA. L. REV. 123, 127 (1918).

52. *Baxendale v. The E. Counties Ry.*, 4 C.B. 63 (1858) (Byles, J). Other English authorities addressing the meaning of undue preference or undue discrimination include *Pickering Phipps v. London & N.W. Ry.* [1982] 2 K.B. 229; *London Electricity Bd. v. Spring Gate* [1969] 3 All E.R. 289 (1947 Electricity Act); *South West Water v. Rumble's* [1985] 1 All E.R. 513 (considering § 30(5) of the Water Act of 1973). Section 30(4) provides that charges must reflect the cost of service. Section provides that "[a] water authority may make different charges for the same service, facility or right in different cases . . . but it shall be [their duty to ensure that] their charges are such as not to show undue preference to, or to discriminate unduly against, any class of persons."

53. Kline, *supra* note 51, at 134.

54. Roger C. Carter, *The National Energy Board of Canada and the American Administrative Procedure Act: A Comparative Study*, 34 SASK. L. REV. 104, 110-12 (1969). Carter states that the duty to decide functions will affect rights or impose obligations. *Security Export Co. v. Hetherington*, [1923] S.C.R. 539, 549-551.

or import it to Canada.<sup>55</sup> The NEB was created by Canadian Parliament in 1959,<sup>56</sup> following the recommendations of two Royal Commissions.<sup>57</sup>

Licensing and ratemaking are other quasi-judicial functions.<sup>58</sup> Licenses must issue under the Board's authority in order to export gas from or import it to Canada.<sup>59</sup> Pursuant to the NEB's rate-making powers, all tolls are required to be "just and reasonable,"<sup>60</sup> and the Board may disallow rates and prescribe other rates in their stead. Significantly, the Act prohibits the setting of "any unjust discrimination; in tolls, service or facilities, against any person or any locality."<sup>61</sup> The normal evidentiary burden is reversed upon proof of such favoritism since the onus of proving justified discrimination rests with the natural gas company.<sup>62</sup> However, the problem of determining equitable rates<sup>63</sup> and of ferreting out unjustified discriminatory practices is not straightforward. In the

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55. National Energy Board Act, S.C. 1959, ch. 46, currently available at R.S.C. 1985 ch. N-7 [hereinafter NEB Act]. See H. G. J. Aitken, *The Midwestern Case: Canadian Gas and the Federal Power Commission*, 25 CAN. J. ECON. & POL. SCI., 129, 130 (1959); Roland Priddle, Chairman, National Energy Board, *A Canadian National Energy Board Perspective on North American Gas Trade Issues*, 12th Annual Natural Gas Conference (speech delivered Jan. 24, 1992). Chairman Priddle stated that:

We [the NEB] are a thoroughly independent, quasi-judicial tribunal. We have similar roots to American public utility regulatory tribunals, but with a somewhat broader mandate and, at least until recently, we have experienced fewer court challenges . . . Some of our decisions, such as facilities certification and export licensing are subject to approval [but not variance] by the Canadian Cabinet. In other areas, such as the setting of just and reasonable pipeline tolls, our decisions are final . . . [Our mandate] is in some respects broader than that of the FERC . . . [, as] we provide energy information and advice to the government and public and we expect shortly to be made responsible for aspects of oil and gas regulation in the Canadian North. On the other hand, we have never regulated well-head gas prices . . . Our environmental scope is broad: the environmental and land-use effects of pipeline construction and operation are fully integrated into the decision-making process leading to the issuance of a certificate authorizing their construction.

*Id.*

56. NEB Act, *supra* note 55.

57. B.D. Fisher, *The Role of the National Energy Board in Controlling the Export of Natural Gas from Canada*, 9 OSGOODE HALL L.J. 553, 556 (1971). See ROYAL COMMISSION ON CANADA'S ECONOMIC PROSPECTS, FINAL REPORT (1957) (Walter Gordon, Chairman).

58. Carter, *supra* note 54, at 110-12. Carter states the duty to decide function will affect rights or impose obligations. *Security Export Co.*, [1923] S.C.R. at 549-551.

59. NEB Act, *supra* note 55, §§ 81, 82, 17(3).

60. *Id.* § 62 ("All tolls shall be just and reasonable, and shall always under substantially similar circumstances and conditions with respect to all traffic of the same description carried over the same route be charged equally to all persons at the same rate."). Compare CAL. PUB. UTIL. CODE §§ 451, 453 (West Supp. 1986); N. Y. PUB. SERV. LAW § 65(1)(3) (McKinney 1955 & Supp. 1986).

61. NEB Act, *supra* note 55.

62. *Id.* §§ 50-57.

63. MINISTER OF SUPPLY AND SERVICES CANADA 1988, NATIONAL ENERGY BOARD: AN INTRODUCTION (1989). The NEB regulates the tolls and tariffs of the pipelines under its jurisdiction to ensure they are just and reasonable and that no unjust discrimination takes place in tariffs or service. The NEB takes into consideration the financial concerns of the pipeline companies, such as the capital and operating costs, the need for the companies to earn a reasonable rate of return on investment, and the cost of expanding service. Concurrently, the Board ensures that

United States, some states have elaborated upon the rule against unjust discrimination by requiring that the facilities to be "used and useful"<sup>64</sup> before their related costs can be incorporated in rates. Still others permit incorporating only costs which have been "prudently incurred."<sup>65</sup> Altogether, these functions are facilitated by the NEB's ability to make its own rules of practice and procedure.<sup>66</sup> With the approval of the Governor in Council, the Board may use its delegated powers to make pipeline safety rules and compel the production of books of account.<sup>67</sup>

Few NEB members admit that the Board in any way makes policy [but] it is clear that the extremely general nature of these guiding government policies leaves considerable scope for policy formulation by the Board through decisions in particular applications and through interpretation in the establishment of proceedings and standard conditions. There can be no doubt that the Board makes Policy.<sup>68</sup>

Given the detailed finances of the industry and the availability of creative accounting techniques, this latter provision is important in cost analysis verification.

Finally, the statute appears to oust the jurisdiction of the courts to grant the prerogative remedies of mandamus, certiorari, and prohibition<sup>69</sup> by providing that all Board decisions are "final and conclusive" except for a limited appeal to the Federal Court of Appeal on a "question

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[the] companies that ship the oil or natural gas are protected from excessively high transportation costs. A pipeline company's tariff contains the conditions under which transportation service is provided. The tariff includes conditions on accepting new shippers, on determining which position a shipper will occupy on the waiting list for service (queuing), and on allocating capacity to shippers when the pipelines are operating at capacity. The Board requires that pipeline companies operate under the principles of open access and non-discrimination. To explain further: all parties must have access to transportation (whether firm or interruptible) on the same non-discriminatory basis. These principles are applicable to domestic and export interruptible customers, and to pipeline affiliates, local distribution companies, and independent shippers. In addition, the tolls for services provided under similar circumstances and conditions must be charged equally to all customers of a pipeline.

*Id.*

64. See CAL. PUB. UTIL. CODE § 1005.5(d) (West Supp. 1986); ILL. ANN. STAT. ch. 111 2/3, ¶ 9-211 (Smith-Hurd Supp. 1986).

65. See CAL. PUB. UTIL. CODE § 463 (West Supp. 1986) (requiring commission to disallow expenses resulting from "error or omission" in planning, construction, or operation of utility facilities, and permitting the commission to find other utility expenses "unreasonable or imprudent"); N. Y. PUB. SERV. LAW § 66(12) (McKinney Supp. 1986) (allowing the commission to order a refund of monies collected pursuant to increased rates arising from fuel adjustment clauses when the utility was found to have exercised less than "reasonable care" in providing electrical service).

66. NEB Act, *supra* note 55, § 7.

67. *Id.* §§ 39(2), 88.

68. T. BELL & A. R. LUCAS, *THE NATIONAL ENERGY BOARD: POLICY, PROCEDURE, AND PRACTICE* 35-36 (1977).

69. Carter, *supra* note 54, at 112.

of law or a question of jurisdiction.”<sup>70</sup> Conversely, before gas leaves the Province of Alberta, either intra-provincially or internationally, it requires an Alberta removal permit in addition to Federal NEB authorization.<sup>71</sup> Conservation<sup>72</sup> includes economic conservation, and hence removal permits can be used to promote provincial public interest. The Alberta Energy Resources Conservation Board (ERCB) is the provincial natural resource management tribunal and has a considerable impact upon the natural gas industry. It can make “just and reasonable orders” affecting, *inter alia*, “economic, orderly, and efficient development” of oil and gas as well as preventing its waste.<sup>73</sup> Hence, beside the competing private interests there exist two tiers of regulation in Canada, federal and provincial, which sometimes conflict.

Like most laws, natural gas regulation does not exist in a vacuum. It is affected by complex social, fiscal, economic, and technological factors that pertain to supply and transportation arrangements. In particular, pipeline sales are characterized by long-term firm sales<sup>74</sup> arrangements, while transportation for others consist mostly of “spot” sales which are generally short-term interruptible sale<sup>75</sup> arrangements. A firm sales customer is contractually entitled to purchase natural gas on demand up to a daily maximum (his contract demand).<sup>76</sup> On the other

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70. NEB Act, *supra* note 55, §§ 18, 19.

71. Each province is exclusively empowered to make laws pertaining to the exploration, development, management and conservation of forest resources, and non-renewable resources in the province, as well as electrical energy facilities. Constitution Act of 1867, §§ 92A(1)(a)-(c); Gas Resources Preservation Act, R.S.A. 1980 ch. G-3.1, *amended by* S.A. 1984, ch. G-3.1, § 2(1), S.A. 1986 ch. 17, § 3, ch. D-18.1, and S.A. 1987, ch. 23) (Alberta removal permits); *see also* Natural Gas Marketing Act, S.A. (1986) ch. N-2.8, §§ 12(1), (2), *amended by* the Natural Gas Marketing Amendment Act, 1991 (Bill 41, passed in June 1991); Natural Gas Marketing Amendment Act, 1992 ch. 25 (Bill 12), and Arbitration Act, R.S.A. 1980, ch. A-43 (*amended by* S.A. 1983 ch. 18 & S.A. 1986 ch. 10, § 17; NB Petroleum Marketing Amendment Act 1992 ch. 28, Bill 11; Energy Resources Conservation Amendment Act, S.A. 1992, ch. 14, Bill 10; Mines & Mineral Amendment Act, S.A. 1992, ch. 20, Bill 18.

72. For example, Alberta currently uses a 15 year mandated surplus test to provide for the volume of gas needed to protect Alberta core users. ALBERTA ENERGY RESOURCES CONSERVATION BOARD, GAS SUPPLY PROTECTION FOR ALBERTA: POLICIES AND PROCEDURES (REPORT 87-A) 17-20 (1987).

73. Oil and Gas Conservation Act, R.S.A. 1980, ch. O-5, §§ 4, 7; *amended by* Oil & Gas Conservation Amendment Act, 1982 S.A., ch. 27.

74. Firm service is a relatively high-priced transportation service that provides for transportation of up to a maximum daily volume without interruption except under extraordinary circumstances.

75. Interruptible T-service is an interruptible gas transportation service provided under contract for gas not owned by the pipeline company. Interruption occurs at the option of the pipeline company or distributor. There are two tiers of interruptible service. IS-1 is higher priority, offering less risk of interruption than IS-2, which is lower priority. The toll for IS-1 is higher than that for IS-2.

76. Contract Demand (CD) is a firm service that provides gas up to a specific maximum daily



hand, interruptible customers only have a right to gas or transportation to the extent that it is available.

To some extent these vending arrangements reflect of the costs incurred by a pipeline in providing service. Demand related costs are related to maintenance of the capacity necessary to meet a customer's peak demand. Commodity-related costs concern the total amount of gas or transportation service actually provided.<sup>77</sup> Both are variable costs which are often classified as commodity-related. Public utility<sup>78</sup> regulators repeatedly question the break-down of tariffs, for instance, whether fixed costs should also be classified as commodity-related and, if so, then what percentage.

#### A. *Brokerage and Transportation Functions*

Deregulation in Canada and the United States refers broadly to a market-oriented approach in transportation and sale arrangements concerning natural gas. The FTA may arguably make this approach both paramount and permanent by restricting the ability of producing jurisdictions to meddle in pricing matters. As a result of the market-oriented emphasis, new participants, called "independent brokers," are challenging the traditional dominance of the "system gas" pipeline-distributor arrangement.

Non-system gas is gas owned by producers who have not contracted to supply a pipeline or the pipeline's marketing subsidiary. Direct producer sales avoid or "bypass" pipelines in a legal (as opposed to physical) sense.<sup>79</sup> They reach the burner-tip without even having been purchased by a pipeline. Direct sales are distinguished since gas ownership is not vested in the pipeline company that provides transportation service (T-service) for the contracting parties.<sup>80</sup> In order for direct sales of non-

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quantity. The buyer must pay a monthly demand charge regardless of the volume taken and a commodity charge for the volume actually taken.

77. Bernhardt, *supra* note 42, at 758 ("Since the early 1950s, the FPC (now the FERC) generally has classified some portion of the fixed costs as commodity-related. That portion has ranged from a high of 75% under the United method to a low of perhaps 25% under the modified fixed-variable method.").

78. Public utilities in the United States include gas, electricity, telecommunications, and fresh water supplies, as well as other industries such as sewage, toll bridges, and warehouses.

79. Angyal & Means, *supra* note 40, at 2.

80. See NATIONAL ENERGY BOARD, MINISTER OF SUPPLY AND SERVICES CANADA, NATURAL GAS MARKET ASSESSMENT 1989-1991 9, 100 (1989).

system gas to compete with system gas sales<sup>81</sup> in central and eastern Canada, access to the TransCanada Pipeline Ltd. System (TCPL) must be available to all shippers on similar terms and conditions.

Normally, the pipeline operates in two capacities, as both distributor-carrier and as marketer-broker. In a direct sale, the producer may sell its gas to the end user or to a distributor or independent marketer even though the producer does not sell it to a pipeline.<sup>82</sup> Direct sales have their own respective opportunity cost and generally affect pipeline rates. The structure of pipeline rate design (apportioning the burden of a utility's revenue needs among customer classes) can have a dramatic effect on the operation of the gas industry.<sup>83</sup>

For example, an end user might buy gas from a producer in Alberta and contractually take ownership of the gas immediately east of the Alberta/Saskatchewan border. Here, the producer would be responsible for arranging a Province of Alberta removal permit to obtain transportation on the NOVA pipeline system (hence becoming the shipper). The end user would be the shipper on the TransCanada pipeline and local distribution systems, which would have to make separate arrangements for back-stopping and with a distributor for any required storage or load balancing.<sup>84</sup> Thus the challenge of U.S. and Canadian natural gas utility regulators is to promote the public interest in their respective jurisdictions without resorting to protectionism. This is the broad form of mischief that the FTA seeks to remedy.

### B. *Take-or-Pay*

Prior to deregulation and the FTA, the pricing of natural gas as a

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81. System gas sales (vente du gaz du réseau) encompass gas sold by pipeline companies of their affiliates. For instance, TransCanada Pipelines is the major transmission system in Canada, extending from Alberta to Québec. It buys and sells more gas from its subsidiary, Western Gas Marketing Ltd. (WGML), than any other Canadian company.

82. An independent marketer is a party other than a pipeline or distributor that buys and resells gas. An independent marketer differs from a marketer in that it takes title to the gas. The distinction between a pipeline and a distribution company is not clear in all cases. Some pipelines also operate distribution grids, and some companies that are considered to be distribution companies operate transmission lines to link separate distribution grids or to carry gas from a pipeline to the distribution grid.

83. Richard J. Pierce Jr., *Natural Gas Regulation, Deregulation and Contracts*, 68 VA. L. REV. 63, 83-84 (1982).

84. Load factor is the ratio of the average load over a designated period of time to the contracted maximum load, expressed as a percentage. Balancing refers to obligations requiring pipeline transportation customers to maintain equity between gas inserted and withdrawn from the pipeline with reference to specified tolerances and time periods.

commodity was regulated by the U.S. and Canadian governments by reference to the price of oil, an alternative fuel. Price regulation created a business environment that masked the market signals of supply and demand. Large "system pipelines" benefitted from the predictability of long term supply contracts upstream, coupled with firm distribution contracts downstream to local distribution companies. Competition was thwarted by preventing direct sales or third party access to distribution grids.

Transportation of a direct producer sale volume can affect rates since an opportunity cost arises when the pipeline could refuse transportation and substitute system gas. If the pipeline itself would otherwise have made the sale, transportation of the direct producer sale gas will not change the pipeline's throughput, the total volume being transported at any one time. In contrast, however, direct sales result in a shift from sales volume to transportation volume. The impact of such a shift on a pipeline and its customers depends on its transportation and sales tariffs and on the pipeline's fixed costs.<sup>85</sup> End-user rates are also affected by the relationship of transportation tariffs to sales (commodity) tariffs. This reason is arguably more important in the United States intrastate market because of the denser pipeline network and the probability of alternative transportation routes.<sup>86</sup> Take-or-pay contract exposure also significantly affects rates.

Sellers were often compensated via take-or-pay contracts for long-term dedication of a particular gas supply to a particular purchaser. These purchasers would buy gas from all producers in a particular field at relatively uniform prices. Today, a new philosophy exists among various interest groups in both countries in response to "system gas" operators and producers, who are not willing to share markets. This follows the relatively new circumstances where short term contracts are more common, and purchasers are willing to buy gas from one producer. An array of prices, commonly characterized in deliverability/best efforts contracts, currently exist due to deregulation and the over-supply of gas on the market.<sup>87</sup> The increase in the variety of prices and transportation options requires responsible regulation that can adapt to the new commercial exigencies.

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85. Angyal & Means, *supra* note 40, at 32-33.

86. *Id.*

87. LEGAL EDUCATION SOCIETY OF ALBERTA, OIL & GAS OPERATING AGREEMENTS: CONVENTIONAL, FRONTIER AND INTERNATIONAL App. B at 79 (1991).

### C. *Rate Base and Marginal Costs*

In order to calculate the maximum rates that a utility may levy, it is necessary first to determine the utility's operating expenses and rate base. A firm's rate base is the value of its facilities and capital investments and assets employed in rendering the service. This figure is multiplied by another parameter called the rate of return, which is a percentage of the former figure. The product of the equation is the amount or allowable return that a regulated monopoly will be permitted to earn and, by implication, to pass on to its investors.<sup>88</sup> Thus a major issue in regulatory hearings is the equitable evaluation of the capital used in the venture.

Unlike Canada, the United States has provisions in its Constitution protecting property rights, and these have presented unique constitutional challenges regarding the method of evaluating a firm's rate base. An early appellate decision held that owners of private property were protected from rate regulation that had the effect of expropriating it without just compensation or without due process under the Fifth and Fourteenth Amendments. The maximum rates were based upon the "fair value" test, which included reference to the present replacement cost of the property, the original construction costs less depreciation, the market value of its stocks and bonds, as well as the estimated earning capacity under particular statutory rates.<sup>89</sup>

Most states do not continue to follow this rate base evaluation method, which is itself a compromise between two other competing tests. The United States Supreme Court no longer requires a detailed rate base formula predicated upon the "fair value" test. The prevailing rule states that it is the result reached and not the method employed that is the main factor in determining "just and reasonable rates."<sup>90</sup> Presently, the matter involves economics and the selection of a formula to cope with the effect of inflation on assets. One way is to determine the replacement cost of installing equipment, but this technique can result in a book value greater than the original costs. The FERC and most state commissions espouse the calculation of the original cost of assets less depreciation, even though this method may tend to lower the book values.<sup>91</sup>

When viewed mathematically, the rate level of a firm may be expressed as its operating expenses plus its rate base, as multiplied by the

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88. A. J. G. PRIEST, *PRINCIPLES OF PUBLIC UTILITY REGULATION* 138-142 (1969).

89. *Smyth v. Ames*, 169 U.S. 466 (1898).

90. *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 601-03 (1944).

91. LEONARD W. WEISS & ALLYN D. STRICKLAND, *REGULATION: A CASE APPROACH* 16 (1976).

percentage figure termed rate of return. A rate level does not determine the specific rates that will be levied nor their interrelationship, as this parameter is found in the rate structure. This latter concept is also referred to as rate design, and it apportions the specific rates that are chargeable to various categories of customers.<sup>92</sup>

The objective of a utility's rate structure is to meet its financial needs and to distribute this burden equitably amongst its customers, while discouraging waste of the service and encouraging optimal use. Other criteria include rates that are simple, understandable, publicly acceptable, and that eschew undue discrimination.<sup>93</sup> But these criteria often represent conflicting exigencies. Inevitably, the rate structure represents a compromise among these factors, and it can be restructured from time to time to alter the distribution of the system's benefits.

Individual rates involve the subject of microeconomics and the relationship between marginal cost and price. Marginal cost is that cost incurred from the production of another incremental unit or alternatively the savings gained by avoiding production of that unit. Given that the economy has a finite capacity for production at any one time, an opportunity cost "for the alternatives that must be forgone"<sup>94</sup> exists from the choice to produce more or less of a particular service or good. By producing more of one particular service, society makes a corollary decision to produce less of another. A rate structure should reflect marginal costs if consumers are to make intelligent purchase decisions, since demand for more or less of an item must reflect the supply cost of more or less.<sup>95</sup>

Marginal costs involve the variable production expenses that pertain to a particular service or item, such as a widget. The direct production expenses contemplated by the marginal cost formula are distinguished from the overall production or constant costs, which are not affected by additional or reduced widget production. The latter costs are fixed because they are not dependent on or proportionate to variations in output. They are sometimes referred to as joint costs, and may include the indirect and non-attributable costs of two or more types of natural gas service to various classes of customers from one pipeline system.<sup>96</sup>

Rate structures in use have tended to avoid the fully distributed, or

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92. TOMAIN, *supra* note 36, at 112-15.

93. BONBRIGHT, *supra* note 6, at 291-93.

94. 1 KAHN, *supra* note 43, at 66.

95. *Id.* at 65-66.

96. WILLIAM K. JONES, CASES AND MATERIALS ON REGULATED INDUSTRIES 191-95 (2d ed. 1976).

average cost, measurement in the setting of rates, even though it provides a straightforward mechanism that can yield the required aggregate revenue for a firm. One disadvantage of the method is its relatively arbitrary allocation of joint costs among customers. Marginal cost rate-setting appears more desirable due to its efficiency in the allocation of resources.<sup>97</sup> Nevertheless, marginal cost pricing is difficult to apply to a regulated natural monopoly because it does not allow for the recovery of fixed costs when these are high and the marginal costs are very small. Some elements of marginal cost pricing may be used in the rate schedule in order to elicit more customers, thereby keeping the overall costs down; however, it cannot be used as the sole pricing criterion.

Furthermore, it is not easy to calculate this parameter since regulated firms usually set "different prices for different classes of customers, different amounts of service purchased," and different time periods.<sup>98</sup> Components of natural gas marginal-cost rates include charges for the volume of gas purchased and fixed administration costs such as connection and metering. These rates also proportionally comprise the natural gas plant costs incurred in providing service capacity to the customer at peak periods such as winter, when demand is greater than in summer.<sup>99</sup>

Hence, a pervasive criterion of public utility rates is that they cover the "value-of-the-service."<sup>100</sup> The difficulty in arriving at this value is the subject of public regulatory hearings where intervenors regularly utilize complex socio-economic and financial data to advocate the position of their respective interest groups. Much effort is directed to the examination of technical data in an attempt to tease out proof of undue discrimination. Admittedly, discrimination can not be prevented entirely, as shown by the disproportional contribution to aggregate revenues made by the divergent rates of different customer groups. Once all the considerations are made, discrimination may indeed be socially desirable, for example, in order to distribute gas under postage-stamp like rates even when a cost analysis made between city and country users does not justify it.<sup>101</sup> Regulators must therefore decide when the analysis as a whole justifies discrimination and under what circumstances it does not.

Marginal cost-based rates are not the only alternative to fully-distributed rates. Certain discriminatory rates—block rates or multi-part

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97. GELLHORN & PIERCE, *supra* note 5, at 194-97.

98. STRICKLAND & WEISS, *supra* note 91, at 18.

99. *Id.* at 20-21.

100. PRIEST, *supra* note 88, at 337.

101. *Id.* at 344-45.

rates—exist, yet they do not have “all of the consumer-rationing advantages of un-qualified marginal-cost pricing.”<sup>102</sup> While marginal-cost rates may be theoretically more efficient in the short run, they must be qualified by the expectation of consumers that utility rates will remain stable for a relatively long time. Accordingly, some regulatory commentators and economists believe that a rate design should be based on persistent or long-run marginal costs. They argue that stability in rates would be encouraged, but acknowledge both the inherent problems in estimating cost functions for twenty years or more and the long-term marginal cost assumption that the output rate will be enhanced indefinitely following an increase in plant capacity.<sup>103</sup>

Dissatisfaction with strict long-run or short-run marginal-cost pricing has resulted in the use of a notable rate setting technique. This popular alternative derives from joint costs incurred by natural gas utilities in the capital-intensive construction of pipelines and compressor stations, and acquiring of rights of way. Although their fixed overhead costs are relatively high, their incremental costs are relatively low. “In such an industry, prices set to equal to the incremental cost of increasing production or services by another unit will not earn enough revenue to cover fixed overhead costs . . . . A long run policy of incremental or marginal cost pricing will therefore not be possible in such an industry.”<sup>104</sup>

In order to pay the so-called wages of capital, and in order to minimize the inefficiency, regulators advocate discriminatory prices among various customer classes according to a structure that is the inverse of the normal demand elasticity curve.<sup>105</sup> For example, natural gas utilities might set low rates for industrial users because such customers may switch to alternative competing fuels if gas is priced at a higher rate. Despite making an allowance for the actual costs in serving divergent classes of customers, higher rates are usually levied to residential and commercial customers because their demand is less elastic.<sup>106</sup> Since these classes of customers place a greater value on gas service, they pay a higher share of the fixed costs than do industrial users, who place less value on the service. Given the inability of incremental costs to cover average costs (due to high fixed costs), the justification for this form of

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102. BONBRIGHT, *supra* note 6, at 395.

103. *Id.* at 319, 400-02.

104. BREYER & STEWART, *supra* note 18, at 514.

105. *Id.* at 516.

106. STRICKLAND & WEISS, *supra* note 91, at 22.

regulatory price discrimination is to minimize allocative waste while recovering or paying for fixed investment.<sup>107</sup>

Public utilities are often in an environment or economy of scale that fosters long run decreasing costs, with the unit cost decreasing as total output increases.<sup>108</sup> Thus, another example of price discrimination that has been justified by regulatory agencies is the traditional declining block rate. This structure initially charges customers a rate sufficient to cover fixed costs as well demand and customer costs. It is designed to pay for the entire service cost by both small and large users, yet it encourages greater consumption by lowering the rates as more of the commodity is used.<sup>109</sup> Rate discrimination between classes of customers is therefore justified in many instances due to the economic exigencies of the natural monopoly.

Finally, the Canadian natural gas utilities invariably conduct discriminatory practices without being tainted by the connotation that the word "discrimination" normally affords. However, not all forms of discrimination in effect are acceptable, and indeed some types may be patently unfair to certain classes of customers while unjustly benefitting others. Regulators have a duty to identify and prohibit undue or unjust discrimination. The goal of regulation is to provide maximum cost savings to all natural gas users while ferreting out instances of undue price discrimination. Unfortunately, such instances may have been inadvertently exacerbated by the Canadian deregulation of prices for the commodity.<sup>110</sup>

#### IV. REGULATORY METHODOLOGY

Apportionment of commodity and transportation costs is an additional concern facing regulatory authorities. This is realized outside North America, where the European Commission suggests that a Community "purchase price for natural gas" would promote competition.<sup>111</sup> This would be predicated upon price transparency, the obligation of undertakings to make known the prices they charge. Its predominant purpose is to prevent price discrimination, though it remains to be seen

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107. BREYER & STEWART, *supra* note 18, at 515-16.

108. STRICKLAND & WEISS, *supra* note 91, at 22-23.

109. TOMAIN, *supra* note 36, at 117-18.

110. Alexander J. Black, *Canadian Natural Gas Deregulation: Contractual Impediments and Discriminatory Consequences*, 7 J. ENERGY NAT. RESOURCES L. 42-73 (1989).

111. A now dated summary of European Community natural gas initiatives appears in Alexander J. Black, *Common Carriage of European Natural Gas and Relevant Canadian Experience*, 8 OIL & GAS L. TAX'N REV. 195-207 (1990).



whether there is support in Community law for such a policy.<sup>112</sup> The potential sophistication of such a policy is illustrated by a recent Canadian decision.

Despite the Canada-U.S. Free Trade Agreement, the North American gas industry is focusing on the regulatory impact of freely negotiated contracts. The TCPL had applied to the NEB for approval to expand its pipeline system to serve growing domestic and export (American) markets. On November 6, 1990, the NEB released the *Iroquois* decision<sup>113</sup> on toll design and economic feasibility pertaining to the TCPL's 1991-92 expansion project. The Board decided to hear these issues as a matter of procedure, before addressing the facilities expansion issue, including applications for export licenses. The proposed \$2.6 billion transportation facilities include construction of a 1,592 kilometers of pipeline, and installation of twenty-one new compressor units and two new compressor stations. The pipeline will run parallel to its existing system in Saskatchewan, Manitoba and Ontario, except for a new 4.5 kilometer pipeline at Iroquois, Ontario,<sup>114</sup> which will accommodate volumes destined for the American Northeast.

The NEB decided to continue the rolled-in-tolling<sup>115</sup> regime for new

112. Ernst-Joachim Mestmäcker, *Natural Gas in the European Internal Market: A Comparative Analysis of Common Carriage and Price Transparency*, 11 MICH. J. INT'L L. 691, 748-49 (1990). "A gas spot market can be achieved only in a highly competitive wellhead market and by means of a diversified common carriage system covering the whole country." *Id.* at 706.

113. National Energy Board Reasons for Decision, TransCanada Pipelines Ltd, GH-5-89 Volume 1, Tolling and Economic Feasibility, (Nov. 1990); see also National Energy Board Reasons for Decision, IPL Facilities and Tolls Application, GHW-5-90, RH-3-90 (Feb. 1991).

114. Paul C. Hillard, *Iroquois: IPAA Strives for Equity: Independent Petroleum Association of America Objects to Importing of Canadian Natural Gas to New England*, 60 PETROLEUM INDEPENDENT 9 (1990). The IPAA argued before the FERC that the Iroquois proposal was highly discriminatory against domestic gas producers. Commentators say that

[i]f the Iroquois line is built because of an advantageous rate structure [that favors Canadian gas,] Canadian gas producers will be the primary gas suppliers to the Northeast, and U.S. suppliers will be the suppliers of second choice, or the swing suppliers to that area as they now are in California—where Canadian gas fills 40% of the market.

*Id.*

115. U.S. Incremental Pricing: Until it was repealed in May 1987, Title II of the Natural Gas Policy Act (NGPA) established a program of incremental pricing of interstate gas supplies. NGPA, Pub. L. No. 100-42, 15 U.S.C. §§ 3341-3348 (1982) (until repeal in 1987). Under traditional Commission ratemaking, all customers reimburse the pipeline for its average cost of gas acquisition. This "rolled-in" pricing rolls all of the variously priced gas supplies of the pipeline into an average price, which is then passed on to the pipeline's customers. The repealing legislation provided that the Commission's incremental pricing rule would continue in effect "only with respect to the flow through of costs incurred before the enactment of this section, including any surcharges based on such costs." See also National Energy Board, Reasons for Decision, Blackhorse Extension, GH-R-1-92, TransCanada Pipelines Ltd., Blackhorse Extension (June 1992), at 6 (approving a rolled-in toll). In this decision, the Board noted that:

[T]he costs of any portion of an integrated pipeline system, which is jointly used by many

facilities, rejecting industry proposals for incremental tolls, which would cause the new traffic to bear a substantially higher toll than the existing traffic. Also rejected was a proposal putting the American Northeast traffic in a separate rate base. The Board found that all shippers, both existing and new, "caused" the expansion.

This finding was necessary to dispose of the incremental tolls proposal which would require the new shippers to bear the expansion costs based on the cost responsibility principle of toll making. Incremental tolls for new shippers would shield existing shippers from the costs resulting from the new facilities. This undesirable proposal was based on the premise that existing shippers had some "acquired rights" on the system. The Board opined that previous tollpayers have no acquired rights, they cannot expect to be exempted from a toll increase simply because they have paid tolls in the past.

The Board found that different, less favorable toll treatment of new shippers (and toll protection for existing ones), solely on the basis of when they commenced service, would be discriminatory. Mitigating the impact on existing shippers was effectively found not to be a valid objective in toll-making. Many existing shippers are locked into long term contracts and cannot extricate themselves should they not wish to pay higher tolls. Nevertheless, this extreme position downplays the role that existing shippers have in the financing of earlier pipeline expansions.<sup>116</sup>

#### A. *Traditional Rate-of-Return Regulation*

Rate-of-return regulation is the predominant method of North American regulatory control against public utility-monopoly abuse. Rate-setting and policing or enforcement of rates impose significant costs on a regulated natural monopoly.<sup>117</sup> Regulation tends to impose high costs on both administrators and management. Requiring a "reasonable" rate-of-return on productive capital assets can inefficiently encourage

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shippers and which provides a standard service, should be shared by all system users through rolled-in tolls. Rolled in tolls reflect the fact that all shippers cause costs on the system and that all shippers also share the benefits of the integrated system. In such circumstances, rolled-in tolls send the correct market signals to shippers with respect to the cost of providing the service.

*Id.*

116. NAT. GAS REG. NEWSL. (J. Thomas Brett, Johnston & Buchan, Barristers & Solicitors, Ottawa), Nov. 1990.

117. Natural monopoly is defined as a state of market in which a single firm can produce the desired output at a lower cost than any combination of two or more firms. See HAZLETT, *THE CURIOUS EVOLUTION OF NATURAL MONOPOLY THEORY* (1985); UNNATURAL MONOPOLIES—THE CASE FOR DEREGULATING PUBLIC UTILITIES 1, 16 (Robert W. Poole, Jr., ed.).

capital expenditures and decrease incentives to minimize costs.<sup>118</sup>

Rate-of-return regulation in the U.S. typically monitors prices, quality of services, cross-subsidies, and terms of transactions between affiliates; determines depreciation policies, entry and exit conditions; and reviews expenses.<sup>119</sup> In order to calculate the maximum rates that a utility may levy, it is necessary to first determine its operating expenses and rate base.<sup>120</sup> A firm's rate base is the value of its facilities and capital investments and assets employed in rendering the service. This figure is multiplied by another parameter called the rate of return, which is a percentage of the former figure and should be consistent with the risk to which capital is exposed. The product of the equation is the amount or allowable return that a regulated monopoly will be permitted to earn and by implication, pass on to investors in the concern.<sup>121</sup>

The rate level of a firm may be expressed as its operating expenses plus, its rate base as multiplied by the percentage figure termed rate of return. It does not comprise the specific rates that will be levied nor their inter-relationship as this parameter is found in the rate structure. This latter concept is also referred to as rate design, and it apportions the specific rates that are chargeable to various categories of customers.<sup>122</sup> The objective of a utilities' rate structure is to meet its financial needs, yet distribute this burden equitably amongst its customers, while discouraging waste of the service and encouraging optimal use. Other criteria include rates that are simple, understandable, publicly acceptable and that eschew undue discrimination.<sup>123</sup>

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118. Bernhardt, *supra* note 42, at 762. "A system of pipeline regulation is warranted only if four conditions are met: (1) some unregulated pipeline companies would exercise substantial market power, resulting in significant resource misallocation; (2) the regulation would substantially increase the efficiency of resource allocation in those markets; (3) the regulation is not overly expensive; and (4) no alternative system would cause a greater efficiency increase or be less costly." *Id.*

119. Sushil K. Bhattacharyya & Dan J. Laughhunn, *Price Cap Regulation: Can We Learn From the British Telecom Experience*, 120 PUB. UTIL. FORT. 22, 27 (1987).

120. "[A]lthough the consumer sees only a single aggregate charge, to ensure that pipeline companies cover their costs with a fair return, the FERC must estimate the costs separately and regulate pipeline charges for each component." Bernhardt, *supra* note 42, at 768.

121. PRIEST, *supra* note 88, at 138-42.

122. TOMAIN, *SUPRA* note 36, at 112-15; *see supra* discussion at Part III.C.

123. BONBRIGHT, *supra* note 6, at 11. Bonbright adds that:

The familiar statement that a public utility is a 'natural monopoly' is meant to indicate that this type of business, by virtue of its inherent technical characteristics rather than by virtue of any legal restrictions or financial power, cannot be operated with efficiency and economy unless it enjoys a monopoly of its market. So great are the diseconomies of direct competition that, even if it gets an effective start, the competition will probably not long persist if only because it will lead to the bankruptcy of the rivals. But even if competition is long lived, as has occasionally happened when rivalry has taken a restrained form, it is wasteful of resources because it involves unnecessary duplication of tracks, of cables, of substations, etc.

## B. Price Cap Regulation

Price capping is more than just a cap that fixes prices at their present levels, subject to certain adjustments. Rather, it is a control system that attempts to adjust for purchase prices of inputs that the company buys. Price cap regulation has been called "social contract" regulation<sup>124</sup> and is respectively employed by the British Office of Telecommunications (OFTEL) and the Office of Gas Supply (OFGAS).

The OFTEL formula was based on recommendations by Professor Littlechild, who proposed a local tariff reduction scheme under which a local tariff index would increase over a twelve-month period at a rate equal to the retail price index (RPI),<sup>125</sup> less a fixed percentage. The tariff would be applied to a basket of services. Nevertheless, profitability and rate-of-return remain valid concerns when the price cap allows profits that are publicly perceived to be excessive, or when it constrains the regulated industry's ability to earn a reasonable rate of return.<sup>126</sup>

In the United States, the Federal Communications Commission (FCC) has implemented price cap regulation where developing technology offers room for productivity improvements.<sup>127</sup> A supporting report identified potential benefits including, "ratepayer protection promotion of service efficiency and technological innovation, reduction, if not elimination of incentives to cross subsidize; and administrative simplicity."<sup>128</sup> However, the price regulatory regime in the United Kingdom has not necessarily prevented the British Gas monopoly from arguably "gold-plating" its system by building it to an unnecessarily high standard and cost.<sup>129</sup>

Price capping does not differ from rate-of-return (ROR) regulation in the totality of controls imposed, but rather differs in the "primary

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*Id.* at 291-93; see *supra* discussion at Part III.C.

124. Jack L. Landau, *Social Contract Regulation is a Bad Bargain for Ratepayers*, 120 PUB. UTIL. FORT. 21 (1987).

125. The RPI's equivalent in the United States is the Consumer Price Index (CPI).

126. Bhattacharyya & Laughhunn, *supra* note 119, at 26; Paul L. Joskow & Richard Schmalensee, *Incentive Regulation for Electric Utilities*, 4 YALE J. REG. 1, 33 (1986). The authors note that "[b]road-based indexes like the CPI are designed to measure the general average rate of price changes; they are not especially sensitive to the price of any particular utility's inputs. [Additionally, there is no] obvious way to come up with good, simple estimates of expected productivity growth."  
*Id.*

127. The FCC adopted a cap on AT&T's rates on May 8, 1989. FCC Policy and Rules Concerning Rates for Dominant Carriers, 54 Fed. Reg. 19,836 (May 8, 1989).

128. FCC Proposes Replacing Rate of Return Regulation for Dominant Carriers with Price Cap Regulation for Interstate Services, FCC Docket 87-303 (1987); Bhattacharyya & Laughhunn, *supra* note 119, at 23.

129. OFFICE OF GAS SUPPLY (LONDON, HMSO), OFGAS ANNUAL REPORT 13 (1991).

control instrument used and the relative emphasis given to the remainder." Rate-of-return regulation focuses on profit control with secondary attention paid to prices and other parameters of performance. Hearings traditionally debate the exclusions or inclusions of expenses from the rate base and the degree of price disaggregations for ROR compliance.

Alternatively, the current British price capping model focuses on the overall price control for protected services, with subsequent attention to profitability and performance parameters. Price capping disputes focus on the suitability of inflation measure(s), the "appropriate offset to reflect productivity," and the nature of the protected services. However, difficulties would exist in implementing price caps in North American jurisdictions because much of the ROR regulatory control system would have to be dismantled.<sup>130</sup>

Ironically, the *RPI-X* price capping method is closer to rate-of-return regulation than government proponents suggest. Both price and profits regulation create perverse incentives.

[P]rice regulation creates pressure to reduce quality of service; profit regulation, which normally allows a reasonable rates of return, somehow defined, on investment, does little to encourage cost reduction. Price regulation . . . involves controlling quality by setting service standards, while cost regulation involves the review of the prudence of the regulated entity's expenditures.<sup>131</sup>

Moreover, tensions between the regulated company and the regulator will be inevitable. While the use of price capping or rate-of-return regulation both have respective merits and demerits, both methods are capable being enhanced.

## V. THE CASE FOR INCENTIVE RATE REGULATION

Traditional rate-of-return regulation<sup>132</sup> arguably creates an environment where efficiency is penalized and incompetence (in the form of

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130. Bhattacharyya & Laughunn, *supra* note 119, at 28.

131. Irwin Stelzer, *Britain's Newest Import: America's Regulatory Experience*, 4 OXFORD REV. ECON. POL'Y 69, 70 (1988).

132. See generally Alexander J. Black, *Public Utilities and Regulatory Theory*, 1 OIL & GAS: L. TAX'N REV. 12-16 [1989/1990]; Alexander J. Black, *Canadian Natural Gas Deregulation: Contractual Impediments and Discriminatory Consequences*, 7 J. ENERGY & NAT. RESOURCES L. 42-73 (1989).

overcapitalization) rewarded.<sup>133</sup> Using a cost-plus basis to determine total revenue requirements ensures that all expenses (cost-of-service)<sup>134</sup> will be reimbursed along with the allowed return on equity provided that these costs are deemed "prudent." These costs are escalating. For instance, tighter environmental standards are forced on firms subject to rate-of-return regulation. By 1981, approximately one-third of U.S. environmentally-related spending was made by public utilities. With inelastic demand price, state regulatory commissions invariably allowed utilities to pass on the extra costs to customers.<sup>135</sup> Yet traditional rate-of-return regulation perversely discourages incentives by generally preventing the retention of any gains from greater productivity.<sup>136</sup>

On the other hand, an incentive approach (including the bonus or gainsharing system used in unregulated companies) can permeate the company organization, changing the motivations and behavior of corporate personnel.<sup>137</sup> Well settled principles of public utility regulation require that efficiency be monitored and that rewards and penalties be

133. The Averch & Johnston hypothesis suggests that getting a rate higher than the market rate of return on capital from a regulatory commission encourages an imore efficient use of capital. Public utility regulation encourages inefficient use of capital, including the choice of capital-intensive technologies, because increasing the use of capital will increase revenues and profits. See Averch & Johnston, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECOM. REV. 1052 (1962); see also E. BAILEY, *ECONOMIC THEORY OF REGULATORY CONSTRAINT* 4 (1973) (positing that the standard result under Averch-Johnson "is that the firm has an incentive to misallocate resources by substituting capital for labor in production, and that this misallocation is strictly preferred by the firm to any padding of the rate base.").

134. BONBRIGHT, *supra* note 6, at 262. Bonbright comments that

as long as rates are fixed so as to assure even a company under mediocre management that it can cover its costs, including a 'fair rate of return,' and as long as any higher return is denied even to a company under exceptionally able management, there will be lacking under regulated private ownership a stimulus for efficiency comparable to the stimulus for efficiency of actual competition.

Professor Bonbright suggests that standard service has been prevented by regulatory lags and the prevention of companies from receiving excessive earnings for prolonged periods. See also Paul V. Nolan, *Progress of Regulation: Trends and Topics*, 108 PUB. UTIL. FORT. 50 (1981) (stating that in 1981, Michigan and Massachusetts were quite active in developing efficiency programs).

135. Robert W. Crandall, *Pollution Controls and Productivity Growth in Basic Industries*, in *PRODUCTIVITY MEASUREMENT IN REGULATED INDUSTRIES* 349-52 (Thomas G. Cowing & Rodney E. Stevenson eds., 1981).

136. Harry M. Trebing, *Toward an Incentive System of Regulation*, 71 PUB. UTIL. FORT. 22. n.1 (1963) (citing GARDINER C. MEANS, *PRICING, POWER AND THE PUBLIC INTEREST* 191 (1962)) (dismissing utility-type regulation as a method of compelling a high level of performance in the steel industry because "it greatly weakens the profit pressure for economic efficiency.").

137. KURT A. STRASSER & MARK F. KOHLER, *REGULATING UTILITIES WITH MANAGEMENT INCENTIVES: A STRATEGY FOR IMPROVED PERFORMANCE* 137 & ch.5 generally (1989). Alternatively, rate capping is a "crude investment tool at best" without an accurate measurement of potential productivity. This productivity measurement is difficult to obtain. Accordingly, in the United States, rate capping has been seriously considered only in the telecommunications industry, in which potential exists for substantial improvements to productivity because of new technological advances. *Id.* at 67.

conferred for appropriate performance.<sup>138</sup> Increased motivation is needed as North America moves commercially towards a single gas market without the guidance of a firm North American Gas Policy. Regulatory restructuring in North America created a market shake-up or dislocation characterized by substantial (take-or-pay) contract costs and externalities.<sup>139</sup> However, one important caveat exists. Incentive rate regulation, like other forms of regulation can never be a perfect substitute for the invisible hand of competition.<sup>140</sup> Nevertheless, incentive rate regulation indeed may be a timely and efficient response to these changed circumstances.

### A. Regulatory Lag

Admittedly, exceptions exist from the general criticism that rate-of-return regulation stifles innovative performance. For instance, tax credits and accelerated depreciation can combine to result in a higher rate of return after tax has been computed than before. This can occur when the taxpayer has "income from other sources or when some mechanism exists for transferring those tax incentives that cannot currently be used by the taxpayer."<sup>141</sup> However, regulatory lag involves lack of continuity

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138. Alfred E. Kahn, *Public Utility Productivity*, iii (1975). Kahn notes that:

[p]ublic utility regulation is inherently incapable of supplying the kind of continuous pressure and incentive for efficient operation that we rely on competition to supply in nonregulated industries . . . . A regulatory commission has an obligation . . . to monitor the efficiency of the companies that it regulates and to . . . devise rewards and penalties related to the efficiency with which those companies perform . . . . The first step in carrying out such responsibilities is the devising of the systems for assessing and measuring efficiency.

*Id.*

139. See GELLHORN & PIERCE, *supra* note 5, at 55. For example, a tortfeasor's actions impose external costs upon the victim even though the relationship between the tortfeasor and the victim is involuntary. In voluntary relationships, such as contracts, legal rules that are ambiguous or in a state of flux can also impose external costs. The allocative efficiency of competition assumes that all product costs are incurred by a producing firm and that all benefits are respectively reflected in its revenues. Some costs or benefits called beneficial and detrimental externalities are in fact not reflected in the firm's costs and revenues. These include pollution effects. See also John Baden & Richard Stroup, *Externality, Property Rights, and the Management of Our National Forest*, 16 J. L. & ECON. 303 (1973) (noting that current forest management policies leave problems of inefficiency and inequity unresolved).

140. The classic free enterprise argument is that efficient allocation of resources (and hence public welfare) can be enhanced by behavior that seeks to further private interests where the actors are led "as if by an invisible hand, to seek an end which was no part of their intention." ADAM SMITH, *THE WEALTH OF NATIONS* (7th ed. 1793); Paul W. MacAvoy et al., *Is Competitive Entry Free? Bypass and Partial Deregulation in Natural Gas Markets*, 6 YALE J. REG. 209, 230 (1989) ("Conflicting regulatory jurisdictions do not correspond to the 'invisible hand' of Competition under which consumers and firms pursue economic objectives. The consequences of competing regulations can include increased regulatory intervention in markets, greater administrative costs, and unnecessary delays in certification of new entrants.").

141. Eymes, *supra* note 16; see E. Cary Brown, *Business Income Taxation and Investment Incentives*, in *INCOME, EMPLOYMENT, AND PUBLIC POLICY* 300 (1948).

and a hiatus between regulatory decisions. Innovation and efficiency can occur "if the return on investment, as a residual after expenses," is not to be lost. The profit motive may also operate during regulatory lag, when firms behave efficiently in the absence of inflation in order to retain profits pending the next formal rate hearing.<sup>142</sup> A fixed price between rate hearings therefore acts as an efficiency incentive. Inevitably, there is a delay before regulatory approval and this delay can result in cost restraint.<sup>143</sup> When industry costs fall relative to rates, excess profits are made, as happened in the U.S. electric power industry from 1945 until the mid-1960s. Since then, rising costs and fixed prices have lowered profits and the rates cannot match the escalation in costs due to regulatory lag.<sup>144</sup>

Nevertheless, traditional regulation has limitations. Traditional regulation may cause a delay in installing new cost reduction technology since cost this might reduce revenues. Regulated firms also react by inflating expenses<sup>145</sup> and investment per unit output, often "gold-plating" or over-building their infrastructure pursuant to a "cost-plus" strategy.

There is also a bias to boost the rate base through expansion. Under traditional regulation, utilities earn high returns while increasing the cost-of-service. This corporate behavior can disguise excessive salaries and other payments. While innovation is required for survival under the theory of competition, regulated companies generally eschew capital saving innovations that reduce either investment or rate base per unit output (and hence the return per unit output).<sup>146</sup> Over-investment can dilute the effect of price as a constraint on new business. These price constraints can be retarded by avoiding the block rate structure, the convergence of capital costs and allowed rate-of-return, and the factor bias caused by a

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142. Trebing, *supra* note 136, at 25; cf. Elizabeth Warren, *The Regulatory Lag Fallacy*, 106 PUB. UTIL. FORT. 15, 16 (1980). Warren comments that:

Interestingly, as a utility becomes more efficient, it has more to fear from regulatory lag. An inefficient utility has many cost reductions available to offset inflation during a period of regulatory lag. It may choose to implement few or several. By contrast, an efficient producer has few costs cuts yet to be made. High inflation during a regulatory lag period may impair the efficient producer's financial integrity, while it permits an inefficient producer to maintain relatively higher rates of return if it will simply make some movement toward increased efficiency. Regulatory lag is at best an undifferentiating device to promote utility efficiency.

*Id.*

143. BONBRIGHT, *supra* note 6, at 53-54.

144. STRASSER & KOHLER, *supra* note 137, at 16. "In essence, a rate cap is similar to a permanent, institutionalized, and rationalized regulatory lag". *Id.* at 66.

145. BONBRIGHT, *supra* note 6, at 262. Escalating costs mean that revenues will also rise.

146. Trebing, *supra* note 136, at 24.



fuel adjustment clause (FAC),<sup>147</sup> where prices automatically move up or down as input costs change. A fuel adjustment clause prevents an otherwise inherent rigidity in utility pricing by encouraging rapid pass-through of increased fuel costs.<sup>148</sup> Concurrently, this device facilitates a savings pass-through to customers. As one author stated, "there is an inherent rigidity in utility pricing without an automatic cost adjustment provision."<sup>149</sup> Overinvestment is indirectly encouraged when regulators do not consider economic costs when establishing the rate base, earnings and prices.<sup>150</sup>

Thus, while marginal cost pricing is increasingly used in the electricity industry, there are wide areas for discretionary judgement, including at least four costing methodologies. Over-investment may also be encouraged by regulatory commissions that wish to moderate the impact peak-period price. Another weakened regulatory constraint is the avoidance of incremental tolls because high cost supplemental gas supplies has been abandoned in favor of a rolled-in tolls.<sup>151</sup>

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147. Many jurisdictions permit gas utilities to implement automatic adjustment clauses ("purchased gas adjustment" or "automatic fuel adjustment" clauses) to recover changes in purchased gas costs. Regulatory agencies often have discretion to allow the passing-through of the increase to customers with or without a formal public hearing. James McManus, *Natural Gas, in ENERGY LAW AND TRANSACTIONS* 336, (David J. Muchow & William A. Mogel, eds., 1990); see e.g., 16 U.S.C. § 2625(e) (1988); CAL. PUB. UTIL. CODE § 454.5 (West Supp. 1986) (permitting rate adjustments for fuel cost increases).

148. Harry M. Trebing, *Motivations and Barriers to Superior Performance Under Public Utility Regulation, in PRODUCTIVITY MEASUREMENT IN REGULATED INDUSTRIES*, *supra* note 135, at 376. FACs might encourage, especially in vertically integrated utilities, fuel-intensive rather than capital-intensive production processes. FACs are also conducive to X-inefficiency (internal slack and waste). The Public Utility Regulatory Policies Act of 1978 required the FERC to review FACs every four years to determine whether they provide incentives for efficient resource use.

149. Elizabeth Warren, *Regulated Industries' Automatic Cost of Service Adjustment Clauses: Do They Increase or Decrease Cost to the Consumer?*, 55 NOTRE DAME LAW. 333, 336 (1980).

Responsiveness of price to cost is what distinguishes automatic cost adjustment clauses from escalator clauses, which are usually predetermined increments in utility rates that are automatically triggered after a certain time has elapsed since the preceding regulatory hearing. . . . Whenever utility costs decline or increase they are reflected in an automatic adjustment in the customers' bill. . . . The responsibility of a regulatory commission is to establish rates that balance consumer and investor interests.

*Id.* at 336-37; see *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944). The key reason that the interests must be balanced is that the entire premise of regulation is violated if either interest is short-changed; see also John A. Carver, *Developments in Regulations: Adjustment Clauses*, 53 DENV. L.J. 663, 665-68 (1976). Professor Warren suggests that "regulatory lag is at best, a profit-squeezing device unrelated to real efficiency potential." Warren at 351.

150. Trebing, *supra* note 151, at 375. Another incentive to overinvestment is the normalization of taxes associated with accelerated depreciation. Such normalization provides an interest-free loan to a firm, inducing continued high levels of investment in order to postpone the payback period.

151. *Id.* at 376. The Federal Power Commission abandoned plans to incrementally price LNG facilities in favor of a rolled-in price that would average high-cost LNG with low-cost flowing gas. This diluted the effect of price as a constraint on new business. *Columbia LNG Corp, Op. No.622*, 47 F.P.C. 1624, 1641 (1972); *Columbia LNG Corp, Op. No 622-A*, 48 F.P.C. 723, 729 (1972);

## B. *Incentive Rate Rationale*

Public utilities face uncertainties caused by the regulatory process, and many of these business uncertainties are not necessarily shared by unregulated companies.<sup>152</sup> Instead of the traditional command-and-control regulation, incentive regulation can increase goal specificity if the regulatory commission sets clear goals that will result in definite and unambiguous rewards.<sup>153</sup> These goals concern organizational productivity. Incentive rates promote flexible pricing by public utilities by creating rates that are above a utility's marginal cost of production yet lower than its regular charges.

Incentive rates reflect changes in a general price index (such as the Consumer Price Index) rather than charges to a specific company's costs. Otherwise, the self-interest seeking behavior of a regulated firm will skew its efforts towards the narrow parameter at the expense of other performance indicators. The proposed FERC policy requires incentive ratemaking proposals to be prospective with the Commission establishing "just and reasonable" rates at the inception of the plan. Secondly, participation by regulated companies will be voluntary. Thirdly, the benefits of the incentive rate proposal must be stated clearly in comparison to cost-of-service regulation. Finally, the FERC seeks quantifiable customer benefits.<sup>154</sup>

Post-World War II North American economic growth has been aided by productivity advancement, with the regulated industries invariably leading other sectors. Productivity considers "the efficiency with which inputs are transformed into useful output within the production process." However, since 1966, productivity growth has slowed down in both regulated and non-regulated industries.<sup>155</sup> One increasingly used

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Trunkline LNG Co. et al., Opinion Nos. 796 & 796-A (1977). The Natural Gas Policy Act of 1978 incrementally priced high-cost gas with low priority industrial boiler fuel until the price reached parity with fuel oil: At that time, rolled-in or average cost pricing is reinstated.

152. STRASSER & KOHLER, *supra* note 137, at 99.

153. *Id.* at 90-91. Organizations may face ambiguity in their decision-making processes. Organizations have, for this purpose been defined as "a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be an answer, and decision makers looking for the work." *Id.* at 93 n.35 (citing Cohen et al., *A Garbage Can Model of Institutional Choice*, 17 ADMIN. SCI. Q. 1, 2).

154. *Incentive Regulation Under Review*, THE REG. TIMES, Mar. 25, 1992, at 7. The FERC will invite comment from the electric and gas industries, and subsequently intends to invite companies to file incentive ratemaking proposals.

155. PRODUCTIVITY MEASUREMENT IN REGULATED INDUSTRIES, *supra* note 135, at 3, 6. Productivity-regulated industries share supply-related characteristics, including that: (1) possible economies of scale result "when an equiproportional expansion of all inputs leads to a greater than proportional expansion in output, or equivalently, when an increase in output at constant input prices leads to a less than proportional increase in total costs. Thus, average costs decline (increase)

technique is total factor productivity (TFP). It measures "unexplained residual" (such as technological advancement): output growth that cannot be accounted for by growth in inputs.<sup>156</sup>

As late as 1963, little had been done to investigate the incentive-regulation paradigm.<sup>157</sup> Extreme recommendations in the United States to use antitrust remedies would either duplicate facilities or reduce economies of scale. In the absence of clear (and largely achieved) efficiency standards, total cost per unit output would not be reduced if utility commissions increased the rate-of-return<sup>158</sup> in order to spur investment.<sup>159</sup>

From the turn of the century until the early 1960s, productivity time measurement has shown that regulated industries in the U.S. have led productivity growth as compared to other industries. The management of these entities possesses a greater "corporate consciousness of sense of public trusteeship" than the public press portrays.<sup>160</sup> Paradoxically, "the inherent logic of cost-plus regulation would indicate that the firm seeking to raise total receipts would inflate costs or input per unit output."<sup>161</sup>

This ostensible paradox is refuted since operational incentives have never been widely used, nor has society really defined "optimal or ideal"

as output expands (contracts), and since larger firms would be able to produce at lower average costs than smaller firms, a competitive equilibrium is not sustainable."; (2) technical changes, including innovations and increased knowledge, affect maximum or efficient output; (3) the degree of capital intensity of the production technology affects efficiency.

Demand-side characteristics include pricing and growth policies:

Economic growth makes it possible for the benefits of both economies of scale and embodied technical change to be realized in the form of lower average costs. Pricing in the regulated sector has generally been carried out on the basis of average historical or embedded costs, rather than marginal costs, thus giving rise to potential allocative distortions, which must be taken into account when assessing productivity growth.

*Id.* at 4-6.

156. Thomas C. Cowing et al., *Comparative Measures of Total Factor Productivity in the Regulated Sector: The Electric Utility Industry*, in *PRODUCTIVITY MEASUREMENT IN REGULATED INDUSTRIES*, *supra* note 138, at 161; cf. Frank S. Robinson, *Total Factor Productivity Studies as a Rate case Tool*, 106 *PUB. UTIL. FORT.* 19 (1980) (discussing the reasons of the New York State Public Utilities Commission decision against using mandatory TFP studies in rate cases).

157. Trebing, *supra* note 136, at 22 n.3 (citing CHARLES S. MORGAN, *REGULATION AND THE MANAGEMENT OF PUBLIC UTILITIES* (1923) and the classic yet dated study whose results are reported therein); MARTIN G. GLAESER, *OUTLINES OF PUBLIC UTILITY ECONOMICS* 432-35 (1923).

158. *Bluefield Waterworks and Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679, 693 (1923). The Court stated "[t]he return should be reasonably sufficient to ensure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties." *Id.*

159. Trebing, *supra* note 136, at 23.

160. *Id.* at 26.

161. *Id.* at 23.

performance.<sup>162</sup> Furthermore, regulatory tribunals are increasingly recognizing the impact of their decisions upon the environment. Any definition of performance has to contemplate inter-disciplinary issues wider than those conventionally associated with regulated industries.

Historically, regulatory incentive plans increased the return in the face of extraordinary efficiency, reducing return rates for the provision of poor service.<sup>163</sup> The other main method is the so-called sliding-scale concept, where the rate-of-return moves inversely with the customer's prices. It originated in England in 1855 in order to regulate local gas companies, was adopted by Consumer's Gas Company of Toronto in 1877, and subsequently was adopted in the U.S. in 1905 by the Boston Board of gas and Electric Light Commissioners. The longest lasting U.S. experiment occurred in Washington D.C. from 1925 to 1955.<sup>164</sup>

Incentive rate regulation schemes are not universally popular.<sup>165</sup> Regulatory commissions and indeed utilities often lack vital information. For instance, compressor fuel is the principal variable input to the transmission process yet it can not be measured accurately. Hence, variable costs "are assumed to be proportional to either horsepower or line-pipe capacity."<sup>166</sup> Since utility managers are invariably better informed, this asymmetry of information gives them "incentive to make their decisions seem prudent by arguing that poor performance is due exclusively to bad luck." It is hard to refute these arguments given the disparity in information. Consequently, regulators tend only to penalize extremely bad operating and investment decisions.<sup>167</sup>

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162. *Id.*

163. See *City of Two Rivers v. Commonwealth Tel. Co.*, 70 Pub. Util. Rep. (PUR) 5, 11 (Wis. 1947) ("Sound regulation of utility rates . . . should include a recognition of the fact that a reasonable share of the savings which result from economy and efficiency of operation should inure to the utility and such share should be sufficient to constitute an incentive for continued and further effort directed to such savings.").

164. Trebing, *supra* note 136, at 28; see I. BUSSING, PUBLIC UTILITY REGULATION 32-33, 53-59 (AMS ed. 1968).

165. CLEMENS, *supra* note 4, at 352 (1950) ("There is more than a suspicion that premiums for efficiency result in nothing more than windfall profits for stockholders who are passive, if not indifferent, to the companies' policies.").

166. Varouj A. Aivazian & Jeffrey L. Callen, *Capacity Expansion in the U.S. Natural-Gas Pipeline Industry*, in PRODUCTIVITY MEASUREMENT IN REGULATED INDUSTRIES, *supra* note 138, at 145, 147 n.8. Natural gas compressor-prime mover units are either reciprocating gas engines or centrifugal gas turbines. The latter consume a significantly greater amount of fuel per horsepower generated than the former. Thus fuel consumption cannot be estimated if each firm does not maintain an inventory of compressor types.

167. Joskow & Schmalensee, *supra* note 126, at 12. "State commissions sometime refer to certain regulatory actions as embodying incentive regulation, even though the measures are in fact merely traditional prudence reviews of one sort or another that reward or penalize a particular utility after the fact." *Id.* at 38 n.85. In contrast, true incentive regulation properly refers only to proactive incentives.

Another problem with traditional rate-of-return regulation is the widespread use of average rather than marginal cost pricing. If regulators order that prices must equal average total cost, then short-run supply and demand conditions will not be properly tracked: prices will sometimes be too high or too low regardless of efficient operating and investment decisions.<sup>168</sup> Thus, "the force dampening incentives is almost entirely a function of regulatory technique, while the countervailing force for efficiency is largely a product of factors operating outside or independent of the ambit of regulation."<sup>169</sup>

Under the so-called "black-letter" rule, regulatory commissions may review for an abuse of discretion by company management but cannot usurp the management's discretion in directing company operations. The task of regulators is to balance the increasing capital costs for increasing risks.<sup>170</sup>

This means that mandatory incentive rate regulation would probably need legislative authorization in order to make subsidy payments to utilities or to fine them. A statutory interpretation presumption exists against retroactive expropriation and it is possible that an incentive fine could be characterized as such. Furthermore, it is possible that subsidies granted to efficiently performing utilities could run foul of the a regulatory board's legislative mandate. For example, many parties increasingly have *locus standi* for many regulatory related issues, including environmental impact assessment. They could conceivably exercise their intervenor<sup>171</sup> rights of audience, and they could argue against subsidies as

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168. *Id.* at 13. For a brief treatment of marginal costs, rate-of-return, and utilities regulation, see Alexander J. Black, *Public Utilities and Regulatory Theory*, 1 OGTLR 12-16 [1989/1990].

169. Trebing, *supra* note 136, at 27.

170. Strasser & Kohler, *supra* note 137, at 18; see Public Serv. Comm'n, 50 Pub. Util. Rep. 4th 416 (N.M. Pub. Serv. Comm'n 1982) (quoting Clemens *supra* note 4, at 128, and commenting on the "well established legal principal that a commission sits as a regulatory agency and cannot usurp the functions of management").

*Bluefield Water Works & Improvement Co. v. Public Serv. Comm'n of West Virginia*, 262 U.S. 679 (1923), provides authority for the proposition that the art of devising a just and reasonable rate of return, requires "efficient and economical management." The Supreme Court held that "[a] public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures." *Id.* at 692; see also PRIEST, *supra* note 121, at 206-08.

171. See generally *Municipal Elec. Ass'n v. Environmental Assessment Bd.*, No. 198/91, 1992 Ont. C.J. LEXIS 135 (Feb. 3, 1992). The Municipal Electric Association (MEA) applied for judicial review of an interim decision by the Ontario Environmental Assessment Board (the Board), which was conducting protracted hearings into a Demand/Supply Plan Report of Ontario Hydro. The proposals were intended to ensure a continued and reliable supply of electricity for the province. Ontario Hydro considered the present facilities inadequate, and the report contemplates planning

detrimental to the utilities' public service obligation. Even in a voluntary

measures to the year 2015. Pursuant to the Environmental Assessment Act (EAA), R.S.O. 1980, c.140 as am., a proposed undertaking by a public body may not proceed unless an environmental assessment has been submitted to the Minister of the Environment and duly accepted. Alternatively, pursuant to § 12(2), the Minister can direct the Board to hold hearings with respect to (1) the acceptance of the environmental assessment; (2) the approval to proceed with the undertaking; and (3) whether the approval should be given subject to terms and conditions and, if so, the provision of such terms and conditions. Ontario Hydro submitted its assessment, and a hearing was ordered. The purpose of the EAA is the betterment of the people of Ontario by providing for the protection, conservation, and wise management of the environment. "Environment" is defined loosely to include the social, economic and cultural conditions that influence the life of man or a community.

Ontario Hydro's Demand/Supply Plan Report included an environmental Assessment pursuant to § 5(3) consisting of: (1) a description of the undertaking; (2) a description and a statement of the rationale for the undertaking, the alternative methods of carrying out the undertaking, "alternatives to the undertaking," and a description of the "the actions necessary or that may reasonably be expected to be necessary to prevent, change mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking." The assessment must also include "an evaluation of the advantages and disadvantages to the environment." The Intervenor Funding Project Act (IFPA) defines an intervenor as a person who has been granted that status by the Board. The statute attempts to provide funding to bona fide interests that may not otherwise be able to participate in proceedings against certain administrative tribunals, including the EAB. Once intervenor status has been granted, the individual or group may apply to a panel of the Board for intervenor funding, and § 3 of the IFPA prevents the hearing of substantive matters until the panel has dealt with all intervenor funding applications. Normally, it is the proponent (in this case Ontario Hydro) that subsidizes the funding award. In this case, over 200 intervenors were given status before the board for DSP hearings. Twenty-nine received funding totalling \$22 million. Energy Probe Research Foundation, was designated an intervenor, made a funding application, and was awarded \$625,000 by the Funding Panel pursuant to an interim order.

A question arose concerning the relevance of material proposed for presentation by Energy Probe to the Board. Energy Probe planned to serve as a full-time intervenor, criticizing Hydro's case, presenting marginal cost pricing concepts, and providing an alternative that would radically alter Ontario Hydro, induce fundamental institutional reform, and privatize all non-nuclear electric generating facilities in Ontario. Energy Probe believes that supply should be governed by competitive market forces. The Funding Panel opined that such a question could be dealt with only by the Board itself. The full Board subsequently ruled that Energy Probe's alternative to the Ontario Hydro plan was reasonable and that it should be investigated. Ultimately the court opined that:

The Board has a most difficult task to perform. It is not the environmental impact of a particular project that [is] being assessed, but rather, a wide-ranging and far-reaching plan dealing with all the variables associated with a projected supply of electricity for this Province over the next quarter of a century. With some 200-plus intervenors and a veritable potpourri of varied and often conflicting interests, the undertaking must be weighed against a definition of environment that takes into consideration virtually all aspects of life.

*Municipal Elec. Ass'n*, 1992 Ont. C.J. LEXIS 135 at \*15.

Although the Court was dealing only with a preliminary ruling of the Board, it realized the potential impact of that ruling on the hearing as a whole. The Applicant for Judicial Review, MEA argued that: (1) The Board exceeded its jurisdiction by permitting Energy Probe to prepare and present evidence in support of a proposal that is not an alternative to the undertaking or an alternative method of carrying out the undertaking pursuant to § 5(3) of the EAA; (2) The Board exceeded its jurisdiction by permitting Energy Probe to prepare and lead evidence in support of the proposal after the Board had ruled that Energy Probe's proposal was not an alternative method of carrying out the undertaking; (3) The Board lost jurisdiction because its decision on the motion was patently unreasonable; and (4) The Board's was contrary to natural justice and in excess of the Board's jurisdiction. The court dismissed the application, and held that the Board acted fairly, reasonably and within its jurisdiction.

The Board has wide discretion to hear and consider evidence it deems relevant. It may make

incentive rate program, legislative authorization would be prudent because a regulatory board cannot fetter its discretion and sign binding contracts with regulated companies.<sup>172</sup>

Management audits may be ordered by a regulatory tribunal due to perceived inefficiency or as the condition for a rate increase. Although utilities view them as an intrusion upon management, they can "restore public confidence in both the utility and the commission."<sup>173</sup>

Bonuses on the rate-of-return for managerial efficiency may be rejected by regulatory commissions given the utility's statutory duty to perform efficiently.<sup>174</sup> "[E]ffective incentive plans are possible; regulators can motivate managers to perform better [, and] . . . the key to better results is to change both the questions asked and the procedures used to answer them—a change in the way regulators think about incentives . . . [O]nly with a comprehensive approach can regulators hope to overcome the problems of case by case incentives . . . ."<sup>175</sup>

Managers require a firm commitment from regulators that good performance will be rewarded and that the incentive criteria will be "clear, predictable and realistically achievable."<sup>176</sup>

further rulings in response to objections raised to evidence during the course of the hearing. This discretion facilitates resolution of the matter pending.

172. Joskow & Schmalensee, *supra* note 126, at 15.

173. STRASSER & KOHLER, *supra* note 137, at 21. Price Waterhouse published a report in 1979 entitled *Survey of Management Audits in the Electric Utility Industry*; see John W. Hall, *Performance Measurement Techniques: A Review*, 116 PUB. UTIL. FORT. 25, 27 (1985). Hall cites Public Utility Productivity, a 1976 symposium sponsored by the New York State Department of Public Service and the State University at Albany and the Public Utility Holding Company Act of 1935 as two of the most important events in the history of utility performance management. He also cites the 1981 National Regulatory Research Institute (under a grant from the Department of Energy) entitled *The Measurement of Electric Utility Performance: Preliminary Analysis* and the NATIONAL ECONOMIC RESEARCH ASSOCIATES, *MEASURING PRODUCTIVITY OF ELECTRIC UTILITIES* (1982).

174. STRASSER & KOHLER, *supra* note 137, at 29; see *Re Kansas City Power & Rate Co.*, 75 Pub. Util. Rep. 4th, (PUR) 1, 22 (Missouri Pub. Utils. Comm'n. 1986); *Re Gas Servicing*, DR 83-345, Supp. Order No. 17, 061) NHPUC June 4, 1984).

175. STRASSER & KOHLER, *supra* note 137, at 57.

176. *Id.* at 59; William J. Baumol, *Productivity Incentive Clauses and Rate Adjustment for Inflation*, 110 PUB. UTIL. FORT. 11, 15 (1982); see CHARLES F. PHILLIPS, *THE ECONOMICS OF REGULATION: THEORY AND PRACTICE IN THE TRANSPORTATION AND PUBLIC UTILITIES INDUSTRIES* 290 (1969).

Conversely, a penalty could take the form of a lower rate of return and hence act as an efficiency incentive. For instance, in *Re South Carolina Elec. & Gas Co.*, 34 Pub. Util. Rep. 4th (PUR), 458, 484-85 (S.C. Pub. Serv. Comm'n 1979), the Commission set rates that would permit give the utility the opportunity to earn revenues sufficient to obtain a rate of return on common equity at the lower end of the range of such returns determined by the commission as fair and reasonable. The Commission considered the company capable of earning a return within a range above the lower limit through the use of effective programs of cost reduction.

Hence, incentive plans must be adaptable to changes in the economic environment.<sup>177</sup> Available incentive programs include: (1) Operating and expense-based ratio plans; (2) plans involving partial operating incentives; (3) automatic cost adjustments;<sup>178</sup> (4) rate caps; (5) "sliding scale" plans;<sup>179</sup> (6) indexed rates and regulatory lag; and (7) least cost planning alternatives.<sup>180</sup> Iowa's State Commerce Commission devised a generic incentive system, which considered service quality a proper factor in determining a reasonable rate-of-return.<sup>181</sup> An operating and expense based ratio plan was proposed by the FERC that considered generic rate of return standards. Electricity industry management performance considered average revenues per kilowatt-hour, comparing utility performance of a preselected group of comparable utilities (though opponents argued that these groups could not be validly developed). It measured both static performance and dynamic performance over time. Although it was structured over a five-year period, recent performance was weighted greater given the lead time in implementing management decisions into meritorious performance. Finally, the plan contemplated management bonuses, which studies suggested might amount to 35% of management's base salaries and requiring rate increases of .5% to 1%. Criticism from the industry followed, arguing primarily that groups of comparable utilities cannot be developed and that the average revenue is an unsatisfactory measure of performance. However, the proposal did not include rate of return adjustment and hence this adjustment was not incorporated into a generic rate of return plan.<sup>182</sup>

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177. Joskow & Schmalensee, *supra* note 126, at 24 ("All of this at least shows that no single incentive scheme will be optimal in all circumstances and [that] the appropriate incentive scheme for any particular firm may change dramatically over time as economic conditions and the Commission's information change."). The authors reported that approximately 20 state public utility commissions had applied some type of incentive regulation program to at least one electric utility in their respective jurisdictions.

178. *Id.* at 29. These plans involve partial automatic adjustments for differences between a base-line figure and the actual cost of service. Prices that change out of proportion to changes in costs therefore provide incentive for cost reduction.

179. Sliding scale plans require that ordinary, linear prices be automatically adjusted if the actual rate of return differs from the target rate of return. Thus prices are reduced if a firm lowers its costs and its rate of return rises above the target while some of the excess profits are allocated to the firm as an efficiency incentive. *Id.* at 27-28.

180. STRASSER & KOHLER, *supra* note 137, at 62-68.

181. See *Re Standards for Public Utility Management Efficiency*, 65 Pub. Util. Rep. 4th (PUR) 189, 196 (Iowa State Commerce Comm'n 1985).

182. STRASSER & KOHLER, *supra* note 137, at 62-63; RESOURCES CONSULTING GROUP, 1 INCENTIVE REGULATION (1983), in ELECTRIC UTILITY INDUSTRY, FINAL REPORT 3.5-3.7, 4.2 (1983) (prepared for the FERC). The plan was based on the Iowa Plan, 65 Pub. Util. Rep. 4th (PUR) 189, 195-96 (Iowa State Communications Comm'n 1985).



Automatic cost adjustments can take the form of "earnings penalties" imposed by regulators when a utility has "gorged" itself upon "questionable or expensive" building program or failed to provide reasonable service. These can take the form of negative adjustments when the rate proceedings show "quantitatively" measured inefficient management. However, there seems to be no consensus on how to make such an adjustment.<sup>183</sup> Thus, it is up to individual regulatory agencies to set cost adjustments and other incentive standards or benchmarks.

Monopoly industries often behave (like other business entities) opportunistically. For example, they use information strategically. Ironically, the regulator has to rely on the regulated company for information about performance.<sup>184</sup> Regulators must get help from a regulated company in order to design and implement the incentive plan. Individualized incentive plans are necessary for each company, allowing for different business strategies, objectives, product or service maturity, growth prospects etc.<sup>185</sup> Regulatory bodies should set the policy, leaving implementation up to the company, with the regulator scrutinizing the company's results. For instance, the regulator could create a pool of funds earmarked for bonuses, with the company deciding the eligibility and amounts of individual bonuses.<sup>186</sup>

### C. *Public Consultation on Incentive Regulation*

The National Energy Board set out a preliminary list of questions to be addressed by participants in its forthcoming workshop on incentive regulation scheduled of December 8-10, 1992 in Calgary.<sup>187</sup> This paper

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183. Nolan, *supra* note 134, at 53.

184. STRASSER & KOHLER, *supra* note 137, at 89. Opportunism has been defined as "self-interest seeking with guile." *Id.* at 88 n.20 (citing OLIVER E. WILLIAMSON, *ECONOMIC ORGANIZATION: FIRMS, MARKETS, AND POLICY CONTROL* 26 (1986)).

185. STRASSER & KOHLER, *supra* note 137, at 139.

186. *Id.* at 144-45.

187. Public Consultation on Incentive Regulation, National Energy Board of Canada, File No. 4500-A000-9, Notice of Proceedings (Mar. 23, 1992 & June 22, 1992). The preliminary and non-exhaustive list of questions posed to approximately 30 participants, representing industry, government, and academia include: (1) Is the current regulatory regime still adequate to establish tolls that reflect cost-effective transportation services?; (2) If not, could the current regime be adapted or modified to take more adequately into account economic efficiency aspects of toll regulation?; (3) If the current regime were to be retained, adapted or modified, what changes could be introduced to the structure of tolls and tariffs to encourage the pipeline companies and their customers to operate in the most economically efficient way?; (4) What should be the characteristics of a viable incentive regulation scheme?; (5) In light of the characteristics outlined in response to question (4), what specific incentive regulation schemes have the potential to be viable in the Canadian regulatory and business environments, and what are the strengths and weaknesses of each of these schemes?; (6) Could different incentive schemes be implemented on different pipeline systems, or should only one

has attempted to comment on some salient issues and realizes that many questions are raised by altering the regulatory status quo. Accordingly, this paper reaches a couple of conclusions, yet admittedly leaves questions unanswered. Hopefully there will be a "joinder of issues" as the consultation process progresses, allowing for restatement of the conclusions expressed here.

## VI. CONCLUSION

The concept of incentive regulation is an idea whose time has come in face of increased open access competition. The persistent gas bubble and deregulation in Canada and the United States are creating new commercial exigencies, complete with attendant transition costs. For instance, the movement away from system gas sales towards direct sales has contributed to market dislocation, which in turn requires competitive responses by pipeline companies and regulators. Another example of the changing competitive environment is the development of capacity brokering<sup>188</sup> in the United States. The extraterritorial effect of pipelines along a common grid is a striking phenomenon as recently highlighted by the California Public Utilities Commission (CPUC) dispute with Alberta aggregators (Alberta & Southern Gas Co.).<sup>189</sup>

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general regulatory regime be implemented?; (7) To the extent that incentive regulation may be appropriate in the case of certain pipelines only, what attributes should a pipeline possess in order to be considered for incentive regulation, and could different attributes justify different incentive regulation schemes?; (8) What impact, positive or negative, could incentive regulation schemes have on the financial integrity of the affected pipeline companies, on their capital structures, or on their overall cost of capital (equity and debt), and how should any such impact be taken into account in deciding whether to implement an incentive regulation scheme?; (9) How should the actual performance of an incentive regulation scheme be empirically measured and evaluated, and how should the several aspects of economic efficiency (e.g., allocative, technical, and dynamic efficiency) be measured and weighted relative to one another? On July 22, 1992, the following question was added to the list by the Ontario Ministry of Energy: "To what extent, if any, would the successful implementation of any specific incentive regulatory scheme suggested for a Board jurisdiction pipeline require any complementary changes in mode of regulation of service offerings by non-Board jurisdiction connecting upstream or downstream pipelines?"

In a letter to participants, the Board stated that the concepts discussed and developed at the workshop could be used in subsequent toll hearings, where they could be combined and tailored to the circumstances of an applicant's pipeline.

188. Capacity brokering is the selling or renting by a shipper of its contracted pipeline capacity to others. Gas inventory charge is a fixed charge or fee that covers the cost of holding gas reserves in order to supply a customer. These charges are market sensitive rates that allow pipelines to recover the cost of maintaining a sufficient gas supply to serve their customers without accumulating excess inventories or incurring substantial take-or-pay liabilities. See Sheila S. Hollis, *The Changing Framework of Natural Gas Business and Law*, 35 ROCKY MOUNTAIN L. INST. 14-4, 14-28 to 14-43 (1989); Alexander J. Black, *Capacity Brokering of Natural Gas and Extraterritorial Regulatory Effect*, 10 OIL & GAS L. & TAX'N REV. — (1992) (forthcoming).

189. National Energy Board Reasons for Decision, GH-R-91 (June 1992); Canadian Petroleum Association Ltd. Application for Review of Decision *re* Alberta & Southern Gas Co., (GH-5-88), at

Any incentive rate regulation scheme will have to balance the public interest with the legitimate expectation interests of capital. This can be accommodated by modest changes to the regulatory environment. Thus the price cap model is not viable as it radically alters the focus of established public utility hearing processes in Canada and the U.S. The price cap model as used in Britain<sup>190</sup> seems successful since British Gas was privatized intact as a vertically integrated monopoly, and it provided an relatively easy model to establish *ab initio*. Furthermore, the dominant position of virtually all pipeline companies in the European Community leaves nothing to contribute to the debate on stewardship of our Canadian natural gas resources because of the immature status of "federal" type regulation there. Major Canadian pipelines may be reticent to assume the added risk that incentive rate regulation imposes upon profits. Yet such a program might promote better risk allocation and lessen the chance of imprudent contracting practices, which arguably led to the take-or-pay problems of the 1980s. Any incentive rate program should be generic and not voluntary and for the sake of legal certainty, and some amendment to the NEB Act may be needed to preclude challenges on this point. The broad parameters of the program have to be set unambiguously, leaving the pipeline companies free to implement the details. A sliding scale plan involving plus or minus 1% (or even .5%) of the present annual rate of return might be a good starting point. Total Factor Productivity (TFP) as measured by the CPI would appear to be a good gauge for performance measurement. As an incentive for the extra "risk", companies would be free to apportion some of the excess profits as they think fit, including bonuses to senior management, dividends to shareholders or reinvestment in the capital base. Nonetheless,

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5. Alberta & Southern buys gas from Canadian (Alberta & British Columbia) producers and exports it to PGT at Kingsgate British Columbia for sale and delivery to Pacific Gas & Electric (PG&E). The gas from British Columbia is transported on the Westcoast Energy Inc. pipeline system into pipeline system owned and operated by the NOVA Corp. of Alberta. The Alberta and B.C. gas is transported on the NOVA facilities for delivery to the pipeline facilities of ANG near Coleman, Alberta. ANG (Alberta Natural Gas Company) transports the gas under a firm transportation contract with A&S across southeastern British Columbia for sale and delivery by A&S to PGT at the international boundary near Kingsgate, British Columbia. PGT, a wholly owned affiliate of PG&E, transports the gas across Idaho, Washington, and Oregon for sale and delivery to PG&E at the Oregon-California border near Malin, Oregon. PG&E, a combined gas and electric utility, then transports and sells the gas to its customers throughout Northern California, including its major load centers in Sacramento and San Francisco.

190. STRASSER & KOHLER, *supra* note 140, at 89; see Alexander J. Black, *Competition Law and British Natural Gas Regulation*, 13 ENERGY L.J. 359 (1992).

however it is implemented, incentive based regulation seems the best way to ensure that Canada's natural gas regulatory regime will be able to keep up with the dynamic changes that currently face the natural gas industry.

