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December 6, 2013

Via Email
Original via Mail

Commercial Energy Consumers Association of British Columbia
c/o Owen Bird Law Corporation
P.O. Box 49130, Three Bentall Centre
2900 – 595 Burrard Street
Vancouver, BC
V7X 1J5

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Inc. (FBC)

Application for Approval of a Multi-Year Performance Based Ratemaking Plan for 2014 through 2018 (the Application)

Response to the Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 2, Responses Related to the PBR Methodology

Filed as Response to FBC CEC IR No. 3a

On July 5, 2013, FBC filed the Application as referenced above. FBC submitted its response to CEC IR No. 2 on November 26, 2013, noting that the responses to the series of CEC IR No. 2 questions 1, 2, 7, 8.1 through 8.3, 9, 10, 11, 16.2, 28, 30, 67, 68 and 69 related to the PBR Methodology, and would be submitted together with the PBR Methodology IRs responses.

In an effort to differentiate the IR responses relating to the PBR Methodology which are the subject of the oral portion of the hearing jointly for FBC and FortisBC Energy Inc. (FEI) from those IR responses which relate to other matters for the written portion of the hearing individually for each of FEI and FBC, FBC will mark these IR responses as FBC CEC IR No. 3a.

FBC respectfully submits these FBC CEC IR No. 2 responses related to the PBR Methodology.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Dennis Swanson

Attachments

cc: Commission Secretary
Registered Parties (email only)

PART 1 - O&M

1 Reference: CEC 1.2

> Correct, since rebasing occurs after a specific test period. It should be noted, however, that the rebasing at the end of a test period has the effect of making some incremental investments in efficiencies uneconomic for the Company because payback cannot be achieved before rebasing occurs. Thus, the economics of efficiencies based on the management's responsibility to shareholders will be different from the efficiencies achieved under PBR. This is one of the main factors for using PBR rather than the cost of service with regular RRA periods.

1.1 Please confirm that no incremental investments would be uneconomic because payback cannot be achieved before rebasing occurs, if the company has forecast the incremental investment costs into the revenue requirements approved as part of an RRA application under a cost of service approach.

Response:

This series of questions appears to be directed at assessing the merits of PBR vs. Cost of Service generally, which FBC considers to be out of scope given the Commission's direction to FBC and FEI in its letter of April 18, 2013. Nevertheless, in the interest of being responsive, FBC will respond to such questions.

The Companies do not understand the difference intended between this question and CEC IR 3a.1.2 below. Incremental investments would be economic from FBC's perspective as long as the capital cost is included in rate base, and depreciation (recovery of the capital cost over time) included in revenue requirements. Rebasing on O&M means rebasing on the actuals regardless of the original expectation.

1.2 Please confirm that this condition only occurs if the company requires additional cost to be invested and they have not been included in revenue requirements as part of an RRA approval.

Response:

Please refer to the response to FBC CEC IR 3a.1.1.

1.3 Please confirm that this condition can be remedied by enabling the company to place into a deferral account costs for unanticipated projects, which were not part of revenue requirements in an RRA application, such that the deferred costs can be collected in rates from customers in a future period.

Response:

Not confirmed.

1.4 Please confirm that for such a deferral account to provide a neutral impact on the company shareholder the account would also have to capture any unanticipated benefits for the period as well as the costs.

Response:

Please refer to the responses to FEI CEC IRs 3a.38.5 and 3a.38.6 regarding the use of deferrals in this context.

2 Reference: CEC 1.3.2

> FortisBC considers its forecast of O&M over the five year period of 2014-2018 to be a high level view that is reasonably indicative.
>
> Past variances are not a result of inaccurate forecasts, but as a result of the Company having achieved greater cost savings as the PBR had incented it to do. The impact of savings on earnings was shared with customers pursuant to the 50/50 earnings sharing mechanism.

2.1 Please confirm that the approved O&M for the five year period will be derived from a formula, equivalent to a forecast or projection of costs.

Response:

Not confirmed. The formulaic O&M will be used for rate setting purposes which includes a substantial stretch over industry for efficiencies (from both O&M and capital) that FBC can achieve over the term of the PBR. The forecast or projection of costs in the Application is only used to provide an indication of how costs may escalate over the Plan period.

The PBR Plan effectively separates revenues determined by the rate-setting process in the Plan from the actions to control costs and undertake investments that management would undertake during the term of the Plan. The resulting efficiencies will improve the Company's ability to deliver energy to its customers, safely, reliably and at a reasonable cost.

2.2 Please confirm that to the extent that there is a past variance between such formula driven forecasts and the eventual actual results the company may not have to achieve any real efficiency gains, if the forecast is more generous than is required for the operation of the company.

Response:

The formula driven amount is not a forecast. Under any PBR formula the Company has an incentive to achieve real efficiency gains even if the formula results in more or less revenue requirements than the Company would actually incur as costs. Provided that the base year costs and the formula are appropriate, then there should be real efficiency gains. The Commission is reviewing all elements of the PBR plan in this proceeding. Past variances in PBR have nothing to do with the current PBR because there has been rebasing in the interim.

2.3 Please confirm that if the forecast is very tight with respect to the required amounts for the operation of the company that FBC might have to find efficiency gains or reduce service levels, if it wanted to earn its return for its shareholder, or might have greater costs than have been allowed for in customer rates and would therefore end up with a reduced return to its shareholder, if it was not able to obtain relief from the Commission.

Response:

This question references a forecast that is very tight. The PBR is not a forecast; it is a formula. If FBC has insufficient revenue to begin with, then the Company would be reluctant to invest new capital and may not earn a fair return.

Please also refer to the response to FBC CEC IR 3a.2.2.

The average percent variance between approved and actual O&M during the period 2007-2011 is within a nominal variance of -1.5% as indicated in the Table below.

O&M Parameters	2007	2008	2009	2010	2011
Approved Gross O&M	43,093	45,310	46,573	47,645	53,885
Actual Gross O&M	43,001	44,725	46,017	46,148	53,076
Variance $	(92)	(585)	(556)	(1,497)	(809)
Variance %	-0.2%	-1.3%	-1.2%	-3.1%	-1.5%
Average Variance %	-1.5%				

2.4 Please confirm, given that the company was able to operate the company for all five years with O&M costs below the approved formula forecast or projection, that the company was not disadvantaged by the process and in fact was provided a benefit each year over and above its allowed return on equity for its shareholders.

Response:

The Company confirms that it was able to achieve savings as a result of O&M costs being below the approved formula amount (the formula amount is not a forecast, as implied by the question). The Company attributes this to the PBR plan working as it was intended, i.e. it was the incentives provided under the 2007 Plan that resulted in the O&M that was lower than it would have been under cost of service regulation. As a result the 2007 Plan provided benefits to customers through lower rates than would have been the case otherwise. FBC believes that similar benefits for customers are achievable under its 2014 Plan.

7 Reference: CEC 1.26.1

> Customer growth is a proxy for both customers and capacity in this context. As customer growth adds facilities that are both customer related and capacity related the system O&M costs increase. For example, there are more miles of conductor to inspect and maintain; more trees to trim; and more opportunities for system damage. Although these costs are not directly customer related they are classified and allocated on capacity. The use of customers is a reasonable proxy in this instance for measuring the impact on additional O&M.

7.1 Please provide any quantitative study FBC has with respect to the relationship between its O&M costs, which are electrical system related, and the system metrics of kilometers of lines and substations. Please provide a comparison of the former with the relationship of the same costs to the number of customers.

Response:

FBC has not conducted any such quantitative study. FBC's O&M forecast costs related to transmission and distribution infrastructure (both stations and lines) are based on actual costs from recently completed work. These actual costs are then extrapolated with appropriate adjustments made to account for variations in the nature, location and scale of the work required.

7.2 Please confirm that when customers are added to the electrical system there are significant portions of the system which do not require any change to integrate the new customers and for which the O&M costs of that portion of the system will not need to change.

Response:

As a practical matter, it is impossible to know which facilities in which parts of the system are changed as a result of customer additions. It is certainly true that customer additions on one feeder segment will have no impact on another remote feeder segment. It is impossible to say, however, that customers will not be added to that segment at another time during the year. The key point is to reflect the average change in O&M costs across the entire system based on added customers. This has been explained in the cited response. Further, in terms of corporate services and administration, for example Human Resources costs will include benefits that go up with number of employees, and as systems become more complex, employees need a higher level of skills to run them which adds to training and skills building costs.

8 Reference: CEC 1.26.2

> FBC does not categorize its O&M expenditures in terms of fixed and variable costs. Most costs could be categorized as either fixed or variable, depending on the context, the assumptions made with regard to cost causation, and the timeframe under consideration.
>
> For the purpose of a Cost of Service Allocation Study, for example, O&M Expenses are classified on a Demand/Energy basis, which could be considered to be a fixed/variable analysis. However FBC does not understand how such an analysis would be relevant to this Application.

8.1 Please confirm that O&M costs based on equipment charges for equipment owned by the company will have temporarily fixed costs, until the equipment is replaced.

Response:

The Company does not agree that some O&M costs that are related to equipment charges should be viewed as fixed in nature, either with respect to the passage of time or customer growth. While it is true that individual pieces of equipment should be expected to require little maintenance for a period of time after initial use or installation, the assets of the utility are, for the purpose of a Cost of Service Analysis and accounting, generally viewed in the aggregate. This pool of assets will at any time have individual pieces of equipment coming into service, being retired, and at various points in the life cycle. For this reason, a longer term view is taken with the O&M expenses classified using a Demand/Energy split that reflects asset mixture.

8.2 Please confirm that for significant portions of the electrical system where there is no material change in the condition of the system and no change in the capacities of the system that the costs related to the O&M for this portion of the electrical system will remain relatively fixed with regard to customer growth but will experience cost inflation.

Response:

Please refer to the response to FBC CEC IR 3a.8.1.

8.3 Please provide a listing of all elements of the FBC O&M costs where there is a potential for the costs to remain fixed for a period of time relative to customer growth.

Response:

Please refer to the response to FBC CEC IR 3a.8.1. The O&M accounts are too broad to be useful for isolating costs in such a manner and in the opinion of the Company, given the discussion in the response to FBC CEC IR 3a.8.1, are not relevant to the treatment of O&M costs in either a cost of service or PBR revenue requirement.

9 Reference: CEC 1.31.2 and ICG 1.8.1

> The "stretch" factor, in the context of PBR, doesn't involve a comparison of FBC's O&M forecast and FBC's O&M formula as the question appears to assume. Rather, a stretch factor typically refers to a comparison of the formula to the industry TFP.
>
> In choosing to propose an X-Factor that includes greater productivity than the TFP, FBC is undertaking to perform better than the industry, based on the adoption of the PBR model in its proposed form. The stretch factor applies to both O&M and capital. It is an aggregate approach to the revenue adjustment that applies to total revenue consisting of both the revenue requirement for capital and for O&M. Thus the Company will be required to manage within the stretch factor a combination of both O&M and capital revenue requirements.

9.1 Regardless of the definition of stretch factor or TFP or X factor, please explain why the forecast of costs is equal to or in some cases less than the formula driven projection for cost.

Response:

B&V provides the following response.

Looking at the PBR Plan overall, the combined O&M and Capital forecasts are above the PBR formula on an aggregate basis. The X-Factor has been determined unrelated to the forecast costs for the Plan period. Under the approved PBR Plan revenues will increase based on the components of the PBR formula and will be divorced from the actual costs incurred.

FBC notes that the forecasts of costs are based on its forecasts of inflation, and actual inflation will likely differ. The Company has included the forecasts in Section C as an illustration and they are indicative only.

9.2 Would FBC expect that this data may be interpreted as an indication that either, the forecasts and projections will be inadequate or that the incentive for productivity performance will be overly generous.

Response:

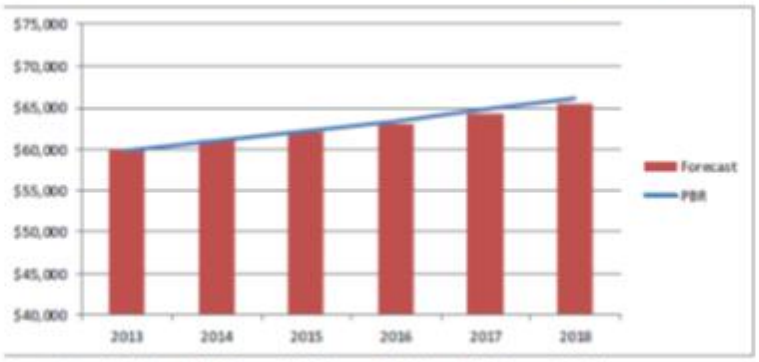
FBC expects that it will be required to make a significant effort to manage within the context of the formula based on its commitment to have significantly lower cost escalation than would be expected based on the industry averages.

10 Reference: CEC 1.31.3

Figure B6-2: Comparison of PBR O&M vs. Forecast ($000s)

	Base 2013	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018
Forecast	$ 59,848	$ 61,375	$ 61,612	$ 60,608	$ 61,889	$ 62,634
PBR	$ 59,848	$ 61,386	$ 61,744	$ 60,960	$ 62,378	$ 63,302

Comparison of PBR O&M vs. Forecast – Excluding AMI Impact ($000s)



	2013	2014	2015	2016	2017	2018
Forecast	59,848	61,375	61,612	60,608	61,889	62,634
PBR	59,848	61,386	61,744	60,960	62,378	63,302

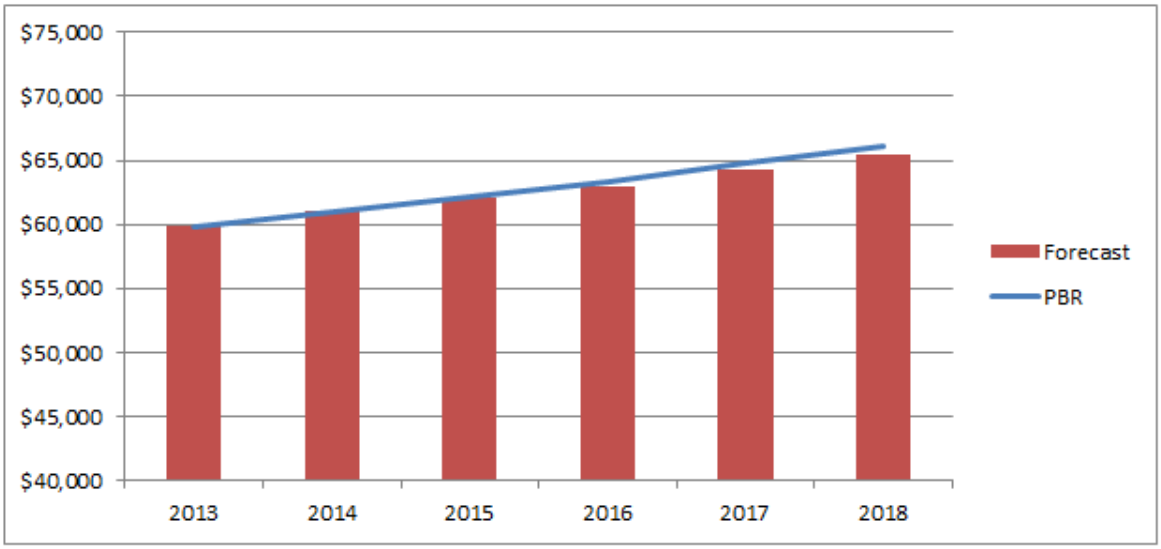
10.1 Please explain why the PBR line is above $65 million for 2018 in the Excluding AMI case and below this level for the including AMI case.

Response:

The AMI impact for 2018 includes savings of approximately $4.4 million related to the elimination of the manual meter reading process, the AMI-enabled capability for remote disconnection and reconnection of meters, a reduction in meter exchanges for compliance purposes, and a slight reduction in forecast contact centre costs. These savings are offset by approximately $1.6 million in new operating costs related to AMI, resulting in a net savings of approximately $2.8 million. When these savings are excluded, the forecast PBR O&M in 2018 increases from $63.3 million to $66.1 million.

FBC notes that although the figure provided in response to FBC CEC IR 1.31.3 (Exhibit B-10) did correctly exclude the impact of AMI, the forecast and PBR O&M costs noted below the figure were not updated to exclude the AMI impact. The figure provided below is identical to the figure previously provided in response to FBC CEC IR 1.31.3, and includes forecast and PBR O&M costs below the figure which exclude the AMI impact.

Comparison of PBR O&M vs. Forecast – Excluding AMI Impact ($000s)



Forecast	59,848	61,007	62,051	63,019	64,258	65,428
PBR	59,848	61,018	62,183	63,371	64,747	66,096

10.2 How does the AMI impact affect the PBR formula?

Response:

AMI does not affect the PBR formula; as seen in Table B6-5 from the Application (Exhibit B-1), the AMI impact is tracked outside of the PBR formula

11 Reference: CEC 1.56.1

7 The table below has been extended to include the 2013 Base and 2014-2018 Forecasts.

11.1 Please confirm that in a Cost of Service regulation the Commission would have no constraint confining it to assume that the 2013 approved budget for O&M was the necessary starting point for forecasting 2014.

Response:

Confirmed, the Commission has no constraints on its assessment of the starting point for forecasting 2014 however, in Cost of Service regulation, the Commission is assessing the O&M for a future test year to determine rates for that year. That process typically has the utility presenting a future forecast of O&M for review and acceptance. A commonly held convention is to utilize a previously approved test year O&M as a point of departure as the previous year will have had regulatory scrutiny that will allow an efficient determination of the future O&M.

In PBR regulation, the Commission is determining a future period O&M based on a formulaic approach with the focus on the PBR formula. The first year of a PBR is determined by applying the formula to a base year. How that base year is determined can vary but utilizing a fully vetted and approved O&M is an efficient, logical and appropriate approach. This is even more appropriate when the regulatory approval for the starting point O&M was recent.

What the IR implies as a constraint is in fact a logical and appropriate practice.

11.2 Please confirm that when FBC has underspent its O&M levels of expenditure approved for collection from customers in the utility rates that FBC's shareholders will have benefited from retaining the difference between actual expenditures and those approved for rates.

Response:

FBC has responded to this question both under PBR and under cost of service regulation.

Under PBR, this cannot be confirmed since FBC shares earnings above the allowed return and since customers ultimately benefit additionally from the cost of service reset for a future PBR period.

Under cost of service, FBC confirms that under spending that is not subject to deferral account treatment will benefit the shareholder for the test period only, after which those lower costs are usually rebased for the permanent benefit of customers.

11.3 Please confirm that when rebasing expenditure plans in a Cost of Service regulation the Commission could well have the view that the savings captured by FBC as under expenditures in the previous year should be carried over into the planning for the subsequent years and that the Commission would likely weigh this evidence and many other sources of evidence into setting the approved revenue requirements for the following test years.

Response:

The Company confirms this is correct under both Cost of Service and PBR, if by "carried over" the question means that the new base would be set at a level that reflected savings captured in the previous year. It would not be permissible to engage in retroactive ratemaking by requiring the utility to disgorge any earnings in the previous year resulting from the savings by setting current rates lower than they ought to be.

See for example Table B6-4 showing that the sustainable savings were carried over into the 2013 base for FBC's 2014-2018 PBR formula.

16 Reference: CEC 1.59.9

Table C4-11: Communications and External Relations O&M Review ($ thousands)

	2010 Actual	2011 Actual	2012 Actual	2013 Approved	2013 Projection	2013 Base
Labour	$ 556	$ 543	$ 493	$ 544	$ 496	$ 531
Non-Labour	1,083	926	751	925	944	959
Total O&M	**$ 1,639**	**$ 1,469**	**$ 1,244**	**$ 1,469**	**$ 1,440**	**$ 1,490**

Table C4-12: Communications and External Relations O&M Forecast ($ thousands)

	2014 Forecast	2015 Forecast	2016 Forecast	2017 Forecast	2018 Forecast
Labour	$ 547	$ 564	$ 581	$ 598	$ 616
Non-Labour	978	997	1,017	1,038	1,058
Total O&M	$ 1,525	$ 1,561	$ 1,598	$ 1,636	$ 1,674

The forecast expenditures over the 2014-2018 period is expected to remain steady from the 2013 base level with only annual inflationary increases over this period.

16.2 Please explain whether or not any of the components have a fixed nature to them and are not necessarily increasing incrementally with each customer added to the system.

Response:

This IR together with FBC CEC IR 2.16.3 (Exhibit B-25) are the first of a series that ask a similar question (or questions) of various FBC departments with respect to the fixed/variable cost structure of the department and whether the department's costs are directly and linearly related to the customer count. FBC is providing a detailed response in this IR covering points common to all of the questions as well as using examples from different departments to illustrate.

The following comments apply generally to these questions as they pertain to the various departments they are asked of:

- The O&M formula (other than costs that are identified as being outside the formula) is applied to FBC as a whole and not to the individual departments. The cost pressures faced by individual departments vary over time, at times being greater than the increases allowed by inflation and customer growth and at other times less. The FBC-wide O&M formula allows the Company to deal with cost increases on a portfolio basis, with individual department level cost pressures able to be managed across the greater diversity of the whole utility.

- The utility-wide O&M formula based on customer count as the key indicator of costs has a long history of successful application in BC. The initial use of an O&M formula based on customer counts was for FEI (then BC Gas Utility Ltd.) for its 1994-95 RRA. Since

then a very similar O&M formula has been used a number of times in multi-year RRAs and PBRs for FEI and FBC. Under PBR this approach to an O&M formula has proven to be successful in motivating the pursuit of efficiencies by the utility and in providing benefits for ratepayers.

- As B&V have noted at numerous points in this regulatory proceeding, the costs of the utility are driven mainly by customers and system capacity (for which customer counts can be used as a proxy). The utility-wide O&M formula is fully consistent with this. Customer-based PBR formulas are also commonly used in other PBR plans. The use of customer-based PBR formulas also serves PBR principles such as being easy to understand, implement and administer.

- The productivity improvement requirement (including the TFP and the implicit stretch factor) applies to the entire customer base. With customer growth averaging less than 1 percent each year the implicit stretch factor of 4.5 percent per year or more (the X-factor of 0.5 percent less the TFP of -4 percent to -6.2 percent (Appendix D-2, page 11)) applies to about 99 percent of the customer base initially (or between 97 percent and 98 percent of the customer base on average over the five-year term). The productivity requirement in the PBR O&M formula therefore greatly exceeds the yearly O&M increase allowed due to customer growth.

- Many of the questions ask about a direct or linear link between customers and departmental budgets. The Company considers that while over time departmental budgets are impacted by total customers, there are other factors such as management's desire to operate efficiently and the addition of discrete amounts of resources required to respond efficiently to workload requirements. The result is often a stepwise change in budgets in response to a gradual increase in customers.

- While it is true that some individual departments may experience little or no impact from customer growth or capacity expansion (using customer growth as a proxy), it is also true that for some departments additional customers may increase costs incrementally more than the percentage of customer growth. Costs may increase in the short term as higher overtime costs to provide service to meet the customer expansion. Over time the Company will minimize the OPEX by making discrete additions to the department by adding more resources rather than using existing resources more intensely. In any case, the overall costs for OPEX and CAPEX increase with additional customers regardless of the individual departments own impact.

FBC provides the following examples by department of costs being related to the number of customers:

- Operations: Many functions of the Operations department are customer-driven, being a function of the size of the transmission and distribution networks required to serve customers. These include the monitoring and control of the networks systems, patrol and maintenance of lines, vegetation management along rights of way and connecting/reconnecting customers (not requiring capital construction). As the number of customers and size of the networks system increases, so does the Operations workload.

- Customer service: Costs related to the production of bills and processing of payments are generally linked to the number of customers. Call volumes into the contact center is somewhat linked, but can also be heavily influenced by other factors such as weather, outages or new programs or services being offered.

- Communications and External Relations: In addition to communications with customers, FBC also has communications requirements for stakeholders, government officials, media, employees and all British Columbians in the service territory. It may be reasonable in the short term to characterize the costs for this group to have a somewhat non-linear relationship with customer count, while in the longer term an increasing customer base will impact the level of department costs.

- Engineering/Project Management: While each individual cost component may not be directly and linearly related to the addition of each customer, it is reasonable that additional system utilization (either through new customer connections or upgrades to support additional system load) results in increased costs. For example, as the need to construct additional infrastructure increases there is a direct need to procure more equipment. This will lead to the need to review material and design standards and potentially develop additional engineering and equipment standards. It may also result in the need to bring in additional contracted labour resources to review and develop new standards. Finally, increased deployment of new devices and infrastructure will likely result in more equipment failures (assuming a constant failure rate, more infrastructure must result in more equipment failures on average). While on its own each of these aspects may not vary linearly with customer growth, FBC considers it reasonable that in the aggregate the various puts and takes result in an overall linear cost relationship.

- Operations support: Operations Support's costs exhibit an indirect link to the number of customers through the activity levels of Operations and the Company's field contractors. For instance, as the customer base grows, the activity levels increase for both Operations and the field contractors, which has a direct impact on the demand for materials and services from the Supply Chain Services group. In addition, increased activity levels by Operations related to customer growth will also impact the demand for vehicle services from the Fleet Services group. Finally, as the service territory continues

to expand with greater customer growth, there is an increased demand for gaining and managing land rights placed upon the Property Services group. It should be noted, however, that Operations Support's activity levels are also dependent upon the system reliability requirements within FBC and therefore the department's costs are also influenced by any change in industry codes, standards and regulations.

- Environment Health and Safety: EH&S costs are driven primarily by external legislative and regulatory requirements. Section C4.13.2 describes the increasing demands on EH&S in recent years, with respect to increasing safety and environment legislation, public expectations and awareness. While the increasing requirements are not directly customer-driven, this provides an example of cost pressures unrelated to inflation that must be recognized in a PBR formula, and for which customer growth serves as an indirect proxy.

- Finance and Regulatory: In the short to medium term, a significant portion of the labour and non-labour costs for Finance and Regulatory will have a non-linear relationship with customer count as the compliance and business deliverables related to financial reporting, tax, treasury, internal control, and regulatory activities, are necessary to be adhered to regardless of changes in customer count. However, for example, customer count will affect the level of capital expenditures which in turn may affect financing requirements performed by Finance. This, in turn may result in incremental costs that may correspondingly increase at levels that are independent of inflation or efficiencies. Customer growth also affects the number and scope of regulatory applications for capital projects and the number of customer interactions with regard to tariff matters and regulatory proceedings. As such, there is an indirect relationship, over time, with certain Finance and Regulatory O&M expense to customer count.

PART 2 – CAPITAL

28 Reference: CEC 1.2.1

> This fundamental relationship is true whether under cost of service regulation or under PBR. O&M and capital are rebased at the conclusion of a PBR to ensure the long term benefits of the savings go to customers. Customers achieve greater benefits in the long term under PBR than under traditional cost of service regulation because the PBR effectively delays rebasing to incent the utility to invest more to achieve new cost savings, efficiencies and/or new revenues. In the meantime, customers receive benefits through earnings sharing.

28.1 If on rebasing under a Cost of Service approach the benefits are 100% accrued to the customers, why would the company suggest that the customers might achieve greater benefits under a longer term PBR, where the customers would only get ½ of the benefits for the extended period of time?

Response:

The long term cost incentives differ from cost of service under PBR as explained in the response to FBC CEC IR 1.24.3 (Exhibit B-10). The expectation of a lower long run cost trajectory is a substantial benefit to customers that can only be achieved within the context of efficiency incentives in PBR. Further there is an increased set of benefits under PBR than under cost of service where management would not make certain investments with long term benefits if it could not get full return for those investments. Further information is provided in response to FEI CEC IR 1.23.1 (Exhibit B-8), reproduced below.

23.Reference: Exhibit B-1, Page 29

> **2.1 *PBR BENEFITS***
>
> The two most commonly cited benefits of a PBR plan are its effectiveness in incenting the utility to capture efficiencies, and regulatory efficiency.

23.1 Please explain why utilities should need an extra incentive to perform efficiently, when they are recovering their prudently incurred costs of service and earning a fair return on their invested capital (ROE).

Response:

B&V provides the following response.

Efficiencies with longer term economic paybacks are not economic for shareholders when the payback extends beyond the expected rate case cycle. Management must

exercise its fiduciary responsibility to shareholders. If an investment in productivity cannot create a full return of and on the investment between rate cases, management would cause a loss in earnings from the investment if it were undertaken. It is this disincentive to invest in longer term efficiencies that is overcome under the FEI PBR Plan. Further, the return granted by the regulatory authority may not equal the actual market cost of capital. In that case, there is also no incentive to invest in efficiencies when system requirements for safety and reliability compete for capital dollars. Under PBR, effective strategies permit the utility to adjust operations to actually earn the required market based cost of capital.

28.2 Please provide a mathematical example of how the delayed rebasing would provide a benefit to customers in regard to an equivalent project under cost of service regulation and under PBR regulation.

Response:

B&V provides the following response.

The premise of the question is incorrect. There may be no equivalent project under cost of service because of differing financial incentives. The benefit to customers may not be on an individual level, but rather on an overall level. Management would not undertake certain investments with long term benefits under cost of service regulation due to too low a payback on shorter period. Please also refer to the response to FBC CEC IR 3a.28.1 above.

28.3 Please confirm that what the company is posing as a proposition is that an extended PBR period in which the company is sharing in ½ of the savings, will provide the company an incentive to do more to generate savings and it is the customers ½ of those additional savings the company is suggesting would be greater benefits than the customers would otherwise receive.

Response:

The first 4 lines in this question are correct, and in addition that PBR generates long term benefits as well for both customers as well as shareholders. However, the sharing is only a portion of the total benefit as discussed in the response to FBC CEC IR 3a.28.1 above.

30 Reference: CEC 1.4.2

> Confirmed. The Company had considered PBR as the best possibility for achieving further efficiencies over and above its standard focus on productivity and past experience with PBR. The Commission's April 18, 2013 '2014 Revenue Requirements Application-Performance Based Rate Setting Environment' letter also placed focus on PBR. It requested FBC to:

30.1 Please confirm that with regard to the company's incentive to invest being limited as a result of the short period of time until rebasing occurs under the Cost of Service regulation approach, that if the company has a deferral account in which to keep costs of efficiency improvement projects for later recovery in customer rates that there would be no limitation on the company earning a return on any investment required at any time independent of the form of regulation.

Response:

Please refer to the responses to FEI CEC IRs 3a.38.5 and 3a.38.6 regarding the use of deferrals in this context.

67 Reference: CEC 1.3.1

> FBC has not considered other approaches to productivity such as reengineering which focuses on the redesign of the organization, as it believes the focus on ongoing improvement is more appropriate. Reinforcing a productivity focus in the organization's culture and encouraging actions to review embedded practices and rethink work with the view to improve efficiency and effectiveness is cost effective and appropriate for its business.

67.1 Please provide the internal documentation of the company's decision to deal with ongoing improvement versus other approaches.

Response:

As indicated in the response to FBC CEC IR 1.3.1 (Exhibit B-10), FBC has not considered other approaches to productivity and continues to believe the focus on ongoing improvement is more appropriate and will deliver benefits as it has done successfully in the past. The Company does not have the internal documentation requested.

67.2 Was the decision an ad hoc decision or one made with evaluation of options?

Response:

Please refer to the response to FBC CEC IR 3a.67.1.

67.3 Does FBC believe that the Commission may find it useful to have a prudent consideration of options as part of its role in approving any future regulatory regime and or future productivity improvement regime particularly one where there is a proposed financial incentive to be offered to the company's shareholder?

Response:

FBC has proposed a PBR Plan which it believes will reinforce its productivity improvement culture while ensuring safety and customer service requirements continue to be met. The Company's ongoing productivity improvement approach is consistent with the PBR Plan and

with its culture which encourages employees to continually look for ways to be more efficient. This approach has worked successfully in the past PBR Plan, delivering benefits to ratepayers and the shareholder. FBC does not believe other approaches would be appropriate for the Company.

Please also refer to the response to FBC CEC IR 3a.67.1.

68 Reference: CEC 1.19.1

> FBC believes the customer interests are essentially FBC's mandate – to provide safe, reliable and cost effective service. FBC considers the Company's interests, apart from its mandate above, to include earning a fair return on and of capital and providing meaningful employment for its employees. Please also refer to the response to CEC IR 1.19.2.

68.1 Please comment on whether or not FBC considers that it could be in the customers interest to achieve greater productivity savings without the need to provide an incentive to the company's shareholder over and above the fair return on its invested capital and the return of that capital as well as the recovery of prudently incurred cost for operation of the utility.

Response:

B&V provides the following response.

This cannot be confirmed for the reasons cited in the response to FEI CEC IR 1.23.1 (Exhibit B-8) copied here for reference.

> **2.1 *PBR BENEFITS***
>
> The two most commonly cited benefits of a PBR plan are its effectiveness in incenting the utility to capture efficiencies, and regulatory efficiency.

23.1 Please explain why utilities should need an extra incentive to perform efficiently, when they are recovering their prudently incurred costs of service and earning a fair return on their invested capital (ROE).

Response:

B&V provides the following response.

Efficiencies with longer term economic paybacks are not economic for shareholders when the payback extends beyond the expected rate case cycle. Management must exercise its fiduciary responsibility to shareholders. If an investment in productivity cannot create a full return of and on the investment between rate cases, management would cause a loss in earnings from the investment if it were undertaken. It is this disincentive to invest in longer term efficiencies that is overcome under the FEI PBR Plan. Further, the return granted by the regulatory authority may not equal the actual market cost of capital. In that case, there is also no incentive to invest in efficiencies when system requirements for safety and reliability compete for capital dollars. Under PBR, effective strategies permit the utility to adjust operations to actually earn the required market based cost of capital.

68.2 Please comment on whether or not there may be alternative regulatory mechanisms to capture regulatory efficiency benefits and fair return opportunities for investment in productivity improvement.

Response:

B&V provides the following response.

In general, there are other regulatory mechanisms such as formula rates plus incentives that can be used as an alternative to PBR. There are also incentive rate of returns to promote certain types of new capital investment. However, these are really just variants on cost of service regulation. PBR has more appropriate incentives than these other options.

Attachment 68.2 contains an article by Professor Weisman et al. which provides a good explanation of why PBR provides more appropriate incentives than cost of service ratemaking, which would apply to both of the two mechanisms described above. B&V adopts his explanation.

68.3 Please confirm that the company has not looked at alternative regulatory models.

Response:

Confirmed. The Companies have successful experience with PBR. The Commission's April 18, 2013 letter requires FBC to propose a PBR methodology (please refer to the response to FBC CEC IR 3a.68.4 below). As discussed in the response to CEC IR 3a.68.2, the Company believes that its proposed 2014 PBR Plan is more appropriate than other alternative regulation models.

68.4 Please comment upon whether or not the FBC believes that it would be useful to the Commission to have available, consider and evaluate alternative options to the ones proposed by FBC.

Response:

FBC believes that only PBR should be considered by the Commission given the experience in this jurisdiction with PBR Plans and the Commission's April 18th letter in which the Commission required as follows:

> *"The Commission requires FEU and FortisBC to describe its productivity improvement culture by an examination of PBR methodologies in its next Revenue Requirements Applications. This examination is to evaluate the most recent PBR methodologies employed by FEU and FortisBC and the various PBR methodologies approved by other jurisdictions in Canada. FEU and FortisBC are to propose a PBR methodology and explain how it addresses the limitations in the various PBR methodologies, and will achieve a productivity improvement culture."*

In terms of the design of a PBR plan, the Application Appendix D-1 PBR Jurisdictional Benchmarking Report provided a comparison of the proposed 2014 Plan with other current plans in Canada. Given the Company's review of other plans, the Company believes the proposed PBR plan is the most appropriate as it draws on BC's successful experience with PBR.

69 Reference: CEC 1.19.2

> It is an overstatement to say that the interests are fundamentally different. While it is true that with respect to certain interests there may be the appearance of conflicts based on different perspectives of customer interests, their interests are aligned in many respects. For example, both customers and shareholders benefit from a financially sound and stable Company. They may have different views of what is required for the utility to be financially sound but failure to provide a reasonable opportunity to earn a fair return actually raises cost for all customers in the long-run. Costs increase and reliability decreases when a utility is not financially sound.
>
> Further, the pendulum for interests changes over time due to circumstances and can severely impact utility performance both financially and operationally. For example, some parties may argue for increasing the vegetation management cycle in order to reduce revenue requirements. There may be no immediate consequences from this delay until the next major storm when more customers lose service and restoration costs are higher as a result. At that point, revenue requirements increase because of new restoration capital and returning to the original vegetation management schedule. This is the kind of impact that hurts both customers and shareholders when the balance swings to reducing revenue requirements without fully understanding the consequences of missing the balance.

69.1 Why would FBC assume that fundamentally conflicting interests would involve the customers in wanting to provide an unfair return on capital and result in a financially unsound utility?

Response:

A more accurate way of characterizing FBC's position is that there can be differing views on what is required to ensure the utility remains sound and different priorities as well. FBC takes a long term view, which requires investments to be made today that may have unfavourable rate implications. It is certainly reasonable to expect that no customer would actively advocate in favour of a financially unsound utility; FBC believes it is a fair statement that some stakeholders may be more focussed on short term rate reductions for their own reasons.

69.2 Surely the fundamental conflicts between utility shareholder interests and ratepayer interests is what the Commission adjudicates all the time, is this not the fundamental role of the regulator?

Response:

The regulator does adjudicate such matters.

Attachment 68.2

Efficiency as a Discovery Process: Why Enhanced Incentives Outperform Regulatory Mandates

Opponents of incentive regulation claim explicit rewards are unnecessary because utilities already operate under a ''statutory obligation'' to be efficient. But that view ignores that incentives are generally superior to mandates for eliciting performance gains, and that a firm cannot knowingly disavow and strategically withhold efficiencies it has yet to discover.

Dennis L. Weisman and Johannes P. Pfeifenberger

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I. Introduction

There has been a pervasive adoption of incentive regulation worldwide in both the electric power industry and the telecommunications industry.[1] In the U.S., at least 28 electric utility companies in 16 states operated under some form of broad-based incentive regulation in 2000–01.[2] Of the 28 identified electric utilities, 13 operate under some form of rate moratorium and 14 operate under price caps. Of the 28 incentive regulation plans, 21 contain earnings sharing provisions or simple dead bands.[3]

The adoption of incentive regulation in the telecommunications industry is even more dramatic. In the course of just over 15 years, at least 48 U.S. states have changed the method of regulating dominant local exchange telephone companies from traditional, cost-of-service regulation to some form of incentive regulation (price caps, rate moratoria, or earnings sharing). Similar changes

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in regulatory regime have occurred in Australia, Europe, and South America. Moreover, the trend in the U.S. has been clearly in the direction of pure price cap regulation—price cap plans without earnings sharing. In 1995, dominant local exchange carriers in the U.S. were subject to some form of earnings-based regulation (cost-of-service regulation or earnings-sharing regulation) in 35 states and pure price cap regulation in 9 states. In 2000, the corresponding values were 8 and 39, respectively.[4]

The speed with which incentive regulation has been adopted can be explained principally by the fact that it offers the prospect of superior performance gains that can benefit all key interest groups. Consumers can benefit from lower rates or slower rate increases; the regulated firm can benefit through enhanced profitability and pricing flexibility; the regulatory process can be streamlined; and competitors can enjoy more favorable terms of entry. In other words, incentive regulation represents a ''win–win'' proposition.[5]

Despite the widespread adoption of incentive regulation and increasing recognition of its attendant benefits, it is not uncommon in regulatory proceedings to encounter opposition to incentive regulation on grounds that utilities already have a ''statutory obligation'' to be efficient and, therefore, should not require additional rewards through incentive plans. At the crux of this argument are two key misconceptions. The first misconception is that a ''mandate'' to be efficient will produce the same long-term benefits as properly structured ''incentives'' to be efficient. The second misconception is the belief that regulated firms may knowingly and strategically disavow opportunities to increase operating efficiency under traditional regulation in order to profit from such innovation under incentive regulation.

One misconception: A ''mandate'' to be efficient will produce the same long-term benefits as properly structured ''incentives'' to be efficient.

The purpose of this article is to examine the basis for these misconceptions. There are two primary responses. First, motivating increased performance through incentives is generally superior to mandating desired performance levels. Second, the realization that efficiency is a ''discovery process'' necessarily implies that a regulated firm cannot knowingly disavow and strategically withhold what it has yet to discover. These two points—largely self-evident for those predisposed to favor incentive regulation—explain the important role that enhanced incentives play in generating dynamic efficiency gains and in enhancing the performance of regulated firms.

II. The Important Role of Incentives

The prominent role of incentives in a market economy is (i) to allocate scarce resources to their highest valued use; (ii) to elicit cost minimization and innovation; and (iii) to encourage firms to supply the products and services that consumers demand. Professor James Bonbright, a leading authority in the field of public utility regulation, explains the important role of market forces in fostering incentives to pursue such efficiency and overall performance:

> Under unregulated competition, the price system is supposed to function in two ways with respect to the relationship between the price of the product and the cost of production. In the first place, the rate of output of any commodity will so adjust itself to the demand that the market price will tend to come into accord with production costs. But in the second place, competition will impel rival producers to strive to reduce their own production costs in order to maximize profits and even in order to survive in the struggle for markets. This latter, dynamic effect of competition has been regarded by modern economists as far more important and far more beneficent than any tendency of ''atomistic'' forms of competition to bring costs and prices into close alignment at any given point of time.[6]

These performance incentives fostered by competitive markets derive from the profit motive. The

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quest for such profits ultimately benefits society as producers strive to supply the goods and services that consumers want at the lowest possible cost. In other words, the pursuit of enlightened self-interest by economic agents serves to benefit society in the aggregate as if their actions were guided by an ''invisible hand.''[7]

The collapse of many centrally planned economies vividly demonstrates that market economies and their strong reliance on incentives are superior to mandates for fostering innovation, efficiency, and overall performance. For example, in recounting the fundamental flaws in the Soviet economic system, Yergin and Stanislaw observe that:

> Already by the early 1970s, a fatal weakness was becoming clear in the system: It could not, for the most part, innovate. There was no reward, no reason to do anything new. In fact, there was a strong predisposition to avoid change of any kind, for change caused enormous bureaucratic headaches. The best thing was to keep doing what had been done before. In more advanced economies, innovation was essential to the promotion of economic growth. But in the Soviet system innovation was characterized mainly by its absence. And that applied to everything—whether it was small changes to make processes work better or the introduction of new products.[8]

While it is prudent to err on the side of caution in drawing wholesale comparisons between market economies and incentive regulation, there are clearly some noteworthy parallels. Prominent among these are the inability of government or regulatory agencies to mandate efficient outcomes, even with the most detailed planning and supervision, and the importance of tangible rewards for motivating superior long-term performance through enhanced efficiency and innovation. The ''five-year plans'' in the former Soviet Union were notorious for both their level of detail and their inability to elicit performance. These plans were characterized by a virtually complete absence of meaningful incentives and rewards as the government attempted, unsuccessfully, to mandate rather than motivate performance.

The ''five-year plans'' in the former Soviet Union were notorious for both their level of detail and their inability to elicit performance.

It is generally accepted that a primary objective of economic regulation is to emulate a competitive market outcome. Professor Alfred Kahn, for example, observes that ''the single most widely accepted rule for the governance of the regulated industries is regulate them in such a way as to produce the same results as would be produced by effective competition, if it were feasible.''[9]

The relevant model of competition to inform regulatory policy is not one of atomistic or perfect competition,[10] but rather one that evaluates and rewards the performance of regulated entities. While the task of evaluating the performance of the utility is inherently difficult in the absence of actual competition, the basic principle is straightforward: the utility's performance is measured and rewarded or penalized based on predetermined, broad-based performance targets, such as the timely provision of quality service at capped prices. The roots of these ideas trace back almost a half a century and form the essence of the modem theory of incentive regulation as commonly practiced today.[11]

A voluminous amount of theoretical and empirical research concludes that incentive regulation is generally superior to strict cost-of-service regulation in emulating such a competitive market outcome.[12] This superior performance derives from the fact that incentive regulation, given the greater emphasis on prices rather than earnings, operates more like a *fixed price contract* in the sense that the regulated firm is limited in its ability to pass cost increases on to consumers in the form of higher rates. This contrasts with strict cost-of-service regulation that operates like a *cost-plus contract*. The result is that incentive regulation (including some forms of modified cost-of-service regulation)[13] provides stronger incentives that lead to superior performance gains in

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numerous dimensions, including (i) use of least-cost technologies; (ii) efficient level of cost-reducing innovations; (iii) incentives to invest and operate efficiently; and (iv) efficient diversification into new markets.

The manner in which enhanced incentives lead to cost control and superior performance is illustrated by the following statement of a utility's chief financial officer concerning the merits of incentive regulation:

> There are a couple items I think are very critical to the issue at hand. The most important has been the use of this [earnings sharing plan] in helping to change the culture of the Company .... [I]t's my job to beat on people about cost .... [But employees] said, every time we reduce costs, the Commission comes and takes it away. [T]hat's the way the cost-of-service model rate base regulation works, ... that's a disincentive. And when we got this plan in place, I made speech after speech ... Here's your opportunity, folks. This is as close to competition I can get you right now, but you make a dollar and we get to keep half of it. It goes to the bottom line. And again, regardless of whether I'm talking to a vice president or a pipefitter in one of our power plants, that's had an effect, and I've seen that effect ... It's good for the shareholders and it's good for customers. I know that sounds trite, but that rings a bell when it comes to employees.[14]

This discussion of performance incentives should not be construed to imply that there is not an important role for mandates and obligations. To the contrary, in virtually every society and economic model it is necessary to impose certain mandates and obligations—be it contract laws, safety regulations, and other basic legal and regulatory constraints. In fact, some of these mandates and obligations, such as patent laws and other intellectual property rights, are specifically designed to create strong incentives and rewards for innovation and superior performance.[15] In general, the role of such mandates and obligations takes the form of setting minimum standards for what is acceptable behavior rather than as a means to solicit superior performance. While such mandates and obligations can help ensure that certain minimum standards are met, robust incentives are required to elicit superior performance. This is the case simply because there is generally a wide ''gap'' between superior performance and performance that is considered merely acceptable.

Not surprisingly, opposition is strongest when the earnings that the regulated firm reports under incentive regulation exceed the earnings that would be expected under cost-of-service regulation.

The important role of incentives in eliciting performance gains has been validated in numerous venues covering many aspects of human interactions not only in how firms and consumers interact in a market economy or how firms compensate their employees, but also how government can exact performance gains from its individual agencies and employees,[16] or even how sporting events motivate participating athletes.[17] This broad experience confirms that it is not the mandates or obligations, but the incentives created by the prospect of meaningful rewards and recognition, that are most effective in eliciting enhanced performance.

III. Efficiency as a Discovery Process

The opposition to incentive regulation is not typically based on a lack of recognition that incentives can elicit superior performance and dynamic efficiency gains. Rather, opposition to incentive regulation often focuses on whether such incentives are needed. Not surprisingly, this opposition is seemingly strongest when the earnings that the regulated firm reports under incentive regulation exceed the level of earnings that would normally be expected under cost-of-service regulation.[18] The frequently voiced concern is that these higher profits necessarily come at the cost of higher prices to consumers.[19] And yet, the broad appeal of incentive regulation is precisely that the realized efficiency gains can benefit regulated firms and consumers alike. In other words, because incentive regulation is not a zero-sum

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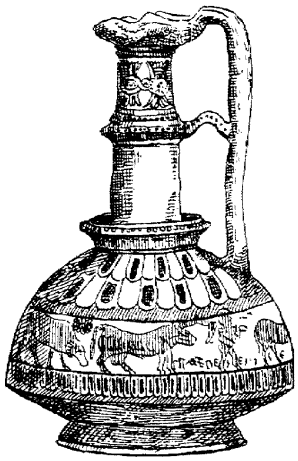
game, higher profits and lower prices need not be mutually exclusive.

In spite of the fact that incentive regulation can be a ''win–win'' proposition, some parties view incentive regulation as little more than a ''scheme'' used by utilities to increase their profits and earn windfall gains. These added profits may even be viewed as ''bribes'' to get utilities to do what they should be doing already. A common refrain is that because utilities have a ''statutory obligation'' to be efficient, any additional rewards for achieving efficient behavior through incentive regulation are unnecessary—and serve only to foster an inequitable distribution of efficiency gains between regulated firms and consumers. This line of argument would seem to suggest that any efficiencies realized by the regulated firm following the adoption of incentive regulation must imply that, under cost-of-service regulation, regulated entities either deliberately engaged in inefficient behavior or were able to ''conceal'' more efficient operating practices from regulators through their superior knowledge of operating conditions.[20]

While the possibility of such behavior cannot be ruled out *a priori*, this claim is incorrect as a general proposition. This is because the achievement of performance gains is first and foremost a ''discovery process'' in which more efficient operating practices and superior use of technology are learned over time.[21] It is the recognition of this discovery process that leads to the conclusion that the efficiency gains realized under incentive regulation need not imply that the firm was knowingly inefficient under cost-of-service regulation. To the contrary, it is quite plausible that the firm under cost-of-service regulation was as efficient as it knew how to be.



To understand the manner in which enhanced incentives can stimulate this discovery process, it is instructive to examine what innovation is and precisely how it comes about. Although the mechanics of innovation are complex and not well-understood, innovation is usually thought of as the creation of a better product or process. If there is a consensus of thought on the innovation process it is that innovation requires highly motivated individuals willing to go beyond doing what has been tried previously, beyond following standard operating procedures, beyond using time-tested methods and technology. Innovation and discovery of new ways of doing things, new technologies, or new applications based on existing technologies requires companies and individuals to question the *status quo*, to be creative, and to be willing to bear the significant risks associated with exploring new methods.[22] Of course, enhanced incentives in the form of meaningful rewards for successful discoveries are required to elicit such effort and risk-bearing.

In market economies, substantial rewards are provided for successful discoveries in the form of competitive advantage and the protection of intellectual property. For example, it is estimated that the overall rate of return for some 17 successful innovations in the 1970s averaged 56 percent.[23] In comparison, the average return on investment for all of American business over the last 30 years has been on the order of 16 percent. Despite these high rewards for innovators, however, there should be little doubt that innovation benefits the economy as a whole. In fact, today America enjoys more than half of its economic growth from industries that barely existed a decade ago.[24] This is consistent with recent findings of the White House Office of Science and Technology Policy estimating that more than half of U.S. economic growth since World War II was the result of innovation.[25]

These facts about the economic role of innovation clearly reinforce the aforementioned observations of Professor Bonbright, that economists generally view dynamic efficiency as being ''far

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more important'' to consumer welfare than static or allocative efficiency. Such dynamic efficiency is achieved through incentives that reward the perpetual discovery of new, innovative methods that increase efficiency and increase overall performance. Clearly, innovation does not happen because market forces ''bribe'' companies or individuals to ''reveal'' what they know already. Rather, it is strong incentives that motivate innovators to exert significant efforts, question the status quo, and assume the risks it takes to discover and implement more efficient procedures, applications, and technologies.

In traditionally rate-regulated industries, however, incentives for such innovation are truncated, if not absent altogether. In fact, the traditional regulatory model provides, at best, weak incentives to discover new efficiencies by: (1) discouraging risk-taking and the application of new technologies through the potential disallowance of costs and investments associated with unsuccessful attempts to innovate; and (2) providing only very limited rewards, if any, for even highly successful innovations. The benefits of new, cost-reducing operating practices simply decrease a utility's ''cost-of-service'' and, as a result, often are appropriated quickly and passed on to customers in the form of lower rates. Moreover, the traditional regulatory model commonly disallows the recovery of the performance incentive payments that regulated firms use in an attempt to motivate their employees.

With very limited potential rewards but significant disallowance risks, the traditional regulatory model strongly encourages the prudent use of tried-and-true operating practices and technologies. It thus provides

very limited incentives, if not explicit disincentives, to look beyond the status quo to discover and employ new, innovative operating practices and technologies. This is why the provision of enhanced incentives can stimulate a discovery process that enables regulated firms to become more efficient than they previously knew how to be. In the long term, this process can lead to dynamic efficiency gains and significant benefits for firms and their customers alike.

IV. Conclusions

Incentive regulation has supplanted traditional cost-of-service regulation in the telecommunications industry and the regulation of electric utilities appears to be following a similar trend. Despite these significant changes in the nature of regulatory regimes, a frequent claim from parties opposed to the adoption of incentive regulation is that the regulated firm should not be rewarded for efficient performance because it is already subject to the statutory obligation to operate efficiently. This view of the world implicitly rests on the premise that the regulated firm knowingly disavows superior methods by which to enhance efficiency. What this view fails to recognize, however, is that (1) the incentives requisite to the *discovery* of superior methods by which to augment efficiency are not sufficiently pronounced under cost-of-service regulation; and (2) the regulated firm cannot knowingly disavow what it has yet to discover.

It is the recognition of efficiencies as a ''discovery process'' that largely explains the long-term benefits that incentive regulation offers over traditional cost-of-service regulation. Indeed, the transition to restructured, more competitive markets now underway in many traditionally regulated industries will require a different mindset for all parties involved in the regulatory process—one that recognizes the importance of enhanced incentives in promoting efficiency and long-term investment in what are arguably some of the most critical of infrastructure industries. It is in

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this context that incentive regulation is poised to bridge the gap between fully integrated, regulated monopolies and a restructured, more competitive marketplace.■

Endnotes:

1. Incentive regulation can be defined as the implementation of rules that provide a regulated firm with strong incentives to achieve desired goals while granting significant, but not unlimited, discretion to the firm. In some sense, all types of regulation—including some forms of cost-of-service regulation—can constitute a form of incentive regulation. The common practice has been to limit the definition of incentive regulation to alternative forms of regulation that satisfy the above definition. These include price cap regulation, rate moratoria or rate freezes (which are also a form of price cap regulation), and various combinations that include earnings sharing. See DAVID E.M. SAPPINGTON AND DENNIS L. WEISMAN, DESIGNING INCENTIVE REGULATION FOR THE TELECOMMUNICATIONS INDUSTRY (Cambridge, MA: MIT Press, 1996), at 2. See also note 13 below.

2. David E.M. Sappington, Johannes P. Pfeifenberger, Philip Hanser and Gregory N. Basheda, *Status and Trends of Performance-Based Regulation in the U.S. Electric Utility Industry*, ELEC. J., Oct. 2001, at 71–79.

3. A dead-band is a range of earnings within which no action is taken by the regulator—either to modify rates or to appropriate earnings.

4. See David E.M. Sappington, *Price Regulation*, in Martin Cave, Sumit Majumdar, and Ingo Vogelsang (eds.), HANDBOOK OF TELECOMMUNICATIONS ECONOMIST (Amsterdam: North-Holland, 2002), Table 2, Chap. 7, at 225–293.

5. The empirical evidence to date appears to support this claim. See, for example, Jaison R. Abel, *The Performance of the State Telecommunications Industry under Price-Cap Regulation: An Assessment of the Empirical Evidence*, NRRI 00-14, National Regulatory Research Institute, Sept. 2000; and Chunrong Ai and David Sappington, *The Impact of State Incentive Regulation on the U.S. Telecommunications Industry*, J. REGUL. ECON., forthcoming. Note, however, that the overall benefits of incentive regulation are perhaps less controversial than the distribution of those benefits between consumers and regulated firms. The regulated firm under incentive regulation typically bears greater risk in exchange for the prospect of a higher return. The realization of this higher return depends upon the regulated firm's ability to improve efficiency. In contrast, the gains to consumers, which include rate reductions or freezes, bill credits and infrastructure upgrades, are typically guaranteed up-front and thus independent of the actual performance of the regulated firm. This is an important distinction because there may be a temptation by some parties to point to the greater profitability of the regulated firm under incentive regulation as evidence of an inequitable distribution of the gains from incentive regulation. What this perspective fails to realize is that in a different state of the world in which the regulated firm did not perform well, consumers are shielded under incentive regulation from the rate increases that may attend earnings deficiencies under the traditional regulatory model. In other words, incentive regulation provides a type of ''insurance'' for consumers that derives from a less direct linkage between the regulated firm's rates and its actual costs.

6. JAMES C. BONBRIGHT, PRINCIPLES OF PUBLIC UTILITY RATES (New York: Columbia University Press, 1961), at 107.

7. ADAM SMITH, THE WEALTH OF NATIONS (New York: Modern Library, 1937) (originally published in 1776), at 423.

8. DANIEL YERGJN AND JOSEPH STANISLAW, COMMANDING HEIGHTS (New York: Simon & Schuster, 1998), at 273.

9. ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS, vol. I (New York: John Wiley & Sons, 1970), at 17. See also, Bonbright, *supra* note 6, at 107.

10. As Professor Joseph Schumpeter observed:

> In this respect, perfect competition is not only impossible, but inferior, and has no title to being set up as a model of ideal efficiency. It is hence a mistake to base the theory of government regulation of industry on the principle that big business should be made to work as the respective industry would work in perfect competition.

See JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY (New York: Harper & Row, 1942), at 106.

11. See, for example, Sappington and Weisman, *supra* note 1, Chap. 5.

12. See, for example, Sappington, *supra* note 4.

13. Cost-of-service regulation that explicitly rewards superior performance or that specifically allows for extended regulatory lags can also provide strong performance incentives. Such modified cost-of-service regulation, for example, may also employ lengthened regulatory lags similar to rate moratoria. Also note that the traditional regulatory model is not inconsistent with providing rewards for superior performance. Regulatory agencies generally have some flexibility to consider superior company performance or management efficiency as a ''non-cost factor'' in determining whether a utility's rates are within a just and reasonable range. The Federal Energy Regulatory Commission, for example, stated in its Order 414-A (July 29, 1998) that ''the Commission will not lower a pipeline's ROE if its lower risk is the result of the pipeline's own efficiency . . . The record in this case makes it clear that Transco's positive market position is largely the result of the pipeline's relatively low rates in its market area . . . These are characteristics of a healthy company whose efficiency has enabled it to compete successfully in the market place and satisfy its customers.'' (*slip op.*, at 34–35).

14. Testimony of Donald E. Brandt before the Missouri Public Service

  doi:10.1016/S1040-6190(02)00415-3

Commission, Transcript of Proceeding, Case No. EO-96-14, June 2, 1999, at 266–267.

15. It is interesting to note that intellectual property laws may give temporary monopolies (e.g., patent rights) to firms in competitive markets in order to provide ''incentives and rewards'' to encourage innovation, efficiency gains, and superior performance. Yet some argue that ''incentives and rewards'' to encourage innovation, efficiency gains, and superior performance for regulated monopolies are unnecessary because regulated firms already have the ''obligation'' to be efficient.

16. The importance of performance-based compensation within government agencies is broadly recognized. For example, the U.S. General Accounting Office (GAO) notes that ''[i]f federal agencies hope to maximize their performance, ensure accountability, and achieve their strategic goals and objectives, they must, among other things, make effective use of incentives—whether monetary or nonmonetary—to motivate and reward their workforce . . .'' (*Human Capital: Using Incentives to Motivate and Reward High Performance*. Statement of Michael Brostek, GAO/T-GGD-00-118, May 2, 2000, at 11–12). The importance of incentives is also recognized with respect to government agencies as a whole. For example, a recent report of the Missouri Energy Policy Task Force ''recognizes that state agencies may be reluctant to become more efficient if those efficiencies result in a dollar-for-dollar reduction in their budgets.'' (*Final Report of the Missouri Energy Policy Task Force Presented to Governor Bob Holden*. Northwest Missouri State University, Maryville, Missouri, Oct. 16, 2001, at 19). The Task Force recommended that these agencies be given efficiency incentives in the form of a shared savings program.

17. For example, studies found that: the performance of race car drivers increases with the absolute spread of prizes (Brian E. Becker and Mark A. Huselid, *The Incentive Effects of Tournament Compensation Systems*, ADMIN. SCI. Q., 1992, 37, at 336–350); golfers' performance increases with higher prizes (Ronald G. Ehrenberg and Michael L. Bognanno, *The Incentive Effects of Tournaments Revisited: Evidence from the European PGA Tour*, IND'L & LABOR RELATIONS REV., 1990, 43, at 74–89); and an incentive pay scheme that shares part of the prize money in horse races with jockeys elicits much improved performance over giving jockeys a flat fee for riding (Sue Femie and David Metcalf, *It's Not What You Pay, It's the Way You Pay It: Jockey's Pay and Performance*, CENTREPIECE MAGAZINE, June 1996, 2).

18. Such a perception of ''excess earnings'' can make it very difficult for regulators to maintain the commitment to the terms of the incentive plan. However, as Professor David Sappington observes, the credibility of a regulator's commitment is critical to the performance of incentive plans:

> Absent credible rewards for superior performance and/or credible penalties for poor performance, the regulated firm will have little incentive to incur the effort costs that increase the likelihood of good performance.

See David E.M. Sappington, *Designing Incentive Regulation*, REV. IND'L ORG., 1994, 9, at 262–263.

19. A related concern is that regulators may face adverse political pressures should the regulated firm report higher earnings under incentive regulation. In other words, how does the regulator explain to part of his constituency that he is doing a ''good job'' as a regulator when the regulated firm reports a significant increase in earnings? See, for example, Dennis L. Weisman, *Superior Regulatory Regimes in Theory and Practice*, J. REGUL. ECON., Dec. 1993, 5 (4), at 364–365.

20. The formal economics literature may, in part, have contributed to this perception through its modeling of principal–agent relationships in which the ''agent'' has superior information to that of the ''principal.'' The inability of the principal to observe this information directly allows the agent to earn ''information rents.'' In other words, the agent must be ''bribed'' to reveal this information. However, it is unclear whether this structure is merely a convenient modeling technique or actually reflects institutional reality. The discussion herein emphasizes discovery rather than concealment by the agent, though they need not be mutually exclusive.

21. Incentive regulation can also facilitate implementation of known efficiency measures because implementation of such measures can be associated with significant direct and indirect costs that are difficult to recover under traditional regulation. Such cost recovery can be difficult under traditional regulation because the regulated entity often bears the full costs of the efficiency measure but may have only limited ability to benefit from the measures as efficiencies are appropriated quickly through the regulatory process. In addition, the regulatory process generally dose not consider indirect costs, such as the risks of using new technologies or the significant institutional strains associated with certain measures such as staff reductions.

22. As the great inventor Charles Franklin Kettering observed, the key to successful innovation is *intelligent failure*—failing in a manner that brings the innovator one step closer to the actual solution. For Kettering, failure was an indispensable part of the innovation process. See, for example, Mark Bernstein, *Charles Kettering: Automotive Genius*, SMITHSONIAN, July 1988.

23. *Industry Gets Religion*, ECONOMIST, Feb. 20, 1999 (Special Supplement on Innovation in Industry).

24. *Id.*

25. Richard M. Russell of the White House Office of Science and Technology Policy estimates that 52 percent of the nation's growth since World War II had come through inventions. His statement that ''unless we can protect intellectual property, we will not have invention'' serves to highlight the importance of incentives in achieving such performance. See Warren E. Leary, *The Inquiring Minds Behind 200 Years of Inventions*, N.Y. TIMES, Oct. 22, 2002, at D4.

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