THE BARBADOS
LIGHT & POWER
COMPANY LIMITED

received by
Commission
Secretary
7/7/09

APPLICATION

PURSUANT TO SECTION 16

OF

THE UTILITIES REGULATION ACT

CAP. 282 OF THE LAWS OF BARBADOS

FOR A REVIEW OF ELECTRICITY RATES

VOLUME 4(b)

Mr. Ivor Gilkes
May 12, 2009
10:00 a.m.
Fair Trading Commission
"Goodhope" Golden Hill
St. Michael
~~Kim Griffith~~
Tang How

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Office of Utilities Regulation

Jamaica Public Service Company Limited Annual Tariff Adjustment 2006

Determination Notice

OUR

OFFICE OF UTILITIES REGULATION

June 1, 2006

DOCUMENT TITLE AND APPROVAL PAGE

DOCUMENT NUMBER: Ele 2006/02

DOCUMENT TITLE: Jamaica Public Service Company Limited Annual Tariff Adjustment for 2006 - Determination Notice

1. PURPOSE OF DOCUMENT

This document sets out the Office's decisions on issues related to the Annual Price Adjustment (2006) under the price control regime that became effective under the 2004 Tariff review. See Decision Ele 2004/ 1

2. APPROVAL

This document is approved by the Office of Utilities Regulation and becomes effective as of **June 1, 2006.**

On behalf of the Office:

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J Paul Morgan

Director General

Date:

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Introduction

This is the second annual tariff adjustment under the current price cap control mechanism which was implemented on June 1, 2004 in compliance with Schedule 3 of the Jamaica Public Service Company Limited (JPS) All-Island Electricity Licence ('the Licence") (OUR document Ele 2004/2.1). In that Tariff Determination, the Office set the average non-fuel rate at J$5.627/kWh. It also established that the price cap be applied on a global basis. Specifically, the annual adjustment resulting from changes in the inflation offset index including efficiency gains and changes in quality of service is to be applied to the tariff basket instead of the individual tariffs. JPS is allowed to adjust the tariffs for each rate class on such a basis that the weighted average increase of the tariff basket does not exceed the price adjustment.

The annual adjustment calculates the movement in the base rates charged by JPS. The company is allowed to make interim monthly adjustment to take into account movements in the foreign exchange rate.

In addition at the previous adjustment determination, the Office approved an adjustment of 6.43% effective June 1, 2005. The adjustment was not implemented until August 1 however and was therefore "trued up" to 7.72% (to reflect recovery over 10 months) due to ongoing considerations of a hurricane claim that was submitted with the annual adjustment and consideration of which could not have been completed in time for implementation in June.

The effective change in rate at the annual adjustment in the average customer bill would therefore be the value of the annual adjustment less the accumulated value of the foreign exchange adjustment over the period and the difference between the approved rate and the 'trued up' rate.

Under normal circumstances, the consideration of the annual adjustment would be a simple exercise as it would only be for the OUR to verify the adjustment factors to be applied by JPS – the decision already having been handed down in the 2004 tariff. JPS, however, has included in the submission, as is its right, other considerations which require the Office's specific attention.

In the 2005 tariff adjustment Determination, the Office mandated JPS to implement the necessary systems so as to establish the baseline for the determination of the Q-factor. The baseline data is required for the computation of System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI) and Customer Average Interruption Duration Index (CAIDI) for planned and forced outages at both the feeder and sub-feeder level. Consequently, the company has submitted, with its filing, information on data collection, security and storage in fulfillment of this mandate. In its filing, JPS has proposed that the Q-factor be set at zero in this 2006 annual tariff consideration and that the Office utilize the 2005 performance data for SAIDI, SAIFI and CAIDI in the determination of the benchmark values for the 2006. JPS also proposes that at the end of January 2007, it will compile and have the

performance data for the calendar year 2006 audited. The full audited figures will be submitted as part of the annual rate adjustment filing at the end of March 2007. This audited data will form the basis of determining the Q-factor along with the previously established benchmark for 2006.

JPS has submitted a cost recovery proposal, related to the 2005 hurricanes' damages through the Z-factor, as provided for in Schedule 3 (Exhibit 1) of the Licence. The proposal outlines the total impact of the hurricanes including the incremental restoration costs, the under-recovered embedded costs in the non-fuel revenue requirement and the opportunity cost of capital. The total proposed cost under the Z-factor is $192.8 million.

1.0 Summary of the Office's Decision

The Licence stipulates that the annual PBRM filing follow the general framework where the **annual rate of change in non-fuel base electricity prices (dPCI)** is determined through the following formula:

$$dPCI = dI \pm X \pm Q \pm Z$$

where

dCPI = annual rate of change in non-fuel base electricity prices;

dI = the annual growth rate in an inflation and devaluation measure;

X = the offset to inflation (annual real price increase or decrease) resulting from productivity changes in the electricity industry;

Q = allowed price adjustment to reflect changes in the quality of service provided to the customers; and

Z = the allowed rate of price adjustment for special reasons not captured by the other elements of the formula.

The Price Index (PCI) is therefore to be adjusted as follows

$$PCI_t = PCI_{t-1}(1+ dPCI)$$

The price cap is to be applied on a global basis. Specifically, the annual adjustment factor (1 + dPCI) is to be applied to the tariff basket instead of the individual tariffs for each rate class. While each rate class attracts a specific weighting the weighted average increase of the tariff basket must not exceed the global price adjustment factor (1 + dPCI).

At any time the actual price index (API) must be less than PCI.

$$dI = [0.76 * e + 0.76 * 0.922 * e^{*}i_{US} + 0.76 * 0.922 * i_{US} + 0.24 * i_j$$

where:

e	= Percentage change in the Base Exchange Rate
i_{US}	= US inflation rate (as defined in the Licence)
i_j	= Jamaican inflation rate (as defined in the Licence)
0.76	= US factor
0.24	= Local (Jamaica) factor

Annual Inflation and Devaluation Growth Rate (dI)

From the application of the following factors (submitted by JPS and verified to be correct):

- The Jamaican twelve-month point-to-point inflation rate to February 28, 2006 of 12.41%, derived from the most recent CPI data[1] (i_j);
- The U.S. twelve-month point-to-point inflation rate to February 28, 2006 of 3.60%, derived from the US Department of Labour statistical data[2] (i_{US}); and
- The change in the base exchange rate from J$62:US$1 to J$65:US$1

dI is determined to be 9.30%

Annual X - Factor Offset to Inflation (X)

X = 2.72% as previously determined in 2004 (Ele2004/2.1) is now applicable

Allowed Q-Factor Price Escalation reflecting Changes in Service Quality (Q)

The Q-factor adjusts the annual escalation rate to reflect changes in quality of service provided to customers by JPS.

In its filing, JPS has proposed that the Q-factor be set at zero in this 2006 annual tariff consideration and that the Office utilizes the 2005 performance data for SAIDI, SAIFI and CAIDI in the determination of the benchmark values for the 2006 tariff. JPS also proposes that at the end of January 2007, it will compile and have the performance data for the calendar year 2006 audited. The full audited figures will be submitted as part of the annual rate adjustment filing at the end of March 2007. The submitted audited data will form the basis of determining the Q-factor along with the previously established benchmark for 2006.

[1] Obtained from the Statistical Institute of Jamaica, CPI Statistical Bulletin February 2006)
[2] Obtained from US Bureau of Labour Statistics website, http://data.bls.gov/cgi-bin/surveymost

The Office has determined that given the current state of the network system there is much room for improvement. Consequently, SAIDI, SAIFI, MAIFI and CAIDI should be continuously improving by 2% in 2006 relative to the 2005 performance level and 3%, relative to the 2005 performance level, in each year from 2006 to 2009.

Until the next price review the verified set of SAIFI, SAIDI and CAIDI indices for 2005 will be used as the benchmark quality level.

The Office's targets for the Q-factor 2006 – 2009 are:

Year	Target SAIDI	Target SAIFI	Target CAIDI
2006	$SAIDI_{2005}$	$SAIFI_{2005}$	$CAIDI_{2004/5}$
2007	$SAIDI_{2005}*(1 - 0.02)$	$SAIFI_{2005}*(1 - 0.02)$	$CAIDI_{2005}*(1 - 0.02)$
2008	$SAIDI_{2005}*(1 - 0.05)$	$SAIFI_{2005}*(1 - 0.05)$	$CAIDI_{2005}*(1 - 0.05)$
2009	$SAIDI_{2005}*(1 - 0.08)$	$SAIFI_{2005}*(1 - 0.08)$	$CAIDI_{2005}*(1 - 0.08)$

The Office has determined that quality of service performance should be classified into three categories, with the following point system:

- Above Average Performance (greater than 10% above benchmark) —would be worth 3 Quality Points on either SAIFI, SAIDI, or CAIDI;
- Dead Band Performance(+ or - 10%)—would be worth 0 Quality Point on either SAIFI, SAIDI, or CAIDI; and
- Below Average Performance (more than 10% below target)—would be worth -3 Quality Points on SAIFI, SAIDI, or CAIDI.

The Office further takes the view that if the sum of Quality Points for:

- SAIFI, SAIDI, and CAIDI is 9, then Q = +0.5%
- SAIFI, SAIDI, and CAIDI is 6, then Q = +0.4%
- SAIFI, SAIDI, and CAIDI is 3, then Q = +0.25%
- SAIFI, SAIDI, and CAIDI is 0, then Q = 0%
- SAIFI, SAIDI, and CAIDI is -3, then Q = -0.25%
- SAIFI, SAIDI, and CAIDI is -6 then Q = -0.40%
- SAIFI, SAIDI, and CAIDI is -9 then Q = -0.50%

Based on its review and the analysis of the prevailing issues the Office has determined that for the 2006 adjustment, Q = 0

Allowed (Z-Factor) Price Escalation reflecting Special Circumstances (Z)

The Z-factor is the allowed rate of price adjustment to compensate the company for the impact of events that:

- Affect JPS costs;
- Are not captured by the other elements of the formula; and
- Are not due to managerial decisions

In its filing, JPS has claimed for the recovery of costs associated with restoration of its system as a consequence of the passage of hurricanes Dennis, Emily and Wilma in the vicinity of Jamaica during 2005. The Office has completed its own analysis of the submission but will reserve issuing a decision on the actual amounts that it will allow until June 30, 2006.

The Office has however determined that the option of recovery of the sums approved shall be directly from the Sinking Fund Reserve.

Therefore for the purpose of this Determination Z = O

Hurricane Sinking Fund

The Office has little discretion in its consideration of the annual adjustment as the License is quite clear as to the process to be followed. It does have some discretion, however, in the wider context of its statutory duty (Office of Utilities Regulation Act as amended 2000 S.4 (2)) to ensure that:

a) The needs of consumers of services provided by the Licensee or specified organizations are met; and

b) The prescribed utility service operates efficiently in a manner designed to -

   i. Protect the health and well being of users of the service;
   ii. Protect and preserve the environment; and
   iii. Afford to its consumers economical and reliable service

In light of the experience of increased frequency and intensity in tropical cyclones affecting the Caribbean in the past five years, a review of the provisions that were made in the 2004 tariff was done. The review suggests that the provisions that were made for the hurricane sinking fund was too conservative and therefore the Office has decided that it would be prudent to increase the provision for the fund, not only in terms of its rate of growth but also in terms of the size of the fund. The experience of the 2004 hurricane Ivan claim attests to the inadequacy of the fund. The initial recommendations to the Office are that the rate of accrual should be US$5 million per annum to a value of US$20 million.

The Office is mindful of the challenges imposed on consumers in the context of the wider issues affecting the economy but lack of action on this issue has the potential of causing even greater challenges to consumers should significant damage occur to the plant as a result of such acts of God as hurricanes. The country's power infrastructure may be crippled without the immediate availability of resources to rebuild thus exacerbating the damage to the economic and social fabric of the country. It is felt therefore that an annual review of this provision should be done and if considered appropriate the contribution to the fund adjusted.

In this context the Office has determined that a provision be made for an incremental increase in the fund equivalent to US$1 Million per annum. This translates to an increase in the non-fuel rate of J$0.02/kWh or 0.3%.

Total Adjustment

The annual Adjustment of the base tariffs approved by the Office effective June 1 2006 are –

dI	9.30%
X	2.72%
Q	0%
Z	0%
Subtotal dPCI	*6.58%*
Hurricane Sinking Fund	0.3%
Total change in non-fuel base rates	6.88%
Less foreign exchange base rate movement	3.68%
Less difference in deemed 2005 base and Price Cap base	1.21%
Effective change in non-fuel rates	**1.99%**

This will result in an average increase of approximately 0.9% in the June electricity bill over the May bill.

As provided for in the Licence, this increase is applied to the basket of tariffs and JPS may adjust rate schedule individually, so long as the average does not exceed the average total adjustment.

Inflation Adjusted Base Non-Fuel Tariffs (dI ± X ± Q)

plus additional sinking fund reserve charge

Class		Block/ Rate Option	Customer Charge J$/ kWh	Energy J$/kWh	Demand J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	78	5.083				
Rate 10	LV	>100 kWh	78	8.932				
Rate 20	LV		179	7.843				
Rate 40A	LV		2,486	4.894	317			
Rate 40	LV - Std		2,486	2.002	811			
Rate 40	LV - TOU		2,486	2.002		33	353	452
Rate 50	MV - Std		2,486	1.804	729			
Rate 50	MV - TOU		2,486	1.804		30	318	407
Rate 60	STREET-LIGHTS		651	9.379				
Rate 60	TRAFFIC-LIGHTS		651	6.321				

2.0 Summary of JPS' Proposal for Rate Adjustment

In compliance with the All-Island Electric Licence 2001 ("the License"), JPS filed an application, dated 3rd April 2006, for the annual rate adjustment with the Office. The company, in its submission, sought approval for the following:

- A weighted average annual inflation adjustment of 5.5% on the June 2005 non-fuel base rates in keeping with the annual adjustment clause contained in the rate schedule. This inflation adjustment does not take into account the foreign exchange component of the index. However, this year also represents the first year in which the 2.72% productivity factor will come into effect in accordance with the Office's June 25, 2004 Determination (Ele2004/2.1). The weighted average increase in inflation will be offset by the 2.72% productivity factor, resulting in an effective increase of 2.78% in the non-fuel tariffs in June 2006. The fuel portion of the bill now accounts for approximately 55% of the charge so therefore the adjustment being sought would result in a 1.25% increase in the average bill.

- The proposals set out the total impact of the hurricanes (Wilma, Dennis and Emily) including the incremental restoration costs, the under-recovered embedded costs in the non-fuel revenue requirement and the opportunity cost of capital. The total proposed cost to be recovered through the application of the Z-factor is $192.8 million. This translates into a proposed increase in the non-fuel rates of 5.9c per kWh. Given the relatively small amount of hurricane storm damage in 2005, JPS proposed two recovery options:

1. ***Recovery from Sinking Fund:*** this method would result in a faster recovery period and accordingly a reduction to the opportunity cost of capital from $32.7 to $ 17.8 million.

2. ***Recovery through the non-fuel base rate***: The Z-Factor claim should be embedded in the non-fuel energy charge only and the monthly computation should be done in such a way so as to ensure that any under- or over-recovery is adjusted through the fuel rate each month.

- JPS proposed that the OUR make a determination that JPS be allowed to effect recovery of any item determined recoverable in full or in part as soon as possible, notwithstanding the 2004 Z-Factor claim dispute on the Loss of revenues.

- In its filing for the Q-factor to be set at zero in this 2006 annual tariff submission JPS has proposed that the OUR utilizes JPS' 2005 performance data on SAIDI, SAIFI and CAIDI in the determination of the benchmark values for the 2006. At the end of January 2007, JPS will compile and audit the performance data for the calendar year 2006. The full audited figures will be submitted as part of the annual rate adjustment filing at the end of March 2007. The submitted audited data will form the basis of determining the Q-Factor along with the previously established benchmark for 2006.

3.0 Office's Application of the Performance Base Ratemaking Mechanism (PBRM)

Effective June 1, 2005 and annually thereafter, JPS is permitted to make an adjustment to the non-fuel base rate on the basis of the formulae below.

$$ABNFy = ABNFy_{-1} (1 + dPCI)$$

Where:

$ABNF_y$	= Adjusted Non-Fuel Base Rate for Year "y"
$ABNF_{y-1}$	= Non-Fuel Base Rate prior to adjustment
dPCI	= *Annual* rate of change in the non-fuel electricity prices as defined below
PCI	= Non-fuel Electricity Pricing Index

Additionally, the annual PBRM filing should follow the general framework where the annual rate of change in non-fuel electricity prices (dPCI) is determined through the following formula:

$$dPCI = dI \pm X \pm Q \pm Z$$

where

dCPI = *annual rate of change in non-fuel electricity prices;*

dI = the annual growth rate in an inflation and devaluation measure;

X = the offset to inflation (annual real price increase or decrease) resulting from productivity changes in the electricity industry;

Q = allowed price adjustment to reflect changes in the quality of service provided to the customers; and

Z = the allowed rate of price adjustment for special reasons not captured by the other elements of the formula.

The price cap is to be applied on a global basis. Specifically, the annual adjustment factor (1 + dPCI) is to be applied to the tariff basket instead of the individual tariffs for each rate class. While each rate class attracts a specific weighting the weighted average increase of the tariff basket must not exceed the global price adjustment factor (1 + dPCI).

3.1 Annual Growth Rate in Inflation and Devaluation

The annual growth rate in inflation and devaluation factor dI is calculated by the formula -

$$dI = [0.76 * e + 0.76 * 0.922 * e * i_{US} + 0.76 * 0.922 * i_{US} + 0.24 * i_j]$$

where:

e = Percentage change in the Base Exchange Rate

i_{US} = US inflation rate (as defined in the Licence)

i_j = Jamaican inflation rate (as defined in the Licence)

0.76 = US factor

0.24 = Local (Jamaica) factor

The application of the above formula results in an inflation adjustment factor of **9.30%** derived using the following factors:

- The Jamaican twelve-month point-to-point inflation rate to February 28, 2006 of 12.41%, derived from the most recent CPI data[3];

[3] Obtained from the Statistical Institute of Jamaica, CPI Statistical Bulletin February 2006)

- The U.S. twelve-month point-to-point inflation rate to February 28, 2006 of 3.60%, derived from the US Department of Labour statistical data[4]; and

- The change in the base exchange rate from J$62:US$1 to J$65:US$1

Annual inflation adjustment (dI) Calculation
Escalation Factor

Table 2.1

Line	Description	Formula	Value
	Base Exchange Rate		
L1	Current		62
L2	Proposed		65
	Jamaica Inflation Index		
L3	CPI @ Feb 2006		2,295.1
L4	CPI @ Feb 2005		2,041.7
	US Inflation Index[3]		
L5	CPI @ Feb 2006		198.7
L6	CPI @ Feb 2005		191.8
L7	Exchange Rate Factor	(L2-L1)/L1	4.84%
L8	Jamaican Inflation Factor	(L3-L4)/L4	12.41%
L9	US Inflation Factor	(L5-L6)/L6	3.60%
	Escalation Factor	0.76*L7*(1+0.922*L9) +0.76*0.922*L9 + 0.24*L8	9.30%

3.2 X – Factor Component of PBRM

The X-Factor is based on the expected productivity gains of JPS. The X-Factor is to equal the difference in the expected total factor productivity growth of the Licensed Business and the general total factor productivity growth of firms whose price index of outputs reflect the escalation measure 'dI'.

The X-Factor was determined by the Office to be 2.72% to be applicable in 2006. The effect on the 2006 annual tariff adjustment is outlined in tables 2.1 – 2.4 below.

3.3 Q – Factor Component of PBRM

Another factor under the PBRM is the Q-factor, the allowed price adjustment to account for changes in the quality of service provided to customers.

The Office is of the view that the Q-factor should meet the following criteria:

- Provide the proper financial incentive to encourage JPS to continually improve service quality. It is important that random variations should not be the source of reward or punishment

[4] Obtained from US Bureau of Labour Statistics website, http://data.bls.gov/cgi-bin/surveymost

- Measurement and calculation should be accurate and transparent without undue cost of compliance.

- It should provide fair treatment for factors affecting performance that are outside of JPS' control, such as those due to disruptions by the independent power producers; natural disasters; and other Force Majeure events, as defined in the Licence.

- It should be symmetrical in application, as stipulated in the Licence.

In the 2004 Tariff Review Determination the Office stipulated that the Q-Factor be based on three quality indices:

- System average interruption frequency index (SAIFI)

$$\text{SAIFI} = \frac{\text{Total number of customer interruptions}}{\text{Total number of customer served}}$$

- System average interruption duration index (SAIDI)

$$\text{SAIDI} = \frac{(\Sigma \text{ Customer interruption durations})}{\text{Total number of customer served}}$$

- CAIDI (customer average interruption duration index) is an industry-defined term that is the result of dividing the duration of the average customer's sustained outages by the frequency of outages for that average customer.

$$\text{CAIDI} = \frac{(\Sigma \text{ Customer interruption durations})}{\text{Total number of interruptions}}$$

The Office's June 2004 determination notice required JPS to implement a mechanism to collect the data on forced outages at both the feeder and sub-feeder levels and to have the data audited and analyzed. Baseline data on System Average Interruption Duration Index (SAIDI)[5], the System Average Interruption Frequency Index (SAIFI)[6] and Customer Average Interruption Duration Index (CAIDI)[7] should have been included with the 2005 annual adjustment filing in order that the Q-Factor can be applied as part of the PBRM. The Office posited at the time that should JPS not provide the supporting data, it would apply international benchmarks to inform the derivation of 'Q' with effect from June 2006.

[5] This index is commonly referred to as customer minutes of interruption or customer hours, and is designed to provide information about the average time that customers are interrupted.

[6] This index is designed to give information about the average frequency of sustained interruptions per customer over a pre-defined area.

[7] This index represents the average time required to restore service to the average customer per sustained interruption.

When JPS put forward its tariff submission in June 1, 2004, the system to capture the information on forced outages at the sub-feeder level was not yet in place. As a result, the Office decided that the Q-Factor would remain at zero until June 2005 when the data on forced outages at both the feeder and sub-feeder levels should have been collected, audited and analyzed by the OUR.

The proposal submitted was to set the baseline for JPS' performance on one year's data from June 2004 to June 2005. JPS implemented the system in June 2004 and data capture for computation of SAIDI, SAIFI and CAIDI on forced outages at the sub-feeder level began in July 2004. As a result of the above, and the *Force Majeure* period September 10 to October 31 due to Hurricane Ivan, one year's data was not available at the time of the previous annual filing in March 2005. As a consequence, the Office delayed the implementation of the Q-Factor adjustment to the 2005/6 tariffs. Finally, having regard to the timing of the annual submission (i.e. March of each year) and the need to compile the Q-data, JPS proposes that going forward it would be more practical to submit the annual performance data on a calendar year basis. Accordingly, JPS has resubmitted the actual indices for the calendar year 2005 to be utilized to establish the base line performance data set.

3.31 JPS' Proposals on the Q-Factor

JPS proposed in this submission that the benchmarks are set such that, in each year between 2005-2009, JPS will have incentives to continuously improve its performance on SAIDI, SAIFI and CAIDI relative to 2004/5.

Specifically the company has proposed:

SAIDI benchmark in year 2005/6 + t = $SAIDI_{2004/5}$ $(1 - 0.02t)$
SAIFI benchmark in year 2005/6 + t = $SAIFI_{2004/5}$ $(1 - 0.02t)$
CAIDI benchmark in year 2005/6 + t = $CAIDI_{2004/5}$ $(1 - 0.02t)$

where t is the number of years from 2005 - 2009

JPS proposed that, SAIDI, SAIFI and CAIDI should be continuously improving by 2%, relative to the 2005 performance level, in each year from 2006 to 2009, not withstanding Force Majeure events.

In each of the four years following 2005, if the:

- SAIDI, SAIFI, and CAIDI calculations show marked improvement relative to the target, Q will be a positive adjustment in the annual PBRM filing.
- SAIDI, SAIFI, and CAIDI calculations show little or no improvement relative to the target, Q will be zero (a dead band) in the annual PBRM filing.
- SAIDI, SAIFI, and CAIDI calculations show deterioration relative to the target, 'Q' will be a negative adjustment in the annual PBRM filing.

3.311 Q-Factor Method of Calculation

JPS proposed that quality-of-service performance be classified into three categories, with point system as follows;

- Above Average Performance—would be worth 3 Quality Points on either SAIFI, SAIDI or CAIDI;
- Dead Band Performance—would be worth 0 Quality Point on either SAIFI, SAIDI or CAIDI; and
- Below Average Performance—would be worth -3 Quality Points on SAIFI, SAIDI or CAIDI.

JPS proposed for each of the indices above, that, beating the target by 2.0% or more should be considered as Above Average Performance; beating the target by less than 2.0% should be considered as Meeting Expectation (Dead Band Performance); and performance that is below the target would be considered as Below Average Performance.

JPS further proposed that if the sum of Quality Points for:

- SAIFI, SAIDI and CAIDI is 9, then Q = +0.5%
- SAIFI, SAIDI and CAIDI is 6, then Q = +0.4%
- SAIFI, SAIDI and CAIDI is 3, then Q = +0.25%
- SAIFI, SAIDI and CAIDI is 0, then Q = +0.0%
- SAIFI, SAIDI and CAIDI is -3, then Q = -0.25%
- SAIFI, SAIDI and CAIDI is -6 then Q = -0.4%
- SAIFI, SAIDI and CAIDI is -9 then Q = -0.5%

Proposed categories and points for SAIFI, SAIDI and CAIDI

Band	Performance relative to target	Quality points
Above average	Beating the target by 2.0%	3
Dead band	Actual performance within -2% to +2% of target	0
Below average	Worsening of performance (more than -2%)	-3

3.312 Data Collection, Security and Storage

For the calculation of SAIDI, SAIFI and CAIDI indices, the key information to be collected is as follows:

Outages start and end times;
System total number of customers; and
Number of customers affected by the outage.

JPS proposes that the data required for calculating approximate SAIDI, SAIFI and CAIDI values will build upon JPS' existing data acquisition capabilities together with JPS' best approximation of the number of customers on each feeder and sub-feeder. JPS' electronic data capture mechanisms are at various stages of development and no one system exists currently to capture all information required for an exact calculation of the SAIDI, SAIFI and CAIDI indices. SCADA status and analogue information are available on the majority of transmission and generation equipment with status information available for 88% of feeder level circuits. Customer reported data, primarily used to indicate start times for sub-feeder level events, is manually captured and stored electronically using the Call Centre Management System (CCMS).

3.313 Planned Improvements in Data Collection

JPS states that it has commenced a geographic information system (GIS) project to establish and maintain a more accurate customer count on each distribution feeder, and in particular, the customer count on each branch circuit. This will result in the GPS mapping of all the customer meters, which will be superimposed on the GIS feeder route and the GPS position of the line switches and fuses will be recorded and mapped in a similar way. This will facilitate the easy counting of all customers on a feeder and sub-feeder basis. A concise database is being created which will incorporate this new customer data into the CIS and the Outage Management System. When this project is completed all reliability indices can be computed using the actual customer count for the affected section of the T&D system.

3.314 Basis for Resetting the Base Line Data set in 2007

JPS is of the opinion that the improvement in the data collection process noted above will enable the recalculation of all 2006 data on an exact customer count basis. However, JPS indicates that it will not be in a position to recalculate the 2005 data set based on the actual customer count. A comparison of the 2006 actual performance calculated using the estimated customer count method versus the actual customer count method will provide a basis to re-establish new benchmark data for the quality indices (SAIDI, SAIFI and CAIDI) for 2007, which would be based on the actual customer count method. These revised benchmarks could then form the basis for future comparison. Should the OUR accept this proposed approach; JPS could officially switch its determination of the number of customers affected from an estimation to an actual count starting 2007. If the OUR is averse to resetting the benchmark in 2007 on the above mentioned basis, then

JPS proposes that the resetting of the benchmark up to 2009 proceed on the basis proposed above. Likewise, JPS will continue to utilize the estimation routine for comparison against these benchmarks for the remainder of the five-year rate cap period. Under this approach, JPS would submit recalculated data based on the actual customer count method to be utilized after 2009. Actual performance would also be measured using this method.

3.32 Office's Position on the Q-Factor Proposal

The Performance-based Rate-making Mechanism (PBRM), in general, allows the Office to reward JPS for good performance and penalize it for poor performance. The Office is anxious to apply the PBRM under the price cap situations to counteract any inclination by JPS to cut costs at the expense of reliability by providing the correct incentives.

The Office agrees with JPS' proposed approach to exclude from the reliability indices calculation, Force Majeure and major events outside of the reasonable control of JPS. Additionally, the Office is of the view that MAIFI should also be benchmarked in the future. Additionally, capital expenditure submitted to the Office by JPS in support of its tariff review in 2004 revealed that over US$90 million will be expended to expand and improve the network over the next 5 years. The Office is of the view that given the current state of the network system there is much room for improvement. Consequently, SAIDI, SAIFI, MAIFI and CAIDI should be continuously improving by 2% in 2006 relative to the 2005 performance level and 3%, relative to the 2005 performance level, in each year from 2006 to 2009.

Until the next price review, a verified set of SAIFI, SAIDI and CAIDI indices for 2005 will be used as the benchmark quality level.

The Office targets for the Q-Factor 2006 – 2009

Year	Target SAIDI	Target SAIFI	Target CAIDI
2006	$SAIDI_{2005}$	$SAIFI_{2005}$	$CAIDI_{2004/5}$
2007	$SAIDI_{2005}*(1-0.02)$	$SAIFI_{2005}*(1-0.02)$	$CAIDI_{2005}*(1-0.02)$
2008	$SAIDI_{2005}*(1-0.05)$	$SAIFI_{2005}*(1-0.05)$	$CAIDI_{2005}*(1-0.05)$
2009	$SAIDI_{2005}*(1-0.08)$	$SAIFI_{2005}*(1-0.08)$	$CAIDI_{2005}*(1-0.08)$

Generally, in PBRM penalties are increased as performance worsens and are capped when a maximum penalty is reached. Rewards for good reliability can be implemented in similar manner. The Office is of the view that this would provide incentive for JPS to enact reliability improvement measures even after they have surpassed the poor reliability threshold for a year, before the year ends.

The Office considers it appropriate that quality-of-service performance should be classified into three categories, with the following point system:

- Above Average Performance—would be worth 3 Quality Points on either SAIFI, SAIDI, or CAIDI;

- Dead Band Performance—would be worth 0 Quality Point on either SAIFI, SAIDI, or CAIDI; and

- Below Average Performance—would be worth -3 Quality Points on SAIFI, SAIDI, or CAIDI.

The Office further takes the view that if the sum of Quality Points for:

- SAIFI, SAIDI, and CAIDI is 9, then Q = +0.5%
- SAIFI, SAIDI, and CAIDI is 6, then Q = +0.4%
- SAIFI, SAIDI, and CAIDI is 3, then Q = +0.25%
- SAIFI, SAIDI, and CAIDI is 0, then Q = 0%
- SAIFI, SAIDI, and CAIDI is -3, then Q = -0.25%
- SAIFI, SAIDI, and CAIDI is -6 then Q = -0.40%
- SAIFI, SAIDI, and CAIDI is -9 then Q = -0.50%

Since the performance in each of the three performance measures can either be above target, below target or on target (dead band) there are twenty two (22) possible outcomes as in table 2.2 below.

Table 2.2

Possible Q-factor scores

SAIDI	SAIFI	CAIDI	Total	PBRM ADJUSTMENT FACTOR
3	3	3	9	0.5%
3	3	0	6	0.40%
3	0	3	6	0.40%
0	3	3	6	0.40%
3	0	0	3	0.25%
0	0	3	3	0.25%
0	3	0	3	0.25%
3	3	-3	3	0.25%
-3	3	3	3	0.25%
3	-3	3	3	0.25%
0	0	0	0	0.00%
3	0	-3	0	0.0%
-3	3	0	0	0.0%
0	-3	3	0	0.0%
-3	0	3	0	0.0%
0	0	-3	-3	-0.25%
0	-3	0	-3	-0.25%
-3	0	0	-3	-0.25%
3	-3	-3	-3	-0.25%
-3	-3	3	-3	-0.25%
-3	3	-3	-3	-0.25%
-3	0	-3	-6	-0.40%
0	-3	-3	-6	-0.40%
-3	-3	0	-6	-0.40%
-3	-3	-3	-9	-0.5%

This design of the Q-factor adjustment as a component of the PRBM is symmetrical and all possible outcomes are properly defined based on the PBRM point system. The design is balanced as it provides equal opportunity for either a positive or negative adjustment to the PRBM.

JPS proposed that measurements approximating SAIDI, SAIFI and CAIDI for ***Sustained Interruptions***, as defined in the Institute of Electrical and Electronics Engineers Standard (IEEE Std. 1366, 2001), become the quality criteria used to determine level of service quality. By this definition, a Sustained Interruption is any interruption not classified as a momentary event, i.e., any interruption longer than five minutes.

However, the Office is of the view that interruptions of less than five minutes' duration or momentary interruptions are just as important for measuring reliability. Consequently, the Office is directing JPS to start collecting the data so that the company's performance in this regard can be monitored on an ongoing basis.

MAIFI (momentary average interruption frequency index) is an industry-defined term that attempts to identify the frequency of all momentary outages that a customer will experience during a given time-frame. It is calculated by summing all customer interruptions for momentary outages (those less than 5 minutes duration) and dividing by all customers served within the affected area. With the increasing vulnerability of critical machinery and systems to temporary loss of power, there should be incentives to direct the company along the path of improved quality in this area.

Recognising the difficulties that have been experienced in the measurement of the other indices, the Office now directs that MAIFI be computed annually over the period 2006 – 2009 and the index used as the baseline for incorporating MAIFI in the computation of the value of Q in the 2009 rate review. The Office will make itself available to discuss the implementation strategy as necessary. Accordingly, the value of Q will be based upon actual values of SAIDI, SAIFI, MAIFI and CAIDI for each year of the PBRM as compared to a new baseline effective 2009.

The Office expressed some concerns about the methodology proposed to measure the indices. The company does not have a system in place to accurately record the customer count or timing of outages at the sub-feeder level and so has proposed the use of proxies to determine the indices. Although there has been some refinement to the proposal for the capture of the customer count by outages by 2007, the time recording methodology at the sub-feeder level still does not allow for reliable measurement of the proposed indices or for the development of a system to record MAIFI. The Office is disappointed that a more robust system of measurement is not being developed having regard to the fact that the first determination on the requirements for the quality of service indices was over five years ago.

The Office is of the opinion that the two-year baseline data currently available is not sufficient and may undermine the penalty and reward system that seeks to give an incentive to JPS to provide quality electric service. The current baseline data proposed by

JPS represents data that is reflective of a period when there were a number of factors[8] that militated against adequate reliability and resulting in a high variability in the monthly indices.

The table below gives an indication of the variability of the monthly indices as per the submission for the annual adjustment. The level of variability shown raises the question of whether the regime proposed by JPS will actually reward or punish for results that can be largely attributed to the actions of management. The expected variation for a given month could push the indices much more than the 2% proposed for triggering rewards and penalties.

Table 2.3 - Variability of Monthly Indices for 2005

	SAIDI	SAIFI	CAIDI
Mean	286	3.05	92.31
Standard Deviation	130	1.28	17.29

The Office is of the view that the data presented is neither sufficient nor representative enough to ensure the optimum baseline for a robust Q-factor.

In addition, the Office has a major concern about the differences in the reports on the indices in the monthly technical reports submitted during the year and the contents of the submission for the annual adjustment.

JPS' 2005 Performance on SAIDI, SAIFI and CAIDI based on their Tariff Submission

Table 2.4:

MONTH	SAIDI	SAIFI	CAIDI
January	151.79	1.82	83.20
February	117.57	1.73	67.85
March	257.26	2.49	103.42
April	207.02	2.72	76.16
May	311.18	3.73	83.47
June	521.32	6.16	84.60
July	480.03	3.92	122.57
August	305.61	3.70	82.58
September	306.31	3.13	97.76
October	390.07	3.42	113.91
November	256.33	2.27	112.69
December	123.23	1.55	79.51
TOTAL	**3,427.73**	**36.65**	**93.52**

[8] The countervailing factors are hurricanes in 2004 and 2005 and data collection issues relating to the integrity of the system

JPS 2005 Performance on SAIDI, SAIFI and CAIDI based on Monthly Technical Reports Submissions

Table 2.5

MONTH	SAIDI	SAIFI	CAIDI
January	230.41	3.25	70.90
February	487.56	3.57	136.57
March	379.01	4.43	85.56
April			
May	288.12	4.38	65.78
June	381.09	5.41	70.44
July	486.13	6.17	78.79
August	303.53	5.37	56.52
September	90.76	3.17	28.63
October	112.65	4.55	24.76
November	110.85	2.84	39.03
December	75.64	2.30	32.89
TOTAL[9]	**3213.5**	**49.57**	**64.83**

In order to minimise the risk of a lower than optimum baseline for the measurement of subsequent Q-Factor the dead band performance[10] target should be sufficiently large to take into account the variability of the current data. This will ensure that the utility will have to bring material improvements to the quality of service to score quality points exceeding the dead band of zero. The Office accepts JPS' proposal of using available data for the baseline, but is of the view that the initial dead band target should be 10% rather than the 2% proposed by JPS. This position is taken based on the fact that the data presented by JPS showed significant variances, greater than 2%, within the monthly and annual indices.

Based on the risk–reward scenario that the available data presents, the Office agrees that that the Q-Factor should remain at zero for this adjustment period. The Office is extremely disappointed that adequate and reliable data is not available to properly assess the quality of service provided to customer after the long period of notice as to the requirements. Consequently, the Office has determined that a directive outlining reporting specifications and implementation will be issued following this Determination Notice.

For the next review (in 2009) the Office will be setting the benchmark targets using a moving average based on the previous three years' data.

[9] Annual Total derived from eleven months of data. (Technical Report for April 2005 is unavailable)

[10] Actual performance within a certain variance sufficiently large to ensure that the utility will have to improve quality of service to score quality points exceeding zero.

3.321 Force Majeure and Major Events

The Office agrees with JPS that Force Majeure and major events outside of the reasonable control of JPS should be excluded from the reliability indices calculation.

However, in order to ensure proper treatment of the Force Majeure and major events, the Office intends to introduce a regime that would require that:

- JPS divides the entire distribution system into geographical or operational areas and should report reliability indices for each defined area as well as for the system.

- JPS formally requests exclusion of service interruptions for reporting purposes by proving an outage qualifies as a major event in a particular area or areas.

- JPS in its application to the Office for a declaration that the event can be classified as Force Majeure or major should indicate the actual timeframe in which the major event began and ended.

The above requirements are geared to complement the following safeguards for which the company is prohibited:

- Combining of separate events as a major event

- Excluding outage data from all geographical areas when the major event that has occurred is localized to one geographical area

- Excluding all outages that took place on any day in which a major event took place, regardless of the actual timeframes in which the major event began and ended.

The Office agrees with the Company that procedures for dealing with these special conditions be developed and promulgated as a Code. The Office anticipates receiving the Company's draft in this regard within two months of the effective date of this Determination.

3.4 Z-Factor Component

JPS experienced losses as a result of hurricane storm damage in 2005, resulting from the passage of Hurricanes Dennis, Emily and Wilma in the vicinity of Jamaica. JPS had made the case in the 2004 tariff submission that the company is not able to obtain conventional insurance coverage in relation to its T&D assets. As a result, the Office agreed with the company's proposal to start a Self-insurance Sinking Fund effective June 2004 with funding approximately US$2 Million per annum. The fund has an accumulated value of approximately US$3.5 Million as at March 31, 2006. The Office accepts that where there is insufficient funds available under the Self Insurance Fund, in

the event of an approved event, JPS may file for recovery of the relevant costs under the Z-factor, as defined in Schedule 3 (Exhibit 1) of the Licence.

The Z-Factor is the allowed rate of price adjustment to compensate the company for the impact of events that:

- Affect JPS costs;
- Are not captured by the other elements of the formula; and
- Are not due to managerial decisions

The Z-Factor claim submitted by JPS relates to hurricane damage to the Transmission and Distribution network. The power plants have insurance coverage. The JPS filing has the costs impact broken down into three categories;

1. Restoration costs J$86.8 million
2. Revenue impairment J$73.3 million ; and
3. Opportunity cost of capital J$32.7 million

Hence, the total claim made by JPS is to recover $192.8 million under the Z-component of PBRM.

The whole basis for considering cost recovery for damage caused by hurricanes is discussed in the Office's Determination Ele 2005/5. It is sufficient to note that it has over the years become increasingly difficult if not impossible, not only for Caribbean utilities but also for utilities that operate in the south eastern and eastern United States in the so called "hurricane belt", to acquire insurance cover. The statement provided by OUR consultants is that they are not aware of any "reputable insurance company or broker that presently offers windstorm cover for transmission and distribution networks within the 'hurricane belt'." In fact, it was this reality that prompted JPS in the 2004 Tariff Submission to request approval for the establishment of a Self-Insurance Scheme and the Office was so disposed as to have approved the revenue stream in the tariff to establish the insurance sinking fund.

It is important to note that had JPS been able to obtain appropriate insurance coverage for its T&D assets it would be considered an acceptable cost of providing service and would therefore be included in tariff calculations. The Company, therefore, normally recovers the cost for insurance cover for catastrophic events by the way of premiums before and after the occurrence of such events. These premiums are just a means of smoothing cash flow and the payout may be more or less than the actual damage incurred. The same smoothing out of cash flow can be achieved by either creating a sinking fund or amortizing the cost of the damage over subsequent periods. In the absence of insurance, the costs incurred as a consequence of the event could be funded by the Self Insurance scheme (Sinking Fund), the Z-Factor (amortization of the cost) or a combination of both.

In respect of the current claim made by JPS to recover $192.8 Million under the Z-component of PBRM in relation to (i) hurricane restoration costs, (ii) loss of revenue and (iii) opportunity costs, the Office will apply the same principles as for its Determination Ele 2005/5

In its submission JPS proposed two recovery options;

1. Recovery from the Sinking Fund
2. Recovery through non-fuel base rates

The Office is of the view that given the relatively small amount of the claim for hurricane storm damage in 2005, the option of recovery shall be directly from the Sinking Fund reserve.

In regard to the final claim to be applied against the Sinking Fund – the Office will hand down its decision on June 30 2006.

The Office acknowledges the documentation received from JPS regarding the operation of the Sinking Fund and will respond in a fulsome manner separately.

3.5 Tariff Basket Compliance

The company is required to increase the weighted average of prices by less than or equal to the increase in the electricity price escalation index PCI. The PCI sets the limits for movements in the base tariffs. On a monthly basis adjustments are made for the effects of movements in the Foreign Exchange rate. It is to be noted that the effective change in the non-fuel rates is the dPCI less the cumulative movements due to Foreign Exchange rate changes.

The weights used are the 2005 revenue shares.

The tariff basket compliance must satisfy the following formulae:

$$PCI \geq API; \text{ where}$$

API is the weighted average price of the actual tariff basket prices

The annual adjustment factor for the non-fuel base rates of 6.58% derived from dPCI = (dI = 9.30, - X =2.72, -Q = 0) is applied to the total basket. The adjustment in each tariff is weighted and hence the adjustment across rates is dependent on the relative weights in relation to the total tariff basket.

Total Non-Fuel Tariff Basket

Table 2.6

Class		Block/ Rate Option	Customer Charge Revenue (J$'000)	Energy Revenue (J$'000)	Demand (KVA) Revenue (J$'000)				Total Demand Revenue (J$'000)	Total Revenues (J$'000)
					Std.	Off-Peak	Part-Peak	On-Peak		
Rate 10	LV	0-100 kWh	12,125	1,830,298						1,842,423
Rate 10	LV	> 100 kWh	22,577	5,999,306						6,021,883
Rate 20	LV		8,904	4,551,927						4,560,831
Rate 40A	LV		945	295,440	117,704				117,704	414,089
Rate 40	LV	STD	2,072	939,717	1,334,229				1,334,229	2,276,018
Rate 40	LV	TOU	306	282,742		14,469	151,357	159,149	324,975	608,023
Rate 50	MV	STD	142	406,649	519,855				519,855	926,646
Rate 50	MV	TOU	60	186,693		12,989	124,856	113,593	251,438	438,191
Rate 60	LV		118	567,997						568,115
Total			47,249	15,060,769	1,971,788	27,458	276,213	272,742	2,548,201	17,656,219

Table 2.7 below shows the annual adjustment factor that JPS proposes to apply to each individual tariff.

Annual Non-Fuel Inflation Adjustment per Tariff

Table 2.7

Class	Block/ Rate Option	Customer Charge (J$/kWh)	Energy (J$/kWh)	Demand (J$/KVA)			
				Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	0-100 kWh	10.0%	6.57%				
Rate 10	>100 kWh	10.0%	6.57%				
Rate 20	LV	10.0%	6.57%				
Rate 40A	LV	10.0%	6.57%	6.57%			
Rate 40	LV - Std	10.0%	6.57%	6.57%			
Rate 40	LV - TOU	10.0%	6.57%		6.57%	6.57%	6.57%
Rate 50	MV - Std	10.0%	6.57%	6.57%			
Rate 50	MV - TOU	10.0%	6.57%		6.57%	6.57%	6.57%
Rate 60	STREET-LIGHTS	10.0%	6.57%				
Rate 60	TRAFFIC-LIGHTS	10.0%	6.57%				

It is a requirement that when aggregated, the weighted adjustment proposed by JPS should equate to the annual adjustment factor (6.58%). Confirmation of this is shown below in table 2.8.

Weighted Non-Fuel Inflation Adjustment (dI – X)

Table 2.8

Class	Block/ Rate Option	Customer *Charge* (J$/kWh)	Energy (J$/kWh)	Demand (J$/KVA)				Total
				Std.	Off-Peak	Part Peak	On-Peak	
Rate 10	0-100 kWh	0.01%	0.68%					0.69%
Rate 10	>100 kWh	0.01%	2.24%					2.25%
Rate 20	LV	0.01%	1.69%					1.70%
Rate 40A	LV	0.00%	0.11%	0.04%				0.15%
Rate 40	LV - Std	0.00%	0.35%	0.50%				0.85%
Rate 40	LV - TOU	0.00%	0.11%	0.00%	0.01%	0.05%	0.05%	0.22%
Rate 50	MV - Std	0.00%	0.15%	0.19%	0.00%	0.00%	0.00%	0.34%
Rate 50	MV - TOU	0.00%	0.07%	0.00%	0.00%	0.05%	0.05%	0.17%
Rate 60	LV	0.00%	0.21%					0.21%
Total		0.03%	5.61%	0.73%	0.01%	0.10%	0.10%	**6.58%**

The current non-fuel base rates approved by the Office in the 2005 Decision are shown below.

Approved Non-Fuel Tariffs for 2005

Table 2.9

Class		Block/ Rate Option	Customer Charge J$/ kWh	Energy *J$/kWh*	Demand J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	71	4.751				
Rate 10	LV	>100 kWh	71	8.363				
Rate 20	LV		163	7.341				
Rate 40A	LV		2,259	4.571	297			
Rate 40	LV - Std		2,259	1.859	760			
Rate 40	LV - TOU		2,259	1.859		31	331	424
Rate 50	MV - Std		2,259	1.674	684			
Rate 50	MV - TOU		2,259	1.674		28	298	382
Rate 60	STREET-LIGHTS		592	8.777				
Rate 60	TRAFFIC-LIGHTS		592	5.909				

Table 2.10 shows the inflation adjusted rates after applying the individual tariff increases determined by tariff basket weights. This essentially captures the annual inflationary and efficiency change (dI - X) in the non-fuel electricity prices prior to the application of the Z-Factor. Accordingly, this represents dI - Q - X, where Q = 0 and X= -2.72 as at June 2006 (but this does not take into account the effect of Z. The rates shown in Table 2.4

below is consistent with the price cap tariff compliance constraint and is the maximum allowed under the cap, that is, the weighted average increase of the tariff basket is exactly equal to the price adjustment factor, (1+ dPCI), hence there is no unused portion of the adjustment to be carried forward to the following year.

Inflation Adjusted Non-Fuel Tariffs based on (dI ± X ± Q)

Table 2.10

Class	Block/ Rate Option	Customer Charge J$/ kWh	Energy J$/kWh	Demand J$/KVA			
				Std.	Off-Peak	Part-Peak	On-Peak
Rate 10 LV	0-100 kWh	78	5.063				
Rate 10 LV	>100 kWh	78	8.912				
Rate 20 LV		179	7.823				
Rate 40A LV		2,486	4,874	317			
Rate 40 LV - Std		2,486	1,982	811			
Rate 40 LV - TOU		2,486	1,982		33	353	452
Rate 50 MV - Std		2,486	1,784	729			
Rate 50 MV - TOU		2,486	1,784		30	318	407
Rate 60 STREET-LIGHTS		651	9,359				
Rate 60 TRAFFIC-LIGHTS		651	6,301				

4.0 Sinking Fund

Due to the vulnerability of overhead T&D systems to damages from hurricane force winds, acquiring insurance coverage for T&D assets has over the years become increasingly difficult, not only for Caribbean utilities but also for utilities that operate in the south eastern and eastern United States in the so-called "hurricane belt". The consultants pointed out in their study that they are not aware of any "reputable insurance company or broker that presently offers windstorm cover for transmission and distribution networks within the 'hurricane belt'." In fact, it was this reality that prompted JPS in the 2004 Tariff Submission to request approval for the establishment of a Self-Insurance Scheme. Against this background, the Office was satisfied that JPS had been unable to secure reasonable insurance coverage for its T&D network and it therefore approved the revenue stream in the tariff to establish the insurance sinking fund.

It is important to note that had JPS been able to obtain appropriate insurance coverage for its T&D assets it would be considered an acceptable cost of providing service and would therefore be included in tariff calculations. The company, therefore, normally recovers the cost for insurance cover for catastrophic events by the way of premiums before and after the occurrence of such events. These premiums are just a means of smoothing cash flow and the payout may be more or less than the actual damage incurred. The same smoothing out of cash flow can be achieved by either creating a sinking fund or amortizing the cost of the damage over subsequent periods. In the absence of insurance,

the costs incurred as a consequence of the event could be funded by the Self Insurance scheme (Sinking Fund), the Z-Factor (amortization of the cost) or a combination of both.

4.1 Providing for an adequate Sinking Fund

Data encompassing some 989 tropical cyclones (TC) which developed in the Caribbean since 1900 reveals the following:

1. Jamaica has suffered severely (came within 200 km) from 74 of the 989 of which 22 were direct hits.

2. Over the 100-year period 1900 to 1999 the region has experienced on average 10 TC per year.

3. For the 2000 - 2005 there has been an average of 20 TC per year.

4. The maximum No. of TC in one year that has affected the island severely is 5.

5. The maximum No. of TC that has occurred during five consecutive years is 8.

Using JPS cost information on the effect of hurricanes during 2004 and 2005 along with other assumptions the following can be concluded:

1. There is a 7.5% chance that Jamaica will be severely affected by a TC that has developed in the region.

2. On average Jamaica should be severely affected by approximately 3 TC every two years.

3. Approximately 30% of the TC that have severe effect (comes within 200km) of the island will be direct hits.

4. Restoration costs in the long term could average between S$2.8 Million to US$9.6 Million per year for the reasonable range of probabilities.

5. The upper limit for the size of the Fund should be US$15 Million if 8 TC in five years is assumed (which historically is reasonable). If however, 10 is assumed based on recent developments, then US$20 Million would be more appropriate.

The Sinking Fund established in 2004 currently has an accumulated value of approximately US$3.5 million as at March 31, 2006. The fund will be impaired by J$60 million or US$ 0.92 million as a result of this determination. Additionally, the Office is of the view that the annual funding of US$2 Million is conservative and does not allow the fund to build up fast enough to meet moderate to large claims in the event of major hurricane damages. Furthermore, the frequency of claim as a result of more frequent hurricane that impact on the Island system necessitate an adjustment to the fund to meet

expected claims. The Office is of the view that a maximum fund level of US$20 Million to be achieved over five years is reasonable. In order to meet expected claims from the Self Insurance Fund on an ongoing basis an annual accrual rate of US$5 Million should be targeted. In order to achieve this target an adjustment mechanism and the methodology to collect this premium from rate payers will be the basis for another determination. In this Determination the Office will use the opportunity to bring the annual accrual above the minimum level that it has determined by increasing the rate of accrual by US$1 Million to US$3 Million

The Table below shows the effect of a US$1 Million annual increase to the Self Insurance Fund.

Expected Sales 2006-07 (MWh)	3,245,000
Exchange Rate J$:US$	65

Annual Increase to Self Insurance Fund **(J$ Mil)**	65
Annual Increase to Self Insurance Fund **(US$ Mil)**	1.00
Increase in Rates **(J cents/kWh)**	2.00
Increase in Rates **(US cents/kWh)**	0.03
Monthly increase in Average Residential (200 kWh) Bill (J$)	4.01
% Increase in Average Residential (200 kWh) Bill	**0.124%**

Current Residential Customer using 200 kWh Monthly Bill (J$)	3,353.14

The rate is to be charged on a per kWh basis and incorporated in the non-fuel rates and included in the bill under the energy charge.

5.0 The Office Determination

The following is an overall summary of the Office's Determination to the JPS rate adjustments proposals:

1. The 2006 annual non-fuel tariff adjustment incorporates changes in relation to inflation, foreign exchange movement and adjustments for the X, Q and Z factors. This represents the second annual tariff adjustment under the new regulatory framework which became effective June 1, 2004. This year has been marked by: relatively high inflation, with U.S. and Jamaica inflation rates of 3.6% and 12.4% respectively; and sustained high oil prices on the world markets. However, this year also represents the first year in which a 2.72% productivity gain, determined by the Office in the June 1, 2004 Determination, will be passed on to customers. This productivity gain will act as a constant 2.72% offset against the inflation adjustment to tariffs for the remaining tariff period (2006 - 2009). Accordingly, the result is, that, while there is a 9.30% weighted average increase in inflation and foreign exchange rate under the annual tariff adjustment mechanism, this will

be offset by the 2.72% productivity factor, and 3.68% for the cumulative monthly adjustment due to foreign exchange movements and 1.21% being the difference in the approved and 'trued-up' base for 2005 resulting in an effective increase of 1.69% in the non-fuel tariffs in June 2006. The J$0.02/kWh increase in the Sinking Fund accrual will add another 0.3% to the non-fuel rates. Given current fuel prices, which account for approximately 55% of customers' total bills, the total bill impact from this increase is expected to be approximately 0.9%.

Inflation Adjusted Base Non-Fuel Tariffs (dI ± X ± Q)
plus Additional Sinking Fund Reserve Charge

Class		Block/ Rate Option	Customer Charge J$/ kWh	Energy J$/kWh	Demand J$/KVA			
					Std.	Off-Peak	Part-Peak	On-Peak
Rate 10	LV	0-100 kWh	78	5.083				
Rate 10	LV	>100 kWh	78	8.932				
Rate 20	LV		179	7.843				
Rate 40A	LV		2,486	4.894	317			
Rate 40	LV - Std		2,486	2.002	811			
Rate 40	LV - TOU		2,486	2.002		33	353	452
Rate 50	MV - Std		2,486	1.804	729			
Rate 50	MV - TOU		2,486	1.804		30	318	407
Rate 60	STREET-LIGHTS		651	9.379				
Rate 60	TRAFFIC-LIGHTS		651	6.321				

2. Until the next review the verified set of SAIFI, SAIDI and CAIDI indices for 2005 will be used as the benchmark quality level.

The Office targets for the Q-Factor 2006 – 2009

Year	Target SAIDI	Target SAIFI	Target CAIDI
2006	$SAIDI_{2005}$	$SAIFI_{2005}$	$CAIDI_{2004/5}$
2007	$SAIDI_{2005}*(1 - 0.02)$	$SAIFI_{2005}*(1 - 0.02)$	$CAIDI_{2005}*(1 - 0.02)$
2008	$SAIDI_{2005}*(1 - 0.05)$	$SAIFI_{2005}*(1 - 0.05)$	$CAIDI_{2005}*(1 - 0.05)$
2009	$SAIDI_{2005}*(1 - 0.08)$	$SAIFI_{2005}*(1 - 0.08)$	$CAIDI_{2005}*(1 - 0.08)$

3. The Office has determined that the data presented for the calculation of the Q-Factor is neither sufficient nor representative enough to ensure the optimum baseline for a robust Q-Factor. However, the Office is of the view that in order to minimize the risk of a lower than optimum baseline for the measurement of subsequent Q-Factor the dead band performance[11] target should be sufficiently

[11] Actual performance within a certain variance sufficiently large to ensure that the utility will have to improve quality of service to score quality points exceeding zero.

large to take into account the variability of the current data. In this regard the Office has determined that the trigger point for calculation of reward or penalties is a 10% variance of the various indices. The baseline data presented is to be verified.

4. The Office agrees that the Q-factor should remain at zero for this adjustment period.

5. The Office agrees with JPS that Force Majeure and major events outside of the reasonable control of JPS should be excluded from the reliability indices calculation. However, in order to ensure proper treatment of the Force Majeure and major events, the Office intends to introduce a regime which requires that:

   - JPS divides up the entire distribution system into geographical or operational areas and should report reliability indices for each defined area and for the system.

   - JPS formally requests exclusion of service interruptions for reporting purposes by proving an outage qualifies as a major event.

   - JPS, in the application to the Office for a declaration that the event can be classified as Force Majeure or major event, should indicate the actual timeframe in which the major event began and ended.

   The above requirements are geared to complement the following safeguards by which the company is prohibited from:

   - Combining of separate events as a major events

   - Excluding outage data from all geographical areas when the major event that has occurred is localized to one geographical area

   - Excluding all outages that took place on any day in which a major event took place, regardless of the actual timeframes in which the major event began and ended.

6. The audited figures for 2006 shall be submitted as part of the annual rate adjustment filing at the end of March 2007. The submitted audited data will form the basis of determining the Q-Factor along with the previously established benchmark for 2006.

7. Additionally, the benchmark data for subsequent regime will be a moving average based on the previous three years' data.

8. The Office now directs that MAIFI should be computed annually over the period 2006 – 2009 and the index used as the baseline for incorporating MAIFI in the computation of the value of Q in the 2009 rate review. Accordingly, the value of Q will be based upon actual values of SAIDI, SAIFI, MAIFI and CAIDI for each year of the PBRM as compared to a new benchmark quality of service level in 2009.

9. In respect of the Claim made by JPS to recover $192.8 Million under the Z-component of PBRM in relation to (i) hurricane restoration costs, (ii) loss of revenue and (iii) opportunity costs, the Office has determined that the Company may recover the approved costs incurred as a consequence of the effects of hurricanes Dennis, Emily and Wilma through the Self Insurance Fund. The Office will hand down a determination on the amounts to be recovered by June 30, 2006.

10. With regard to the hurricane sinking fund, the Office has decided to increase the annual accrual from US2 Million to US$3 Million and, in order to support this rate of accrual to the Self Insurance Scheme, a charge of J$0.02/kWh is to be applied to and incorporated in the non-fuel rates and included in the energy charge.

11. The Office will review the appropriateness of moving the annual accrual to the fund to a level of US$5 Million and a target level of the fund of $20 Million.

Glossary

ABNF	-	Adjusted Non-fuel base rate
CAIDI	-	Customer Average Interruption Duration Index
CIS	-	Customer Information System
CPI	-	Consumer Price Index
CRP	-	Country Risk Premium
CT	-	Current Transformer
GDP	-	Gross Domestic Product
GOJ	-	Government of Jamaica
IPP	-	Independent Power Purchase
kVA	-	Kilo Volt Amperes
kWh	-	Kilowatt-hours
Licence	-	The All Island Electric Licence 2001
MVA	-	Mega Volt Amperes
MW	-	Megawatt
MWh	-	Megawatt-hours
O&M	-	Operating and Maintenance
PBRM	-	Performance Based Rate-Making Mechanism
SAIDI	-	System Average Interruption Duration Index
SAIFI	-	System Average Interruption Frequency Index
T&D	-	Transmission & Distribution
TFP	-	Total Factor Productivity
TOU	-	Time of Use
WACC	-	Weighted Average Cost of Capital

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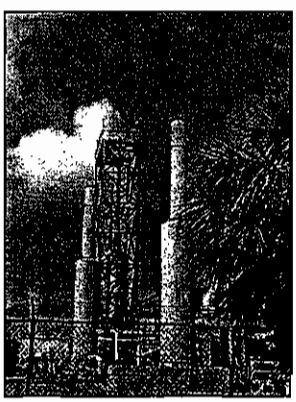
THE IMPACT OF HURRICANE IVAN IN THE CAYMAN ISLANDS

CONTENTS

2. INFRASTRUCTURE

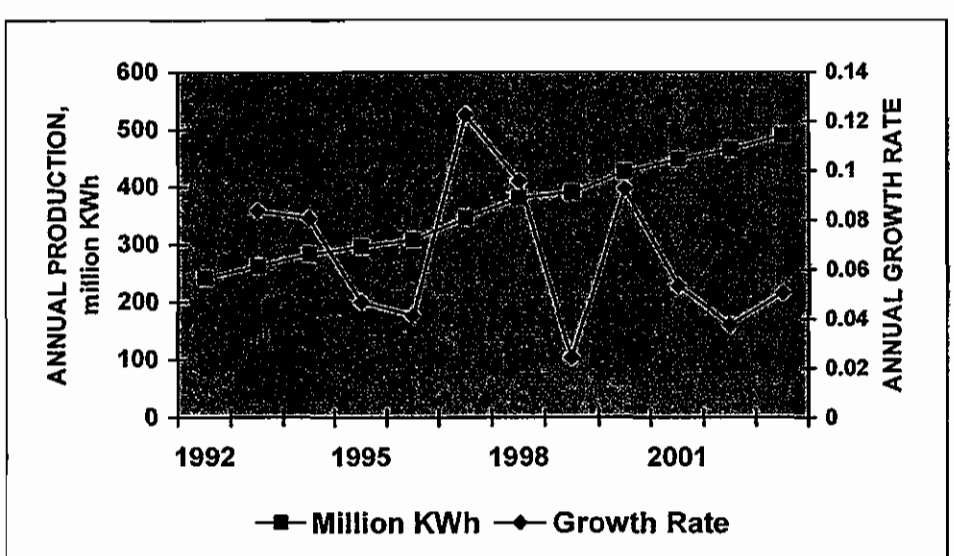
a) Electrical Sector

Background Information



The Caribbean Utilities Company (CUC) provides electrical power in the Cayman Islands. This enterprise has a system that includes 18 power units of varying capacities in its North Sound Road plant, five major electrical substations, and about 300 miles of aerial high-voltage transmission and distribution lines and grids, as well as 14 miles of high-voltage submarine cable [1]. The utility company has been steadily increasing its installed capacity over the years, which presently stands at 123 megawatts, in order to meet the growing electrical demand of the island. Total electricity consumption has been growing at average annual rates of around 6%, to a value of 490 million KWh in 2003, as shown in Figure 7.

Figure 7
Electricity production in the Cayman Islands 1992 to 2003



Source: ECLAC, based on official statistics[2]

[1] See *Cayman Islands 2003 Annual Report and Official Handbook*, George Town, Cayman Islands, June 2004.

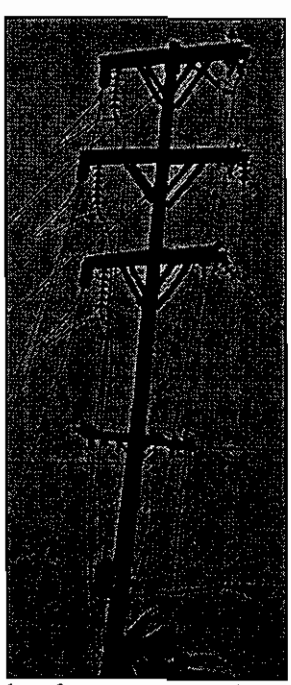
[2] *2003 Cayman Islands Compendium of Statistics*, page 122, Statistics Office, George Town, Cayman Islands, June 2004.

The Impact of the Hurricane

i) Damage Sustained by the System

Contrary to what was done in other places, electricity was not shut down in Grand Cayman before arrival of the hurricane. Total system failure came at around 01:40 hours on 12 September. Slight damage was sustained by the North Sound Road power plant, and more extensive damage occurred in transmission lines and several substations as well as in distribution grids. Furthermore, it was found that the submarine cable in the North Sound was damaged 1,500 feet offshore.

ii) Restoration program



In order to respond to user demands to restore electrical service, CUC secured the assistance of Fortis, Inc., its main stockholder, and of a line construction contractor from North Carolina (Mastec). Furthermore, thanks to the existing subregional Hurricane Action Plan of CARILEC[3], teams from Barbados, Belize, Bermuda and Turk and Caicos electrical enterprises cooperated in the restoration plan of action. This enabled a faster pace in restoring power supply. Efforts were made in order to attend first the needs of priority areas such as hospitals, schools and other key government buildings.

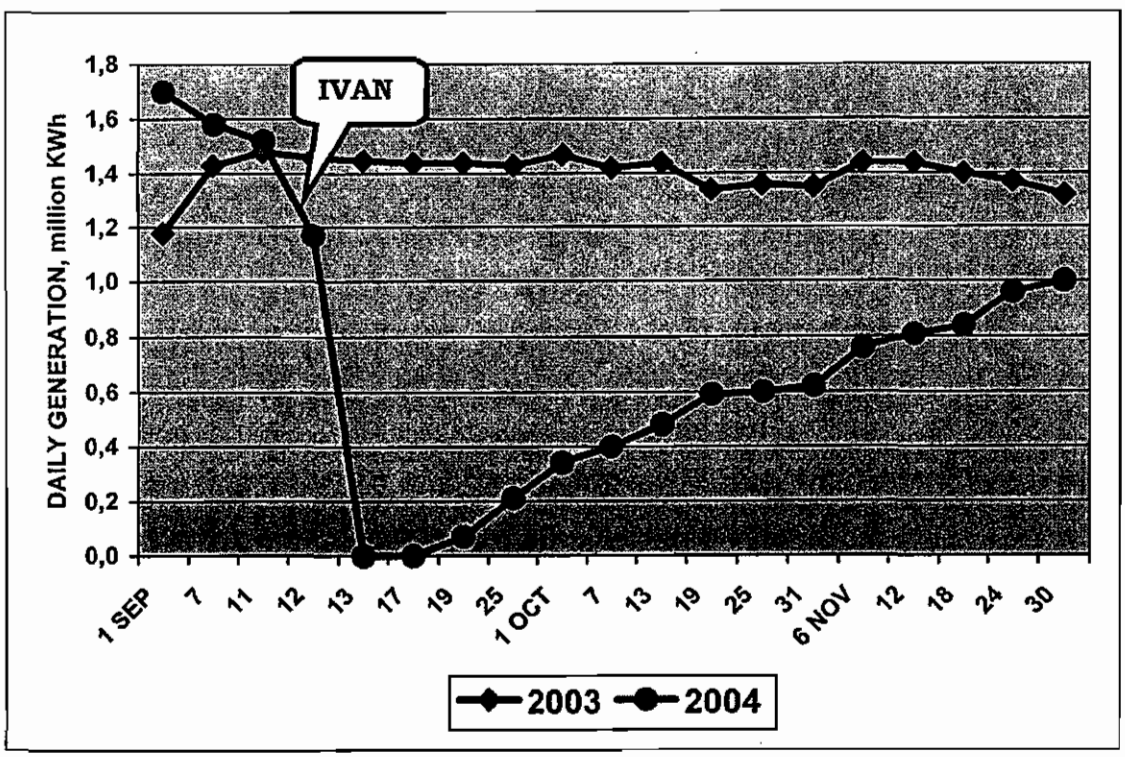
CUC resorted to using its stock of equipment and construction materials to effect repairs. However, this was insufficient and CUC was forced to charter vessels for the urgent transportation of 70-foot poles, transformers and other electrical hardware.

CUC undertook repairs to its power units and lines. By end-November, full recovery of the system had been achieved, even though electrical demand was still well below pre-disaster levels, as reported by CUC. The following graph shows the recovery of power generation by CUC, in comparison with 2003[4].

[3] Caribbean Electric Utility Services Corporation.

[4] Press Release, *CUC Restoration Update-November 30*, Canada NewsWire.

Figure 8
Power generation after the hurricane



iii) Estimates of Impact

Preliminary estimates made by CUC show that insured damage to power plant units, transmission and distribution subsystems, buildings, materials inventories and other items reach an amount of CI$ 33.9 million. Further estimates by CUC indicate that its insured business interruption losses in the following 24 months due to the lower billings over the recovery period will be CI$ 35 million.[5] The latter is due to the abrupt fall in sales following the hurricane, and to the slow recovery of demand in many customers whose premises were damaged or destroyed during the disaster.

CUC has ample insurance to cover its damage and losses. Its insurance policy abroad includes US$ 100 million coverage to its North Sound Road power plant, remote substations and all transmission and distribution equipment located within 1,000 feet of its

[5] Press Release, *CUC Restoration Update-November 30*, Op. Cit.

main plant and substations[6], plus US$ 55 million in business interruption per year within a 24-month indemnity period. The policy has a maximum of US$ 4 million in deductible on asset insurance and a 45-day deductible on business interruption insurance, as well as US$ 15 million in machinery breakdown insurance.

CUC is therefore adequately covered to face most of the damage and losses sustained after Ivan. It also has available a special hurricane fund of US$ 4 million to cover deductibles and uninsured risks, a US$ 7.5 million line of credit for reconstruction, and a US$ 10 million bridging loan facility.

Taking into consideration the uninsured transmission and distribution components, the total impact of the hurricane on the electrical sector of the Cayman Islands has been estimated as CI$ 68.9 million, of which 41% (CI$ 33.9 million) are damage to assets and the remaining 59% (CI$ 35 million) are business losses (see table 10). The damage and losses sustained by the sector will result in the need to import equipment and materials for an estimated amount of CI$ 22.6 million, which will be offset by estimated reinsurance proceeds from abroad of CI$ 48.5 million.

Table 10
Estimated Impact of Disaster on Electrical Sector
(Million Cayman Island Dollars)

	Total Impact			Sector		Imports, exports
	Total	Damage	Losses	Public	Private	
Total Impact	68.9	33.9	35.0	--	68.9	
Assets	33.9	33.9	--			22.6
Losses	35.0	--	35.0			
- Lower revenues	35.0		35.0			
- Increased operational costs	...		...[7]			

Source: ECLAC, on the basis of information provided by CUC.

It is to be noted that the interruption of electricity over the five days following the passage of the hurricane caused losses in the productive sectors that utilize it as an input. These losses will be estimated and accounted for under each user-sector in other sections of this report. As of November 30 CUC had restored service to the entire island. However, an estimated 20% of customers have not been reconnected due to the ongoing repair and rebuilding of their premises.

One last comment is due to stress out the fact that the above estimated damage and losses do not compromise the Utility's financial survival, since they represent – respectively – 11 % of the value of its property, plant and equipment assets and 19% of the annual operating revenues, as stated in the most recent CUC report[8].

[6] Transmission and distribution insurance beyond 1,000 feet from the boundaries of the main plant and substations is not presently included since CUC was not able to obtain such coverage at reasonable economical rates.

[7] No estimates on this item are available as yet.

[8] See *2004 Annual Report*, Caribbean Utilities Company, Limited, George Town, Grand Cayman, 2004.

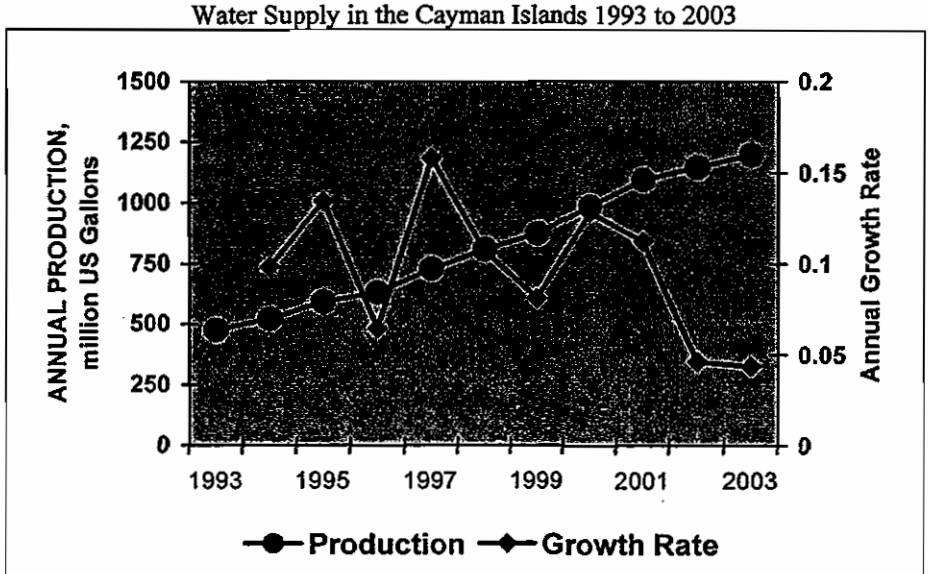
b) Water Supply and Wastewater Disposal

Background Information

There exists a very limited groundwater supply for drinking purposes in the Cayman Islands, mainly tapped at the East End well field. Six reverse osmosis seawater desalination plants, with a combined capacity of 19,800 cubic meters per day (5.3 million US Gallons per day), are in operation to fulfill drinking water demands; they require electrical power for their functioning. These six plants are operated by Consolidated Water Company, Limited (CWCO), which sells water directly to consumer sectors and to the Government's Water Authority-Cayman (WAC). The total water production capacity is divided between the CWCO and WAC water distribution systems, at 45% and 55% respectively.

Potable water demand has steadily grown in the past decade, at average annual rates of near nine per cent, although such growth has decreased in the most recent years (see Figure 9). Total annual consumption of water in Grand Cayman reached 1,200 million US Gallons in 2003, with residential and industrial-commercial consumption taking the main share (see graph 2-4).

Figure 9
Water Supply in the Cayman Islands 1993 to 2003



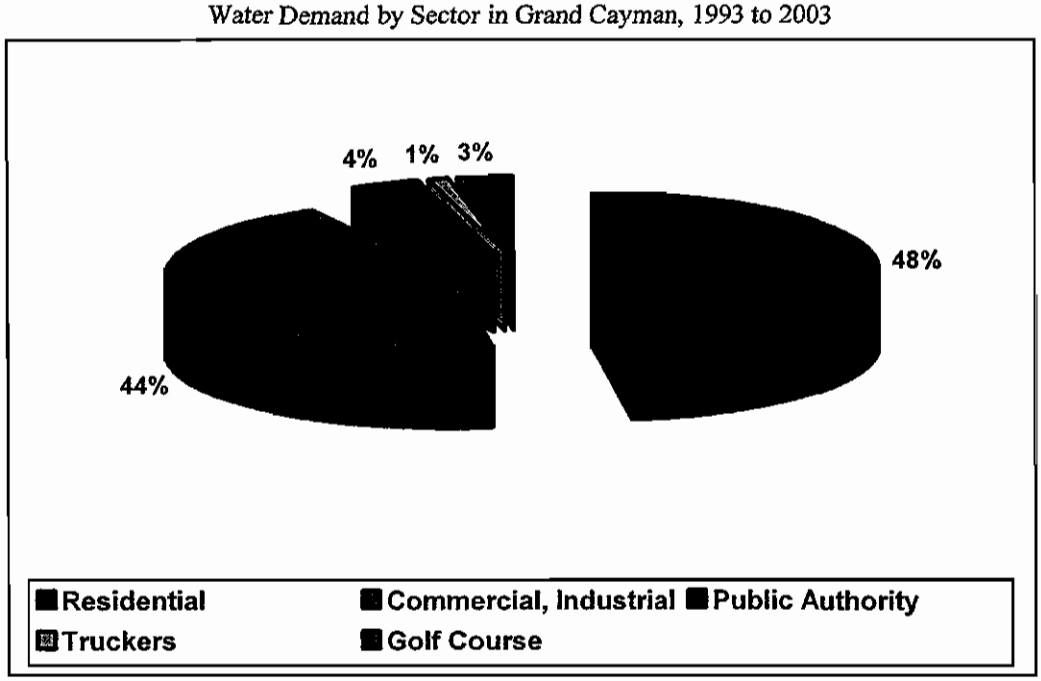
Source: ECLAC, based on official statistics[9]

[9] *2003 Cayman Islands Compendium of Statistics*, page 124, Statistics Office, George Town, Cayman Islands, June 2004.

The Water Authority operates a wastewater collection and treatment system for part of Grand Cayman in the West Bay Beach area. The collection system operates by a combination of gravity and pumping operations and discharges effluent wastewater to stabilization ponds. Treated wastewater is then pumped into the subsoil by means of 150 feet deep disposal wells.

The total volume of wastewater treated in the system increased from 310.6 million US Gallons in 1993 to 534.5 million US Gallons in 2003, an annual average rate of around 7.2%; the number of connections rose from 243 in 1993 to 290 in 2003[10]. In order to improve treatment and potentially increase the coverage of wastewater collection and treatment, a 2.5 million US Gallons capacity Sequencing Batch Reactor system has been under construction since September 2002, and was due to enter into operation precisely at the time when the disaster occurred. The construction of the new wastewater treatment works was carried out by a joint venture of Hadsphaltic International Limited and Wharton-Smith Inc., with financing provided by FirstCaribbean International Bank.[11]

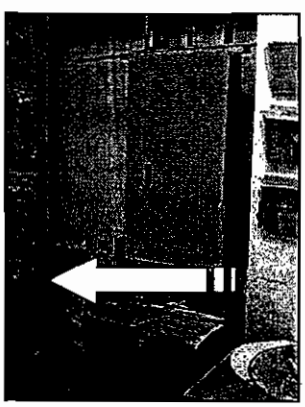
Figure 10
Water Demand by Sector in Grand Cayman, 1993 to 2003



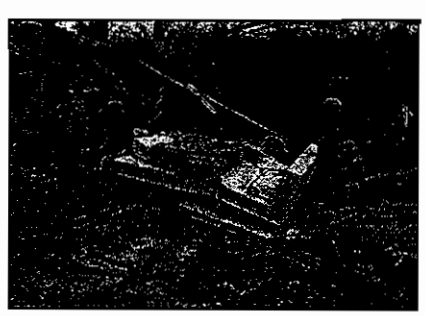
[10] See previous footnote.
[11] See *Cayman Islands 2003 Annual Report and Official Handbook*, Op. Cit., page 187.

The Impact of the Hurricane

i) Damage Sustained by the System



Seawater from the storm surge and strong winds damaged the buildings and equipment of the water production plants, and the lack of electricity brought down their operation. The CWCO headquarters building sustained heavy damage and was evacuated, while relatively minor damage occurred at the Water Authority headquarters. The action of seawater so heavily affected the Britannia water plant (1,600 cubic meters per day capacity) that it was put out of operation permanently, thus reducing the island's total capacity by about 8%. Neither CWCO's nor WAC's water storage tanks were severely damaged. Some 2,000 meters of WAC's main water lines that ran alongside coastal roads became exposed due to the storm surge and although not all of these pipes broke, they must be re-laid in order to ensure structural integrity.



The wastewater collection network became flooded by seawater and the electrical components of 90% of the pumps were damaged. Wastewater could not be disposed nor treated for a few days but no wastewater was discharged onto the roads or properties The WAC utilized portable pumps and sewage vacuum trucks to move wastewater to the waste stabilization ponds for treatment prior to the restoration of power. The new wastewater treatment plant, which was scheduled for inauguration on 8 October, sustained significant damage, primarily to its electrical control system.

ii) Service Restoration Program

CWCO began repairing the damage to the water production plants immediately after the disaster. No power was available from 12 to 17 September; when power returned, the water production plants were placed into operation as per the schedule described below. In some cases, use was made of portable generators to advance the operation of the plants.

While the water production plants were being repaired and placed into operation, CWCO and WAC systematically inspected their water distribution systems and repairs were made in the exposed and damaged interrupted water pipe lines.

Table 11
Schedule of Recovery of Water Plants following the Disaster

Water Plant	Capacity, Cubic meters per day	Recovery, in %	
		October 5	October 19
North Sound	3,000	100	100
Red Gate	5,000	100	100
Lower Valley	3,000	100	100
West Bay	2,700	65	100
Governor's Harbour	4,500	0	100

Source: Reports by CWCO

The above recovery efforts of the water service enabled 67% of the water users to be connected by 29 September, and 90% by 1 October.[12] Water demand has decreased due to the destruction of many households and to the decrease in the arrival of tourists to hotels, and it is expected to remain below normal at least throughout the next tourist season. This will alleviate the situation posed by the permanent loss of the Britannia water plant.

In regard to the wastewater collection and disposal system, pumps were and will be operated manually until new electrical starter motors and control systems can be installed. Repairs to the new sewage treatment plant are still underway at the writing of this report and it is expected to begin operations in early December; i.e. two months behind schedule.

iii) Estimates of Impact

In its third quarter report on operating results, CWCO provided estimates on damage and losses sustained as a result of the disaster. The report indicated that damage to its plant and equipment was CI$ 1.3 million; spare parts inventories, CI$ 93,200; and increased costs to rebuild operations, CI$ 111,130. Net losses of revenue of CI$ 322,893 due to the reduced sales of water to its customers in September were recorded.[13] CWCO also indicated that water sales are expected to recover during the balance of the year, and that it expected its fourth quarter results to still show additional hurricane-related costs and below-normal sales.

[12] See *Press Releases*, Water Authority-Cayman, 29 September and 1 October 2004.
[13] Press Release, *Consolidated Water Company, Limited, Reports Third Quarter Operating Results*, PR Newswire, 23 November 2004.

The above estimated damage and losses do not compromise CWCO's financial performance, since they represent – respectively – 5.1% of the value of its property, plant and equipment assets and 8% of annual operating revenues.

The WAC has estimated damage to its buildings, plants and equipment – including its new wastewater treatment plant – at CI$ 3.6 million.

Including estimates of future revenue losses and increased operational costs beyond 1 October, the total impact of the hurricane on the water supply and wastewater disposal system sector of the Cayman Islands has been estimated as CI$ 5.6 million, of which 86% (CI$ 4.8 million) are damage to assets and the remaining 14% (CI$ 808,600) are business losses (See table 12 below). It is estimated that CI$ 3.6 million will be used to import equipment and construction materials for the reconstruction, and that insurance proceeds from abroad will be around CI$ 4.4 million.

Table 12
Estimated Impact of Disaster on the Water Supply and Wastewater Disposal Sector
(Thousand Cayman Island Dollars)

	Total Impact			Sector		Imports, exports
	Total	Damage	Losses	Public	Private	
Total Impact	5,620.4	4,811.8	808.6	3,628.0	1,992.4	3,649
Assets	4,811.8	4,811.8		3,600.0	1,211.8	3,649
- CWCO	1,211.8	1,211.8				
- WAC	3,600.0	3,600.0				
Losses	808.6		808.6	28.0	780.6	
- Through 30 September	434.0		434.0			
- From 1 October onwards[14]	374.6		374.6			

Source: ECLAC, on the basis of information provided by CWCO and WAC.

[14] Projections made by ECLAC that cover through the end of the first quarter of 2005.

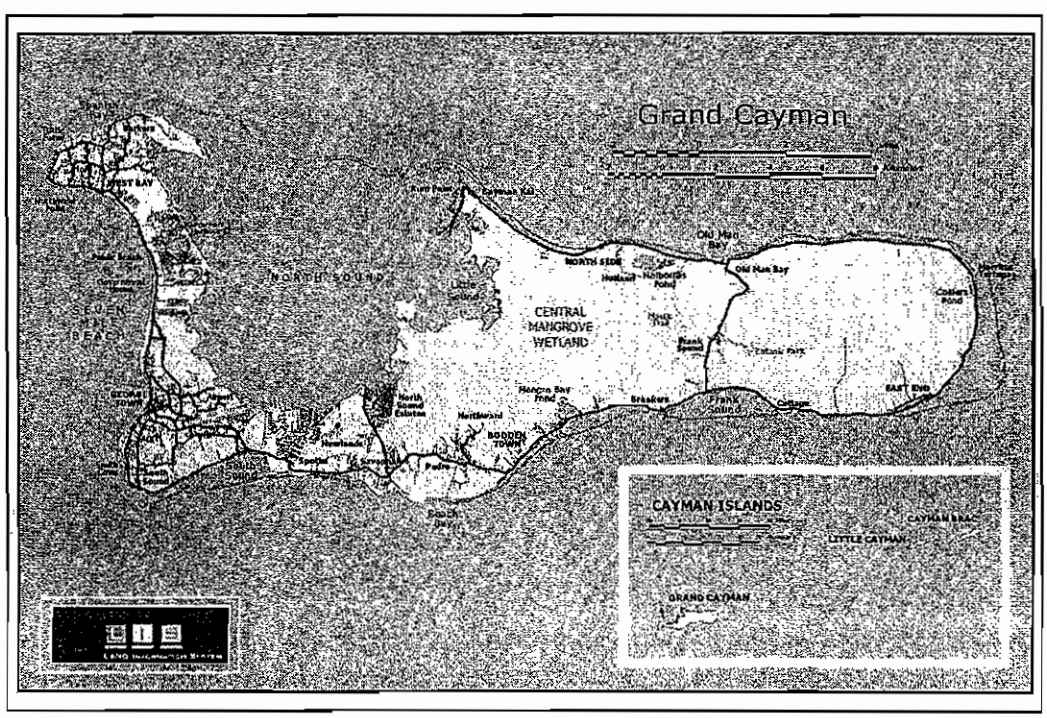
c) Road Transport

Background Information

The highway system of Grand Cayman includes approximately 225 kilometers (140 miles) of roadways (See map below), of which approximately 145 kilometers (90 miles) are of primary and secondary roads with hot-mixed asphalt surface. The remaining 80 kilometers refer to collector, local and other minor streets with oilspray-and-chip surface. In 2001 it was estimated that the asset value of the road network was approximately CI$ 330 million, or CI$ 180 million if land costs were excluded.

Projections of the number of vehicles for 2004[15], just before the hurricane struck, yield a total number of 34,520.

Motorcars, private	27,400
Trucks	5,320
Buses	530
Motor cycles	330
Trailers	435
Special vehicles	508



[15] Made on the basis of the series of *Vehicles Inspected and Passed by Type*, in *2003 Cayman Islands Compendium of Statistics*, page 112, Statistics Office, Grand Cayman, 2004.

Damage to the Road Network

The seawater, sand and debris brought by the storm surge and the strong winds of the hurricane caused extensive damage to the road network and drainage, to traffic signal and signs and to vehicles.

i) Roads

A survey conducted by the National Roads Authority (NRA) determined that 39 sections of the road network sustained from minor to major damage. The greatest damage was in the sections located in East End, Breakers, Bodden Town, Spotts, and South Sound. The 5 to 6 meter high storm surge caused seawater to enter inland more than 100 meters in some cases, and washed away entire sections of roads located along the coast. Many thousand cubic meters of sand, collected by the storm surge at the sea bottom and beaches, were deposited on roadways and drainage ditches. New channels and gullies were cut by the action of the surge in the ironshore.

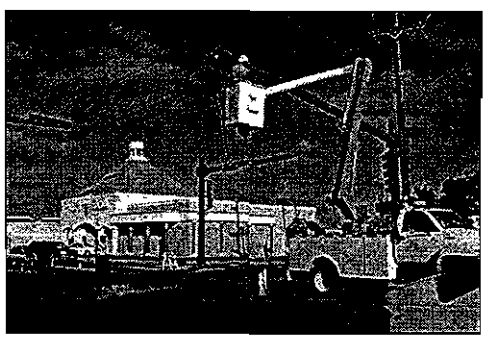
Roads were cut in some sections, and/or reduced in width in others. The asphalt carpeting was removed or damaged severely in still other sections. Drainage structures sustained erosion or silting.

There occurred some cases where fallen trees, even entire houses and many partially or totally destroyed vehicles were deposited on the roads, and many sections were literally buried in deep deposits of sand. Coastal protection for some road sections were destroyed which results in increased vulnerability against new natural phenomena. Traffic was paralyzed in those sectors for several days, until roads were cleared using heavy machinery. And then, longer times than normal were required until traffic was fully restored. The authorities are considering shifting the location of selected road sections to ensure their safety during the hurricane season.

ii) Land Drainage

Surveys conducted by NRA personnel have found that nearly 500 vertical drain well systems were affected in various ways. Sand clogged these wells in the East End, Bodden Town, South Sound and West Bay road areas. Leaves and other debris have reduced the effectiveness of the wells in George Town and in sections of West Bay. Estimates indicate that at least 100 of these wells would have to be redrilled, while the rest are to be cleaned or cleared through mechanical or manual means. Flooding due to rain is likely to result in the absence of such cleaning and reconstruction of the well system.

iii) Traffic Signs and Signals



The action of the strong winds damaged or destroyed the eight signalized intersections in the island, and it was determined that water had infiltrated the electronic and electric components of the computer control component of seven of them. Traffic slowdown has been inevitable as a result.

In addition, many of the traffic signs in the entire road network were blown away or bent by the wind, which results in difficulties when searching for unknown addresses. Furthermore, the shop used to make the signs was damaged and the machinery and stock of materials was seriously affected.

iv) Vehicles

Due to the lack of high places in which to safeguard vehicles during the passage of the hurricane, a heavy toll was sustained due the action of the seawater, sand and fallen trees. Nearly 1 out of five private motor vehicles was rendered useless, since the action of the seawater and sand affected their electrical and electronic components and the upholstery. Heavy transport vehicles were in short supply after the hurricane as well, both in the government and in the private sector.

Not only the average citizen was affected by this, but taxi drivers did not have sufficient vehicles to meet the demand when cruise ships began arriving on 1st November. Car rental companies were pressed to meet the increased demands. Urgent imports of several thousand vehicles were arranged for after the disaster, but the loading docks in Florida were also overburdened due to the action of the hurricanes in their shores.

v) Other Items

The NRA sustained damage to its laboratory and materials testing equipment, as well as to several of its buildings.

Transport Losses

Indirect losses were incurred in the transport sector due to the above-described damage to its assets. On the one hand, increased transport costs were sustained by the users of the road

system due to the temporary suspension of all traffic in the affected sections of roads that required reconstruction and clearing, and due to the need to circulate at lower-than-normal speeds in same over an extended time period in road sections of inferior quality than before. In addition, increased maintenance costs are being incurred by all vehicles because of this situation. Furthermore, many persons that lost their cars are resorting to temporarily renting other vehicles while they are able to acquire new units, and/or to share vehicles with friends or relatives.

The information required to undertake an estimation of these increased transport costs was not fully available at the time of the assessment, but it is certain that may be as high as one-third the value of the damage to assets in the sector.

Summary

The assessment reveals that the total impact sustained by the road transport sector amounts to CI$ 194.9 million, of which 75% are damage or destruction of assets (CI$ 146.2 million) and the remaining 25% refer to increased operational transport costs (CI$ 48.7 million), as described in table 13. Furthermore, that imports of vehicles, machinery and materials for an amount of CI$ 143 million will have to be made in order to restore the assets. Additional estimates indicate that about CI$ 100 million in reinsurance proceeds may be received once the claims are processed and reimbursed.

Table 13
Estimated Impact of Disaster on the Road Transport Sector
(Thousand Cayman Island Dollars)

	Total Impact			Sector		Imports, exports
	Total	Damage	Losses	Public	Private	
Total Impact	***194,865.0***	***146,165.0***	***48,700.0***	***24,565.0***	***170,300.0***	***143,100.0***
Assets	146,165.0	146,165.0		14,965.0	130,300.0	
Road network	10,000.0	10,000.0				
Land drainage well system	190.0	190.0				
Traffic signals and signs	1,600.0	1,600.0				
Buildings and laboratories	75.0	75.0				
Vehicles[16]	134,300.0	134,300.0				
Losses	48,700.0		48,700.0	8,700.0	40,000.0	
Increased transport costs[17]	48,700.0		48,700.0			

Source: ECLAC, on the basis of information provided by NRA and other sources.

[16] The number of units and their estimated value is as follows: private cars (5,480 at CI$ 18,000 each), trucks and buses (175 at CI$ 55,000 each), other transport units (315 at CI$ 125,000 ea.), and government vehicles at CI$ 3.1 million.

[17] Estimated preliminarily as equivalent to 75% of the assets' value.

d) Ports and Airports

1. Grand Cayman's Owen Roberts International Airport

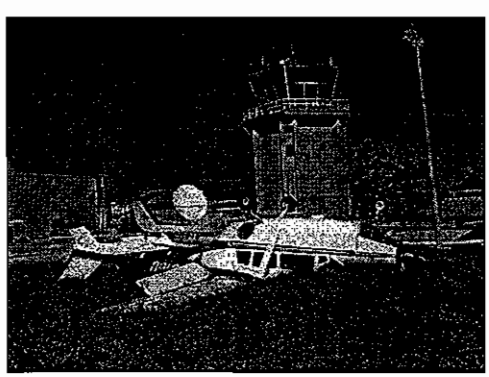
Background Information

The Cayman Islands Airport Authority (CIAA) operates Owen Roberts International Airport in Grand Cayman[18]. This airport links the Cayman Islands with the outside through more than 108 flights per week, of which 70% are to and from Miami. Connections are available to the Sister Islands. During 2003 there were over 25,000 flights into and out of the airport.

Impact of the Disaster

The terminal building sustained significant damage; it lost most of its roof due to the action of the wind and electrical equipment and connections were damaged by water. Air traffic equipment was also damaged and must be replaced. The CIAA office building, the General Aviation, the air cargo office and the Meteorological Office facilities suffered extensive roof and water damage. Seawater up to 60 centimeters in height was brought by the storm surge, and caused the total loss of communications and computing equipment, and of upper-air observation receivers. In addition, the lighting system and electronic equipment for navigational assistance and the emergency generator sustained considerable damage and destruction. The perimeter fence was severely damaged. The runway itself sustained no significant damage. No damage to airport facilities in the Sister Islands was reported

The international airport was closed to operations for two days. On 14 September, daytime operations were reinitiated, and were promptly expanded in order to accommodate incoming relief flights. The government imposed temporary travel restrictions into and out of Grand Cayman. Airlines were requested not to transport any non residents into the Islands, excepting those that were to cooperate in the reconstruction. These restrictions were lifted on 20 November and tourists began to arrive.



Damage sustained by airport building and infrastructure has been estimated at CI$ 1.1 million. The cost of replacing radio and lighting systems reaches CI$ 950,000 while the perimeter fencing repair and replacement and damage to other buildings was valued at CI$ 4.2 million more. Three small private planes that were destroyed by the action of the winds are valued at CI$ 1,950,000.

[18] See *2003 Annual Report and Official Handbook Cayman Islands*, pages 181 and 182, George Town, Cayman Islands, 2004.

The reduction of passenger traffic since the hurricane occurred and at least through mid-2005– when it is expected to reach normal levels provided the tourism infrastructure is back to normal – will cause losses of revenue due to uncollected airport taxes and security fees. These losses have been estimated as CI$ 4.5 million.

Therefore, the total impact of the disaster on the international airport facilities and operations has been estimated at CI$ 12.7 million, of which 65% are direct damages to infrastructure and equipment and the remaining 35% are revenue losses (See table 2-5 below). Some CI$ 9.5 million will have to be assigned to import equipment and materials from abroad, and about CI$ 5.8 million are expected as reinsurance from abroad.

2. George Town Port

Background Information

The Port Authority operates the port facilities at George Town. In 2003, a total of 1,152 port calls were made by 288 cargo ships, 852 cruise ships, 35 tankers and 4 government vessels, and 1.6 million cruise ship visitor landed in the island. A finger pier that was damaged by a storm in 1998 and by hurricane Michelle in 2001 was under restoration.

Impact of the disaster

The winds and storm surge imposed damage to infrastructure and equipment in the port. Vehicles were affected by salt water and by flying debris. The cruise terminals sustained some damage, but the cargo pier was unaffected. The warehouse and its components suffered from the action of the winds, losing part of the roofing. Other buildings, including the mechanic shop and outdoor sheds, the taxi dispatch facility and the Spotts landing, were similarly affected.

The demand on port facilities was temporarily reduced due to the suspension of cruise ships arrival, until their resumption on 1st November, and port operation revenues were reduced accordingly. On the other hand, the Port Authorities have had to cope with the increased cargo traffic to bring in relief assistance and reconstruction equipment and materials.

The total impact of the disaster on port facilities has been estimated as CI$ 3.0 million, evenly divided into direct damage on infrastructure assets and losses of income, as indicated in table 2-5 below. This will also have an impact on the balance of payment due to increased imports of relief and reconstruction goods and to lower revenues from abroad,

to the tune of CI$ 2.6 million. Assets and revenues were partially insured, so that a flow of about CI$ 2.8 million.

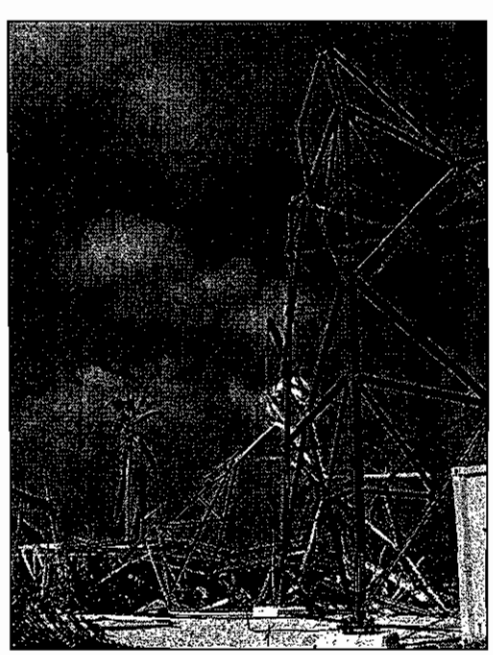
Table 14
Estimated Impact of Disaster on Port and Airport Sector
(Thousand Cayman Island Dollars)

	Total Impact			Sector		Imports, exports
	Total	Damage	Losses	Public	Private	
Total Impact	**15,738**	**9,700**	**6,038**	**13,788**	**1,950**	**12,101**
International Airport	12,700	8,200	4,500	10,750	1,950	9,485
Terminal building	1,100	1,100				
Radio and lighting equipment	950	950				
Other buildings and fencing	4,200	4,200				
Airplanes	1,950	1,950				
Losses in revenue	4,500		4,500			
Port Authority	3,038	1,500	1,538	3,038	---	2,616
Cargo distribution center	600	600				
Cruise terminal	380	380				
Administration buildings	300	300				
Heavy equipment	220	220				
Losses in revenue	1,538		1,538			

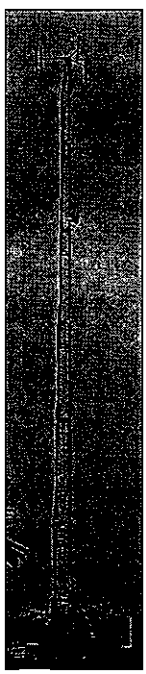
Source: ECLAC, on the basis of information provided by CAA and Port Authority.

e) Telecommunications

A single company – Cable and Wireless, which has a regional coverage mostly in the English-speaking Caribbean – provided telecommunication services to the Cayman Islands in the past. In mid-2003, the Government and Cable and Wireless signed an agreement through which staged competition was introduced in the Islands. Since then several other enterprises – including AT&T, Digicel, TeleCayman and others – have entered the market. The Information & Communications Technology Authority regulates their functioning.



The strong winds of the hurricane combined with the intrusion of seawater from the storm surge caused extensive damage to the telecommunications licensees. In addition, the temporary lack of electricity played was a key element in the restoration of services.



The winds caused the collapse of three major telecommunications towers whose utilization was shared by several of the licensees; many antennas became misaligned. Entry of seawater into base stations damaged the electronic equipment at many cell sites, which required replacement. The landline network was damaged by the winds that brought down poles shared with the electric utility, and by flooding of telephone exchanges and underground optical fibre cable lines. While about 50% of customers presently have service, it is expected that full recovery will not occur until February 2005.

The Maya-1 submarine fiber optic cable that provides international telecommunications traffic sustained damage in the Half-Moon Bay area, and the Cayman-Jamaica Fibre System (CJFS) cable was partially damaged at its shore end. No total traffic interruption occurred, however, since partial capacity was maintained throughout until repairs were completed.

Some of the telecommunications companies flew in portable electrical generators from the United States in order to expedite the resumption of their services; operational costs have risen due to the use of fuel for this purpose. Cable and Wireless brought in some fixed wireless technology equipment to compensate the temporary loss of its landline works. Despite this, many customers have temporarily resorted to the use of mobile telephony instead.

Revenues for the licensees have been lowered on account of the downtime of their services and due to the absence of stay-over visitors. Operational costs have risen due to the use of higher cost energy. Each company has a different timetable for achieving full recovery. Nevertheless, the licensees expect to recover promptly and are even introducing new technologies to improve their services.

A cable television company sustained significant damage due to flooding and is restoring its services on a staged fashion. Radio broadcasting companies were also affected but – with the exception of one radio – are now back in business.

Estimates conducted by ECLAC, on the basis of partial information provided by the enterprises, indicate that the telecommunications sector sustained a total impact of CI$ 79.5 million, of which 60% were damage to assets[19] and 40% are business losses (See table 15). Furthermore, it is estimated that imports of around CI$ 40 million will have to be made in order to replace destroyed or damaged equipment. In addition, insurance proceeds from abroad are expected to the tune of CI$ 69.2 million.

[19] Some of the licensees have lost a sizable fraction of their assets.

Table 15
Estimated Impact of Disaster on the Telecommunications Sector
(Million Cayman Island Dollars)

	Total Impact			Sector		Imports, exports
	Total	Damage	Losses	Public	Private	
Total Impact	**79.5**	**48.1**	**31.4**	**0.3**	**79.2**	**40.3**
Damage and destruction of infrastructure and equipment	48.1	48.1				
Decreased revenues and increased operational costs	31.4		31.4			

Source: ECLAC, on the basis of information provided by private telecommunications enterprises.

f) Public Buildings

Many government and privately owned buildings for public use sustained damage and destruction to its infrastructure and furnishings. The following buildings, not included in the sector-by-sector assessment of the previous sections of this report, are listed in table 16 below.

While most of them have insurance on their infrastructure, many were underinsured for the furnishings and equipment they contain. The total value for their repair has been estimated at CI$ 42.4 million (See table 16).

SUMMARY OF INFRASTRUCTURE

The total amount of the impact on the infrastructure sector has been estimated as CI$ 407 million, of which 70% (CI$ 285 million) are direct damage to assets and the remaining 30% (CI$ 122 million) are losses of revenue and increased operational costs (See table 17). This will also have an impact on the external sector since imports for CI$ 251 million will have to be made for the reconstruction. Insurance proceeds for a total of CI$ 274 million are expected for the entire infrastructure sector.

Table 16
List of Public-Use Buildings Affected

Building	Insured value, Thousand CI$	Estimated Damage, Million CI$
Government-owned facilities	100,001	17.4
Social Service facilities	4,731	
Cadet Corporation	382	
Vehicle and Equipment Services	881	
Marine Enforcement Officer	218	
Fire Services	3,861	
Governor's Residence	1,269	
Immigration	2,010	
Judicial	2,639	
Lands and Surveys	21,734	
Legislative Assembly	3,601	
Licensing	273	
Ministry of Community Services	941	
Ministry of Planning	234	
MCRU	764	
Police	5,303	
Postal Services	5,068	
Prison	12,160	
Public Works	2,461	
Environmental Health	2,940	
Ministry of Tourism	681	
Tourism Attraction Board	7,906	
Turtle Farm	6,465	
Youth and Sports	8,927	
Substance Abuse	1,405	
Others	3,145	
Churches		25.0
Total		42.4

Table 17
Summary of Damage and Losses to Infrastructure
(Million Cayman Island Dollars)

	Impact			Ownership		Effect on Imports
	Total	Damage	Losses	Public	Private	
Total	**407.0**	**285.1**	**122.2**	**60.5**	**346.5**	**251.4**
Electricity	68.9	33.9	35.0	--	68.9	22.6
Water and Wastewater	5.6	4.8	0.8	3.6	2.0	3.6
Road Transport	194.9	146.2	48.7	24.6	171.2	143.1
Ports and Airports	15.7	9.7	6.0	13.7	2.0	12.1
Telecommunications	79.5	48.1	31.7	1.2	78.3	40.3
Public Buildings	42.4	42.4	--	17.4	25.0	87.5

Source: ECLAC.

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STATEMENT OF CASH FLOW

FOR THE YEAR ENDED DECEMBER 31, 2005

	2005 $'000	2004 $'000
CASH FLOWS FROM OPERATING ACTIVITIES		
Profit/(loss) for the year	1,446,155	(141,906)
Adjustments for:		
Depreciation and amortisation	2,531,646	2,265,125
(Gain)/loss on disposal/adjustment of property, plant & equipment	(52,859)	194,616
Unrealised foreign exchange losses	620,501	313,343
Interest capitalised (note 10)	(48,962)	(68,332)
Other interest expense	1,876,587	1,644,166
Deferred taxation	479,901	15,452
Employee benefits, net	(80,759)	(285,077)
Cash generated before changes in working capital and deposits	6,772,210	3,937,387
Accounts receivable	(2,313,594)	(428,453)
Inventories	(434,328)	(145,620)
Accounts payable	1,158,957	(212,883)
Due to related companies	(27,587)	(81,317)
Customer deposits and advances	(70,151)	64,677
Cash generated from operations	5,085,507	3,133,791
Interest paid	(1,851,199)	(1,970,220)
Taxes withheld	(16,641)	(33,899)
Net cash provided by operating activities	3,217,667	1,129,672
CASH FLOWS FROM INVESTING ACTIVITIES		
Purchase of property, plant & equipment	(2,095,445)	(1,773,289)
Purchase of intangible assets	(1,158)	(9,063)
Proceeds from disposal of property, plant & equipment	-	67,727
Net cash used by investing activities	(2,096,603)	(1,714,625)
CASH FLOWS FROM FINANCING ACTIVITIES		
Short-term loans received	1,860,803	318,647
Repayment of short-term loans	(647,197)	(1,152,369)
Long-term loans received	-	2,332,459
Repayment of long-term loans	(665,665)	(1,343,351)
Share premium (note 14)	-	357,563
Dividends paid	(1,394,981)	(170)
Net cash (used)/provided by financing activities	(847,040)	512,779
Net increase/(decrease) in cash and cash equivalents	274,024	(72,174)
Cash and cash equivalents at beginning of year	1,461,604	1,533,778
CASH AND CASH EQUIVALENTS AT END OF YEAR	1,735,628	1,461,604

The accompanying notes form an integral part of the financial statements.

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED DECEMBER 31, 2005

1. Corporate structure and nature of business

The company is incorporated in Jamaica and is an 80% subsidiary of Mirant JPSCO (Barbados) SRL, which is incorporated in Barbados. The registered office of the company is situated at 6 Knutsford Boulevard, Kingston 5, Jamaica, W. I., and its preference shares are listed on the Jamaica Stock Exchange.

The ultimate holding company is Mirant Corporation, incorporated in Delaware, U.S.A, which is listed on the New York Stock Exchange. Mirant Corporation and its subsidiary companies are referred to in these financial statements as "related companies".

The principal activities of the company are generating, transmitting, distributing and supplying electricity in accordance with the terms of the All-Island Electric Licence 2001 (the Licence), granted on March 30, 2001 by the Minister of Mining and Energy.

2. Regulatory arrangements and tariff structure

The Licence authorises the company to supply electricity for public and private purposes within the Island of Jamaica, subject to regulation by the Office of Utilities Regulation (OUR) established pursuant to the Office of Utility Regulation Act, 1995, and as subsequently amended, with power and authority to require observance and performance by the company of its obligations under the Licence, and to regulate the rates charged by the company.

Under the provisions of the Licence, the company is granted the exclusive right to transmit, distribute and supply electricity throughout the Island of Jamaica for a period of twenty years and to develop new generation capacity within the first three years from the effective date of the Licence. Upon the expiration of this period the company shall have the right, together with other persons, to compete for the right to develop new generation capacity.

Schedule 3 of the Licence defines the rates for electricity and the mechanism for rate adjustments. Under the Licence, the rates for electricity consist of a Non-Fuel Base Rate, which is adjusted annually using the Performance Based Rate-making Mechanism; and a Fuel Rate, which is adjusted monthly to reflect fluctuations in actual fuel costs, net of adjustments for prescribed efficiency targets. Both rates (fuel and non-fuel) are adjusted monthly to account for movements in the monetary exchange rate between the United States (US) dollar and the Jamaica dollar.

As of February 1, 2002, these rates are determined in accordance with the tariff regime, provided that the OUR annually reviews the company's efficiency levels (system losses and heat rate) and, where appropriate, adjusts these in the tariff, primarily relating to fuel revenues. Under the rate schedule the company should recover its actual fuel costs net of the prescribed efficiency adjustments though its Fuel Rate.

As of May 31, 2004, and thereafter, on each succeeding fifth anniversary, the company must submit a filing to the OUR for further rate adjustments to its Non-Fuel Base Rate. The rate filing, which requires OUR approval, is based on a test year and includes defined "efficient" non-fuel operating costs, depreciation expenses, taxes, and a fair return on investment.

Embedded in the OUR approved tariff is an amount to be set aside monthly in case of a major catastrophe affecting the company's transmission and distribution assets.

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8. Available-for-sale Financial Asset (Cont'd)

The Company has established a "Self Insurance Fund" to assist in financing risk exposures on certain assets that are under-insured due to the non-availability of the relevant cover or prohibitive pricing. The Company will be setting aside funds on an annual basis and has, at December 31, 2006, subscribed for US$0.992m, 49,581.52 units (2005 – 0.723m, 36,171.72 units) in a "US Dollar Money Market Fund" established by the Unit Trust Corporation of Trinidad & Tobago. The effective interest rate at December 31, 2006 was 5% (2005 – 5%).

9. *Retirement Benefit Asset*

Grade I Employees
The Company contributes to a defined benefit pension scheme with Sagicor Life Inc. for Grade I employees.

Grade II Employees
The Company contributes to a defined benefit pension scheme with Colonial Life Insurance Company for Grade II employees.

The most recent actuarial valuation of the above two schemes is dated December 31, 2003. The plans were valued using the "Projected Unit Credit" method of valuation.

The principal actuarial assumptions used for both schemes were as follows:

	2006 %	2005 %
Discount rate	7.0	7.0
Expected return on plan assets	7.5	7.5
Future salary increases	5.5	5.5
NIC ceiling increases	2.0	2.0
Future pension increases	0.0	0.0

The amounts recognised in the balance sheet at December 31, 2005 are determined as follows:

		Grade II		Grade I		Total	
		2006	2005	2006	2005	2006	2005
Present value of *funded obligations*	$	(8,772,000)	(8,377,000)	(8,409,000)	(7,741,000)	(17,181,000)	(16,118,000)
Fair value of plan assets		10,979,000	10,249,000	10,469,000	9,549,000	21,448,000	19,798,000
Unrecognised actuarial loss/(gain)		(1,314,000)	(1,024,000)	(103,000)	(19,000)	(1,417,000)	(1,043,000)
Defined benefit asset	$	893,000	848,000	1,957,000	1,789,000	2,850,000	2,637,000

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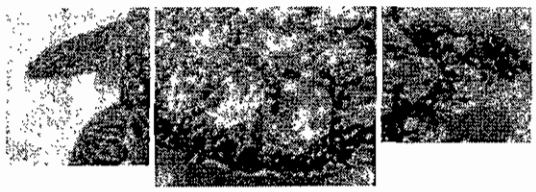
Hawksbill Turtles

It is said that Hawksbills have the most beautifully patterned shells, with overlapping scutes (plates) and serrated "teeth" along the rear end of the shell.



Eretmochelys imbricata

Management's Discussion and Analysis

expenses and investment in fixed assets. CUC will not seek to implement this rate increase, as it agreed with Government that it would freeze basic rates during the period of the Hurricane Ivan ("the hurricane") Cost Recovery Surcharge ("CRS") *(see "Cost Recovery Surcharge" section below)*.

The Company's outlook for the Cayman Islands is positive, and the economy is expected to experience growth in all sectors during fiscal 2007 *(see "Outlook" section on page 23)*.

Cost Recovery Surcharge

The Company's Final Return to Government containing its year-end 2005 audited results indicated that CUC was entitled to a 9.5% rate increase effective August 1, 2005. This shortfall on ROCE was primarily as a result of costs and loss of revenue and reconstruction of transmission and distribution ("T&D") assets related to the impact of the hurricane that affected Grand Cayman in September 2004. In July 2005, CUC and Government agreed on a CRS to be implemented by the Company to recover its uninsured hurricane-related losses, which primarily resulted from damage to the Company's T&D equipment. These assets were uninsured and remain uninsured, as the Company found it uneconomical to obtain T&D coverage at prevailing rates. The CRS commenced with CUC's August 2005 billings. A flat charge of $0.0089 per kiloWatt-hour ("kWh") is applied to all customers, which equates to a 4.7% average rate increase over the 2004/2005 rates.

The agreement to forego a part of the permitted 9.5% rate increase allowed under its Licence was without prejudice to CUC's rights and privileges under its Licence, and is specific to the hurricane-related costs and losses only. Any costs or losses resulting from any future catastrophic event would be subject to recovery under the terms of either the existing or any future Licence or upon terms to be agreed at that time. Under current projections, the CRS is expected to appear on CUC's customer bills for approximately three years from August 2005.

CUC's direct uninsured hurricane losses of $14.0 million were as follows:

	$ millions
T&D property, plant and equipment	7.0
Other property, plant and equipment	2.0
Revenue losses during insurance deductible	5.0
Total	14.0

By agreement with Government, CUC will recover $13.4 million of the $14 million of uninsured losses. CRS revenues for 2006 were $3 million, leaving $10.4 million to be recovered.

Hurricane Ivan Insurance Claim

CUC has agreed a settlement on the hurricane claim with the insurance adjustors in the net amount of $31.1 million. Based on this settlement, the adjustors have issued a final report, and the underwriters have agreed to these terms. Advanced payments on account totalling $22.1 million were made as at April 30, 2006, leaving a balance of $9.0 million to be received. Pursuant to the final settlement, the insurer made a final payment of $9,075,125 in June 2006.

Gain on Insurance Property Settlement

Description	Book Value of Assets Disposed ($)	Settlement ($)	Fiscal 2005 Gain on Disposal of Assets ($)	Fiscal 2006 Gain on Disposal of Assets ($)	Total Gain on Disposal of Assets ($)
T&D and substations	757,796	1,588,585	0	830,789	830,789
Mirrlees units	65,193	2,345,200	1,934,807	345,200	2,280,007
Inventory and other	1,281,043	1,345,685	0	64,642	64,642
Total	2,104,032	5,279,470	1,934,807	1,240,631	3,175,438

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FLORIDA POWER & LIGHT COMPANY

Second Revised Sheet No. 8.040
Cancels First Revised Sheet No. 8.040

STORM CHARGE

The following charges are applied to the Monthly Rate of each rate schedule as indicated and are calculated in accordance with the formula approved by the Public Service Commission.

Cents/kWh			
Rate Schedule	STORM BOND REPAYMENT CHARGE	STORM BOND TAX CHARGE	TOTAL STORM CHARGE
RS-1, RST-1	0.087	0.024	0.111
GS-1, GST-1, WIES-1	0.077	0.021	0.098
GSD-1, GSDT-1, HLFT-1, SDTR (21-499 KW)	0.053	0.015	0.068
GSLD-1, GSLDT-1, HLFT-2, SDTR (500-1,999 KW)	0.047	0.013	0.060
CS-1, CST-1	0.053	0.015	0.068
GSLD-2, GSLDT-2, HLFT-3, SDTR (2000+ KW)	0.039	0.011	0.050
CS-2, CST-2	0.059	0.017	0.076
GSLD-3, GSLDT-3, CS-3, CST-3	0.007	0.002	0.009
OS-2	0.241	0.066	0.307
MET	0.060	0.017	0.077
CILC-1(G)	0.051	0.014	0.065
CILC-1(D)	0.037	0.010	0.047
CILC-1(T)	0.008	0.002	0.010
SL-1, PL-1	0.625	0.172	0.797
OL-1	0.677	0.186	0.863
SL-2, GSCU-1	0.029	0.008	0.037
SST-1(T), ISST-1(T)	0.007	0.002	0.009
SST-1(D1), SST-1(D2) SST-1(D3), ISST-1(D)	0.155	0.042	0.197

(Continued on Sheet No. 8.041)

(Continued from Sheet No. 8.040)

The Storm Bond Repayment Charge and the Storm Bond Tax Charge, which together comprise the Storm Charge, shall be paid by all customers receiving transmission or distribution service from the Company or its successors or assignees under Commission-approved rate schedules or under special contracts, even if the customer elects to purchase electricity from alternative electric suppliers following a fundamental change in regulation of public utilities in this state. The Storm Bond Repayment Charge and the Storm Bond Tax Charge shall be paid monthly from the effective date of this tariff until the Storm Bonds have been paid in full or legally discharged and the other financing costs, including the tax liabilities associated with such charges, have been paid in full or fully recovered.

As approved by the Commission, a Special Purpose Entity (SPE) has been created and is the owner of all rights to the Storm Bond Repayment Charge. The Company shall act as the SPE's collection agent or servicer for the Storm Bond Repayment Charge.

Form 10-Q for FLORIDA PUBLIC UTILITIES CO

14-May-2008

Quarterly Report

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

Overview

We have three primary business segments: natural gas, electric and propane gas. The Florida Public Service Commission (FPSC) regulates the natural gas and electric segments. The effects of seasonal weather conditions, timing of rate increases, economic conditions, fluctuations in demand due to the cost of fuel passed on to customers, and the migration of winter residents and tourists to Florida during the winter season have a significant impact on income.

Earnings for 2008 are higher for the quarter compared to 2007 primarily because of the interim rate relief in our electric operations. Interim rate relief of approximately $800,000, annually, was approved beginning in November 2007. Final electric base rate relief of approximately $3.9 million per year was approved in April 2008 with new rates beginning May 22, 2008.

The new fuel contracts, effective January 1, 2007 in our Northeast division, and effective January 1, 2008 in our Northwest division, significantly increased our electricity fuel costs and revenues. We expect our electric customers will continue to take conservation measures to help offset the recent large fuel increases. We are unable to precisely estimate what impact the higher rates could have on electric consumption, but we expect there could be as much as a reduction of 10% in unit sales. Management does not expect a significant impact to electric gross profit from this expected reduction in sales units since this reduction was considered in our recent electric base rate increase approved in April 2008 and the rates were changed to compensate for this reduction.

Earnings continue to be impacted by the overall economic slow-down and management expects current conditions to continue through 2008 with an ongoing impact to our customer growth rates, unit sales and sales expense. Management continues to look for ways to help offset the negative impacts of the current economic condition.

Results of Operations

Revenues and Gross Profit Summary

Revenues include cost recovery revenues. The FPSC allows cost recovery revenues to directly recover costs of fuel, conservation and revenue-based taxes in our natural gas and electric segments. Revenues collected for these costs and expenses have no effect on results of operations and fluctuations could distort the relationship of revenues between periods. Gross profit is defined as gross

operating revenues less fuel, conservation and revenue-based taxes that are passed directly through to customers. Because gross profit eliminates these cost recovery revenues, we believe it provides a more meaningful basis for evaluating utility revenues. We believe data regarding units sold and number of customers provides additional information helpful in comparing periods. The following summary compares gross profit between periods and units sold in one thousand Dekatherm (MDth) (gas) and Megawatt Hour (MWH) (electric).

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Revenues and Gross Profit
(Dollars in thousands)

	Three Months Ended March 31, 2008	2007
Natural Gas		
Revenues	$22,137	$20,573
Cost of fuel and other pass through costs	14,082	12,522
Gross Profit	$ 8,055	$ 8,051
Units sold: (MDth)	1,861	1,840
Customers (average for the period)	52,166	51,754
Electric		
Revenues	$17,523	$13,358
Cost of fuel and other pass through costs	13,859	9,899
Gross Profit	$ 3,664	$ 3,459
Units sold: (MWH)	173,276	185,636
Customers (average for the period)	31,221	30,936
Propane Gas		
Revenues	$5,370	$4,681
Cost of fuel	2,971	2,348
Gross Profit	$2,399	$2,333
Units sold: (MDth)	170	192
Customers (average for the period)	12,666	13,378
Consolidated		
Revenues	$45,030	$38,612
Cost of fuel	30,912	24,769
Gross Profit	$14,118	$13,843
Customers (average for the period)	96,053	96,068

Three Months Ended March 31, 2008 Compared with Three Months Ended March 31, 2007.

Revenues and Gross Profit

Natural Gas

Natural gas service revenues increased $1.6 million in the first quarter of 2008 from the same period in 2007 due to increased revenues to recover our cost of fuel and other costs passed through to customers. These costs do not impact our gross profit, which remained flat between the two periods. Although we had a marginal increase in customers from the conversion of approximately 500 customers in our Central Florida division from propane to natural gas, gross profit remained relatively unchanged due to a prior year over-earnings estimate that increased the prior year's gross profit by $46,000. Excluding this prior year adjustment, units sold and gross profit increased slightly.

Electric

Electric service revenues increased $4.2 million in the first quarter of 2008 over the same period in 2007. Higher cost of fuel and other costs that were passed through to customers accounted for $4.0 million of this increase. A new fuel contract in our Northwest division effective January 1, 2008, significantly increased the cost of fuel to market rates.

Gross profit this quarter increased by $205,000 or 6% compared to the first quarter of 2007 primarily due to the interim base rate increase effective November 2007. Other factors slightly impacting gross profit were a 1% increase in customer growth, offset by a 1% decrease in usage per customer, excluding two large industrial customers. The decrease in usage per customers possibly relates to conservation measures taken by our customers as a result of the recent fuel cost increases.

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Propane Gas

Propane revenues increased $689,000 in the first quarter of 2008 compared to the same period in 2007. The cost of fuel contributed to most of the revenue increase as gross profit only slightly increased by $66,000.

Increases to our propane rates, which increased profit margins, offset the 5% decrease in customers and 11% decrease in units sold. This decrease in customers is primarily due to the recent conversion of approximately 500 customers in the Summer Glen development located in our Central Florida division from the use of propane to natural gas. This conversion, warmer weather, and possibly conservation measures taken by our customers reduced the number of units sold.

Operating Expenses

Operating expenses remained flat overall in the first quarter of 2008 as compared to the same period in 2007.

There were increases in depreciation expense from new plant additions in our operating segments, along with increased electric depreciation rates that were effective January 1, 2008. Overall depreciation expense increased $188,000 in the first quarter of 2008 compared to the prior quarter ending March 31, 2007.

The new electric depreciation rates are expected to increase annual depreciation expense by approximately $280,000 in 2008. A portion of the 2008 depreciation increase was not recovered in 2008 through the increased electric base rates due to the timing of final rate recovery.

Sales and other operating expenses were lower this quarter by approximately $200,000 compared to the prior year. We reduced the number of sales staff and other related sales expense due to the slow-down in the construction industry and the overall economy.

Other Income and Deductions

Merchandise and service revenue and expense decreased by $193,000 and $186,000 respectively in the first quarter of 2008 compared to the same period last year. We continue to experience a decrease in merchandise sales and expenses as the effects of the slowdown of new construction and housing projects continue.

Total interest expense increased $56,000 in the first quarter of 2008 compared to the same period last year. This is primarily due to the interest on additional funding used to purchase the Water Tower Business Park for the relocation of our South Florida operations.

Liquidity and Capital Resources

Cash Flows

Operating Activities

Net cash flow provided by operating activities for the three months ended March 31, 2008 decreased by approximately $2.6 million over the same period in 2007.
The timing of the receipt of customer accounts receivable which increased due to the recent fuel price increases, offset by the accounts payable increase from the fuel price increase contributed to this decrease. The over-recovered fuel costs collected in 2007 and subsequently refunded in 2008 accounted for approximately $700,000 of the decrease in the current year's net cash flow as compared to the prior year.

Investing Activities

Construction expenditures in the three months ended March 31, 2008 remained consistent with the same period last year. First quarter 2008 expenditures included approximately $700,000 for a replacement 40MVA transformer at the Northeast Florida electric division. This was offset by lower requirements of $100,000 related to office equipment in our propane divisions and a reduction for distribution facilities and installations of approximately $600,000 as a result of the slow-down in the construction industry and economy.

Financing Activities

Cash used for short-term loan payments decreased cash flow. As of March 31, 2008, our line of credit was $9.7 million as compared to $11.1 million as of December 31, 2007.

Capital Resources

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We have a line of credit with Bank of America, which expires July 1, 2010. In March 2008, we amended our line of credit to allow us, upon 30 days notice, to increase our maximum credit line to $26 million from the previous maximum of $20 million The amendment also reduces the interest rate paid on borrowings by 0.10% or 10 basis points. The new interest rate terms, if effective for 2007, would have reduced our overall average interest rate for 2007 to approximately 5.7% from 5.8% as of December 31, 2007. Effective April 29, 2008, we increased the LOC from $12 million to $15 million. The line of credit contains affirmative and negative covenants that, if violated, would give the bank the right to accelerate the due date of the loan to be immediately payable. The covenants include certain financial ratios. All ratios are currently met and management believes we are in full compliance with all covenants and anticipates continued compliance.

We reserve $1 million of the line of credit to cover expenses for any major storm repairs in our electric segment and an additional $250,000 for a letter of credit insuring propane gas facilities. As of March 31, 2008, the amount borrowed on the line of credit was $9.7 million. The line of credit, long-term debt and preferred stock as of March 31, 2008 comprised 55% of total debt and equity capitalization.

Historically we have periodically paid off short-term borrowings under lines of credit using the net proceeds from the sale of long-term debt or equity securities. We continue to review our financing options including increasing our short-term line of credit, issuing equity, or issuing debt. The choice of financing will be dependent on prevailing market conditions, the impact to our financial covenants and the effect on income. The timing of additional funding needs will be dependent on projected environmental expenditures, building of the South Florida operations facility, pension contributions, and other capital expenditures.

Our 1942 Indenture of Mortgage and Deed of Trust, which is a mortgage on all real and personal property, permits the issuance of additional bonds based upon a calculation of unencumbered net real and personal property. At March 31, 2008, such calculation would permit the issuance of approximately $46.1 million of additional bonds.

On October 25, 2007 we received approval from the FPSC to issue and sell or exchange an additional amount of $45 million in any combination of long-term debt, short-term notes and equity securities and/or to assume liabilities or obligations as guarantor, endorser or surety during calendar year 2008. In the event we choose not to proceed in 2008 with such a financing, we may seek approval from the FPSC in 2008 for any possible financing in 2009.

We have $3.5 million in invested funds for payment of future environmental costs. We expect to use some of these funds in 2008.

There is approximately $6.1 million in receivables from the 2003 sale of our water assets, of which an estimated installment of $300,000 is anticipated to be received in 2009. The remaining balance of $5.8 million will be collected in 2010. The present value of this receivable is $5.7 million.

We also received a $244,000 legal claim reimbursement in April 2008 from our insurance company to reimburse us on a liability claim.

Capital Requirements

Portions of our business are seasonal and dependent upon weather conditions in Florida. This factor affects the sale of electricity and gas and impacts the cash provided by operations. Construction costs also impact cash requirements throughout the year. Cash needs for operations and construction are met partially through short-term borrowings from our line of credit.

Capital expenditures are expected to be lower for the remainder of 2008 compared to 2007 by approximately $1.7 million. The anticipated expenditures of $2.0 million for the construction of the building for the new South Florida operations facility in 2008 is lower than the $3.5 million related to the purchase of land for the facility that occurred in 2007. Also in 2007 we also had a $200,000 purchase of a mapping system.

We currently have approximately $500,000 in commitments for capital expenditures for the remainder of 2008. These commitments include vehicles for approximately $340,000 and land in our Central Florida division for $174,000. We expect these expenditures will occur over the remainder of 2008.

Cash requirements will increase significantly in the future due to environmental cleanup costs, sinking fund payments on long-term debt and pension contributions. Environmental cleanup is forecast to require payments of approximately $335,000 in 2008, with remaining payments, which could total approximately $13.3 million, beginning in 2009. Annual long-term debt sinking fund payments of approximately $1.4 million will begin in May 2008 and will continue for eleven years. Based on current projections, we will make a voluntary contribution in our defined benefit pension plan between $278,000 and $1.9 million in 2008 for the 2007 plan and we will continue in future years to make contributions as required by the Pension Protection Act funding rules.

Based on our current expectations for 2008 cash needs, including the construction of our South Florida operations facility, we may rely on the increased line of credit or may choose to consider equity or debt financing. The need and timing will depend upon operational requirements, the timing of environmental expenditures, pension contributions and construction expenditures.

In addition, if we experience significant environmental expenditures in the next two or three years it is possible we may need to raise additional funds after 2008. There can be no assurance, however, that equity or debt transaction financing will be available on favorable terms or at all when we make the decision to proceed with a financing transaction.

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Outlook

Over-earnings-Natural Gas Segment

We recorded estimated 2006 over-earnings for the natural gas segment of $25,000. Interest accrued on this estimated over-earnings as of March 31, 2008 is $1,544. This liability is included in the over-earnings liability on our balance sheet. The calculations supporting these liabilities are complex and involve a variety of projections and estimates before the ultimate settlement of such obligations. Estimates may be revised as expectations change and factors become known and determinable.

Our 2006 estimates of our over-earnings liabilities could change upon the FPSC finalization of our earnings expected during 2008. The FPSC determines the disposition of over-earnings with alternatives that include refunds to customers, funding storm or environmental reserves, or reducing any depreciation reserve deficiency.

Medical Insurance

Insurance costs increased $49,000 in the first quarter of 2008 as compared to 2007.

We continue to experience medical claims which are significantly above average over the last several years. These high claims resulted in a significant increase to our plan cost which has increased our medical premiums each year. In an effort to better control these cost increases, the Company will be more proactive in identifying healthcare options that will help control our overall medical costs and strive to improve our employees' health. We will be exploring various wellness programs that could meet these goals of reduced costs and improved employee health.

Land Purchases

We purchased land for $3.4 million in July 2007 for a new South Florida operations facility. We are in the process of preparing plans for a building on this property and expect to begin construction within the next three years.

We have a commitment to purchase additional land for approximately $200,000 adjacent to our Central Florida operations facility for additional parking. We expect to close on this land purchase during the third quarter of 2008.

Storm Related Expenditures

Regulators continue to focus on hurricane preparedness and storm recovery issues for utility companies. Newly mandated storm preparedness initiatives will impact our operating expenses and capital expenditures in 2008. Storm hardening initiatives, recently mandated by the FPSC, will increase other electric operating expenses for the remainder of 2008. However, we received recovery of these storm related expenses in our recent electric base rate proceeding, and management does not expect a negative impact to our 2008 earnings as a result of these mandates. It is possible that additional regulation and rules will be mandated regarding storm related expenditures over the next several years.

Electric Base Rate Proceeding

We filed a request with the FPSC in the third quarter of 2007 for a base rate increase in our electric segment. This request included recovery of increased expenses and capital expenditures since our last rate proceeding in 2004, as well as additional storm-related expenditures. Finalization of this request and FPSC approval of final permanent rates occurred on April 22, 2008.

Interim rate relief for partial recovery of the increased expenditures was approved by the FPSC on October 23, 2007. Interim rates which will produce additional annual revenues of approximately $800,000 went into effect for meter readings on and after November 22, 2007.

A final annual electric rate increase of approximately $3,900,000 a year was approved in April 2008, with the new rates beginning May 22, 2008. These revenues should provide an increase to our overall profitability for the electric segment and recovery of increased expenditures including depreciation, storm readiness mandates and initiatives and other expenses beginning in 2008.

Electric Depreciation Study

On January 29, 2008, the FPSC approved new electric depreciation rates effective January 1, 2008 that are expected to increase

annual depreciation expense by approximately $280,000 in 2008. The FPSC also recently approved recovery of this increased depreciation expense in our 2008 electric rate proceeding beginning May 22, 2008. Since the new final permanent base rates are not effective until May 22, 2008, a portion of the 2008 depreciation increase will not be recovered in 2008.

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Asphalt Plant

A new commercial customer in our natural gas segment in the South Florida division is expected to be in service during the second quarter of 2008. The increase to annual gross profit from this new customer is expected to be approximately $86,000.

Forward-Looking Statements (Cautionary Statement)

This report contains forward-looking statements including those relating to the following:

?

Based on our current expectations for cash needs, including cash needs relating to construction of the South Florida operations building, we may choose to consider an equity or debt financing.

?

Our anticipation of continued compliance in the foreseeable future with our LOC covenants.

?

Our expectation that cash requirements will increase significantly in the future due to environmental clean-up costs, sinking fund payment on long-term debt and pension contributions.

?

Our belief that cash from operations, coupled with short-term borrowings on our LOC, will be sufficient to satisfy our operating expenses, normal construction expenditure and dividend payments through 2008.

?

Our 2006 over-earnings liability in natural gas will materialize as estimated.

?

Realization of actual additional revenues from the May 2008 electric base rate increase will occur as expected.

?

Earnings continue to be impacted by the overall economic conditions and management expects the slow-down to continue through 2008 with ongoing impact to our customer growth rates, unit sales and sales expense.

?

We are unable to precisely estimate what impact the higher fuel rates could have on electric consumption but we expect there could be as much as a reduction of 10% in sales. Management does not expect a significant impact to electric gross profit from this expected reduction in sales units since this reduction was considered in our recent electric base rate increase approved in April 2008.

?

Storm hardening initiatives recently mandated by the FPSC will increase other electric operating expenses for the remainder of 2008 and management does not expect a negative impact to our 2008 earnings as a result of these mandates due to the recent base rate proceeding.

?

We do not expect any material adverse findings as a result of the IRS audit of 2005 and 2006 tax years.

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?

The Asphalt customer will be in service by the expected date, and gross profit will increase as estimated.

These statements involve certain risks and uncertainties. Actual results may differ materially from what is expressed in such forward-looking statements. Important factors that could cause actual results to differ materially from those expressed by the forward-looking statements include, but are not limited to, those set forth in "Risk Factors" in our Form 10-K for the year ended December 31, 2007.

Item 3.

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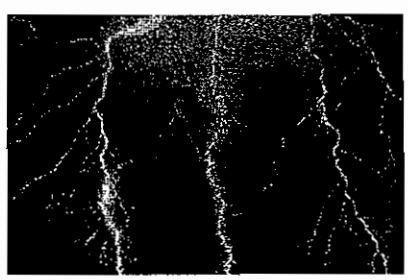
EDISON ELECTRIC INSTITUTE

AFTER THE DISASTER:

Utility Restoration Cost Recovery



February 2005

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Edison Electric Institute (EEI) is the premier trade association for U.S. shareholder-owned electric companies, and serves international affiliates and industry associates worldwide. Our U.S. members serve almost 95 percent of the ultimate customers in the shareholder-owned segment of the industry, and nearly 70 percent of all electric utility ultimate customers in the nation. They generate over 70 percent of the electricity produced by U.S. electric utilities.

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EEI's mission is to ensure members' success in a new competitive environment by:

- Advocating Public Policy
- Expanding Market Opportunities
- Providing Strategic Business Information

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EXECUTIVE SUMMARY

Several methods currently are used by utilities to lessen the financial impact of disaster restoration costs. But there is little consistency in how these methods are applied throughout the industry, or even within a company, from disaster to disaster. This creates uncertainty and invites political intervention. A formal and uniformly applied structure for disaster restoration cost recovery is needed.

When large storms or other disasters damage electric systems, utilities launch massive round-the-clock efforts to restore power as quickly as possible. The logistics associated with these restoration efforts can be daunting. In addition to deploying their own crews, utility companies must call upon crews from other parts of the country to help, with the "host utility" paying for wages, equipment rental, transportation, hotel rooms, meals and even laundry. Added to that are equipment costs, miles of new wire, thousands of new poles, new transformers, cross arms, fuses—the list goes on and on and so do the costs.

The key is restoring power as quickly as possible. Utilities mobilize outside resources at substantial additional costs in their effort to shorten the duration of power outages. When the final costs are tallied, the utility gets a bill that can be devastating financially.

Often there is not an established plan for how this bill will be paid. When the utilities meet with their regulators to discuss disaster restoration costs, the process often becomes highly politicized, and in at least one instance, the ensuing uncertainty has invoked a negative reaction from Wall Street.

To better understand the costs of disasters to utilities and their financial consequences, this report examines restoration cost data for 81 major storms that occurred between 1994 and 2004. The report also summarizes techniques used throughout the electric utility industry to mitigate the potentially devastating financial impacts of these storms and calls for the development of a more consistent and predictable method for recovering the cost of restoration when disaster strikes.

The Summary Points

- Utilities incur substantial costs to repair their systems after disasters strike. Based on survey data obtained for 81 major storms from 14 utility respondents, these disasters cost utilities approximately $2.7 billion (in constant $2003) between 1994 and 2004.
- The economic impact of not having electric service in an area hit by a disaster is much larger than the cost of repairing the damage. This suggests that the utilities' current practice of incurring additional costs to mobilize outside resources to restore power as quickly as possible is appropriate.
- The financial impact of disaster restoration can be devastating if it is not mitigated. For some companies, restoration costs can exceed net operating income for the year
- Several utilities rely on special storm reserves and/or deferred accounting treatment to lessen the financial impact of disasters.

- In at least one instance, Wall Street changed its credit outlook for a utility, in part because of concerns over how quickly a decision favorable to the utility would be reached to mitigate the financial impact of restoration expenses.
- There is little consistency in establishing which events do, or do not, qualify for disaster mitigation. For example, one company was required to expense approximately $160 million of O&M storm costs associated with a major hurricane against current year earnings, while another utility was allowed to recover a $1 million storm expense over a four-year period.
- Storm reserves provide a type of self-insurance to pay for major storms, however, they may not be funded sufficiently to pay for catastrophic storms. In most instances these reserves do not provide a ready source of cash to pay for storms.
- When faced with significant O&M restoration costs that could require a substantial write-off, many companies are granted permission by their commissions to defer these costs, but there is often a lengthy delay in providing this relief and the approval process can become politicized.

INTRODUCTION

Over a six-week period beginning Aug. 13, 2004, four hurricanes struck Florida. Never before in the state's history had so many hurricanes hit in a single season. The scale of the destruction caused by the storms was also unprecedented, with one in five homes suffering damage.

The impact on Florida's investor-owned electric utilities was equally destructive. The hurricanes required the state's investor-owned utilities to replace more than 3,000 miles of wire—enough to reach from Tampa to San Diego, almost 32,000 poles and more than 22,000 transformers. *(See Figure 1.)*

Figure 1
Florida 2004 Hurricane Damage[1]

	Poles Replaced	Transformers Replaced	New Conductor (Miles)
Hurricane Charley			
FPL	7,100	5,100	900
Progress Energy	3,820	1,880	667
Hurricane Frances			
FPL	3,800	3,000	550
Progress Energy	2,800	1,560	500
Hurricane Ivan			
Progress Energy	100	570	N/A
Gulf Power	5,060	3,175	225
Hurricane Jeanne			
FPL	2,300	3,000	250
Progress Energy	6,720	4,010	100
TOTAL	31,700	22,295	3,192

Source: Company reports
[1] Comparable storm damage data for Tampa Electric is not available

The combined storm costs totaled more than $1 billion for Florida Power & Light and Progress Energy alone. Uncertainty over how this bill would be paid caused Standard and Poor's to downgrade its outlook for Progress Energy from stable to negative, citing "uncertainties regarding the timing of hurricane costs" as one of the triggering events for the outlook revision.[1]

FPL fared better. It went into the hurricane season with approximately $345 million ($211 million in cash and $134 million in deferred taxes) set aside in a special storm reserve fund that it had established in the 1940s. Still, FPL was left with a repair bill of more than $545 million. Fortunately for FPL, the Florida Public Service Commission allowed it to carry the remainder of the unpaid storm bill as a negative balance in

[1] "Progress Energy Florida, Inc's Petition for Approval of Storm Cost Recovery Clause for Extraordinary Expenditures Related to Hurricanes Charley, Frances, Jeanne, and Ivan," Nov. 2, 2004, Florida Public Service Commission.

its storm fund thereby negating the earnings impact of the loss.[2] Questions remain on just how this bill will be paid and how the storm reserve will be refunded to provide a cushion for the next hurricane strike.

When the hurricanes struck Florida—and for that matter, whenever a major storm strikes—the affected utility is expected to mobilize a huge workforce to repair the storm damage as quickly as possible, with little or no consideration being given to the cost of the restoration effort.

There are vastly different policies in place around the country on how utilities recover these costs. In some cases, utilities are expected to pay for the costs and charge them against current year earnings. Had this been the policy in Florida, the financial consequences could have been devastating.

Paying for Storms in Hurricane Alley

FPL's service territory encompasses almost the entire east coast and parts of the west coast of Florida, making the company particularly vulnerable to damage from hurricanes. To help mitigate the financial impact of a catastrophic storm, FPL funds its storm reserves with cash payments invested in interest-bearing accounts. FPL is unique in the industry in this regard. This "funded" reserve minimizes the earnings impact of major storms and provides a source of cash to pay for storm costs.

In other instances, there appears to be an unwritten rule that when restoration costs become significant, the utility will be allowed to petition its utility commission to recover its prudently incurred costs by assessing its customers a surcharge or paying for the costs out of earnings over a fixed period of time, usually two to five years. There are also a number of companies, like FPL, whose commissions authorize the creation of special storm reserves that are credited each month. When disasters strike, these funds act as a form of insurance, mitigating the one-time financial impact.

The goal of this report is to look beyond Florida to assess the impact that disasters have on the broader electric utility industry and provide insight into how to pay the heavy price tag incurred as a result of these events. The report contains three major sections. The first summarizes a recent industry survey and provides a historical perspective on storm restoration costs. The second presents data showing the potential financial impact of these storms. The final section of the report looks at how storms are paid for and examines the accounting treatment for major storm costs and the cost-recovery policies that have been developed to help address the devastating financial impact of major storms on utilities.

[2] The Florida Public Service Commission also allowed Progress Energy, Tampa Electric and Gulf Power to carry negative balances in their storm reserve accounts.

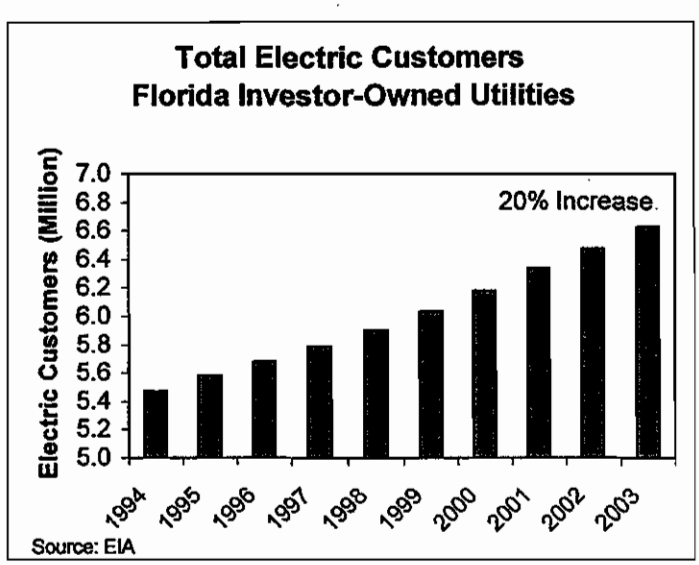
HISTORICAL PERSPECTIVE ON MAJOR STORM COSTS

To obtain a better understanding of the financial impact of major storms at a broader industry level, EEI member companies were asked to complete a survey providing information on storm costs and customer impacts. (*See sample survey in Attachment A, page 17.*) This data was then correlated with financial data obtained from FERC Form 1s to develop several key financial measures of the overall impact of major storms. Figure 2 provides a compilation of the data received from 14 companies for 81 major storms that caused almost $2.7 billion ($2003) in damage. (*See page 4.*)

Figure 3 summarizes major storm costs in constant $2003 obtained from the survey between 1994 and 2004. For the entire period, the average cost of a major storm was $48.7 million. The cost of an individual storm was as high as $890 million. If the five largest storms are deleted however, the average storm cost decreases by over 60 percent to $18.2 million. Four out of the five most expensive storms identified in the survey occurred since 2000 and three of those four were hurricanes. (*See page 5.*)

Increasing Storm Costs

In addition to the frequency and severity of a storm, another major driver in storm costs is customer growth. As populations expand, utilities are required to expand their electric systems to serve more new customers. As a result, even if the severity and frequency of storms remains consistent with historical levels, storm costs can be expected to increase simply because there is more electric equipment subject to damage from storms.



For example, during the 10-year period from 1993 to 2004, Florida utilities expanded their electric systems to serve *approximately 1 million additional* customers. This 20 percent increase in customers likely contributed significantly to the total costs Florida utilities incurred to repair their electric systems after the 2004 hurricanes.

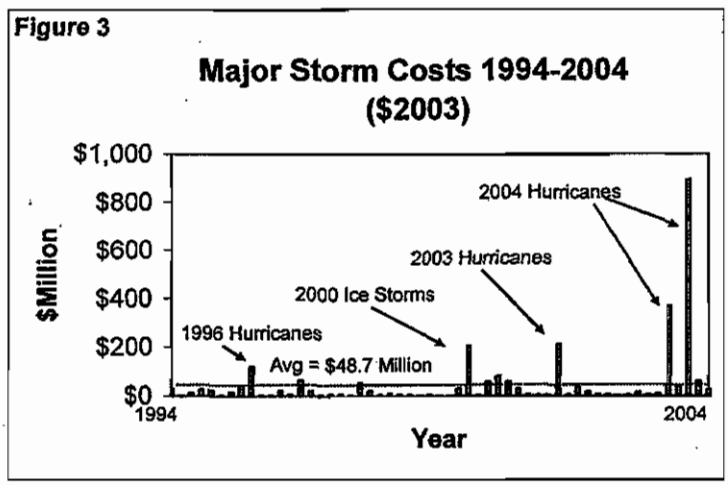
Figure 2: Storm Survey Summary Results (Current Year $)

Major Storm Event	Date	Storm Data: Outage Duration (Days)	Storm Data: Restoration Cost ($Million)	Storm Data: Accounting Treatment	FERC Form 1 Data: T&D O&M Expenses ($Million)	FERC Form 1 Data: Total Earnings From Electric Operations ($Million)
Ice Storm	Feb-94	16	$25.3	Reserve	$53.9	$216.6
Thunderstorm	Jun-95	4	$1.9	Expensed	$41.2	$167.0
WIND STORM & SNOWSTORM	Oct-96	6	$11.3	Deferral	$41.4	$177.9
Ice Storm	Nov-96	10	$21.8	Expensed	$45.7	$112.3
Snow/ice storm	Dec-96	6	$19.6	Deferral	$86.1	$200.6
WINTER STORMS	1996	6	$1.6	Expensed	$31.5	$66.9
HURRICANES & ICE STORM	1996	9	$14.1	Expensed	$147.7	$773.3
HURRICANE & ICE STORM	1996	17	$40.4	Expensed	$218.7	$858.5
HURRICANES	1996	14	$103.6	Deferral	$86.2	$514.1
Thunderstorm	Jun-98	2	$1.3	Expensed	$45.3	$184.2
Hurricane	Aug-98	4	$18.4	Deferral	$98.7	$604.0
Wind storm	Nov-98	2	$4.8	Expensed	$84.8	$218.1
Ice Storm	1998		$56.0	Deferred	$68.6	$98.6
HURRIANE & ICE STORM	1998	13	$18.1	Expensed	$169.3	$600.7
SUMMER STORMS	1998	5	$4.1	Expensed	$34.8	$115.5
Ice Storm	Jan-99	4	$5.4	Expensed	$176.1	$933.9
Ice Storm	Jan-99	5	$6.9	Reserve	$63.5	$138.5
Thunderstorm	Jul-99	5	$3.2	Expensed	$51.6	$224.5
Hurricane	Sep-99	6	$48.0	Deferral	$119.4	$589.4
HURRICANES	1999	13	$20.4	Expensed	$208.7	$751.4
WIND STORMS	1999	2	$4.4	Expensed	$93.4	$227.0
SUMMER & WINTER STORMS	1999	12	$8.4	Expensed	$36.5	$130.5
Ice Storm	Jan-00	4	$5.7	Expensed	$195.1	$824.4
Thunderstorm	May-00	4	$3.4	Expensed	$35.1	$65.3
Thunderstorm	Jul-00	2	$1.2	Expensed	$37.3	$142.2
SUMMER STORMS	Aug-00	8	$5.0	Expensed	$57.5	$139.6
Windstorm	Dec-00	2.9	$2.1	Expensed	$49.3	$143.6
Wind Storm	Dec-00	3	$2.3	Expensed	$88.3	$309.4
WINTER STORM & THUNDERSTORM	2000	13.5	$28.0	Expensed	$210.5	$945.9
ICE STORMS	2000	16	$190.0	Reserve	$78.8	$211.6
Thunderstorm	Jun-01	3	$1.6	Expensed	$62.1	$196.7
Ice Storm	Jan-02	9	$54.7	Deferral	$62.1	$196.7
Ice Storm	Dec-02	9	$77.0	Expensed	$259.5	$895.3
Ice Storm	Dec-02	6	$55.0	Deferral	$145.1	$663.1
HURRICANE & TROPICAL STORM	2002	11	$28.4	Reserve	$21.0	$85.6
WINTER STORMS	2002	11	$4.5	Reserve	$32.5	$51.4
Wind/tornado	May-03	2	$1.4	Expensed	$62.1	$196.7
Tropical Storm	Jun-03	3	$4.3	Reserve	$35.7	$84.2
Hurricane	Sep-03	14	$208.5	Expensed	$293.4	$853.9
WIND STORMS & THUNDERSTORM	2003	11	$4.7	Expensed	$41.9	$32.1
HURRICANE, WIND & ICE STORMS	2003	9.5	$34.9	Expensed	$275.4	$892.8
WIND STORMS	2003	7	$15.2	Deferral	$101.2	$213.3
Wind Storm	Jan-04	5	$5.4	Expensed	$101.2	$213.3
Wind Storm	Mar-04	2.5	$5.0	Expensed	$275.4	$892.8
Thunderstorm	Jun-04	3	$1.6	Expensed	$62.1	$196.7
Hurricane	Sep-04	3	$0.6	Reserve	$35.7	$84.2
Wind Storm	Dec-04	1	$2.0	Expensed	$95.3	$195.7
Ice Storm	Dec-04	5	$14.0	Reserve	$67.0	$223.0
Wind Storm	Dec-04	2	$2.9	Deferral	$101.5	$199.2
SUMMER STORMS	2004	10.1	$7.6	Expensed	$40.6	$119.3
HURRICANES	2004		$890.0	Reserve	$291.6	$917.7
HURRICANES	2004	15	$42.2	Deferral*	$119.0	$830.5
HURRICANES	2004	26	$366.4	Reserve	$120.6	$352.0
HURRICANES	2004		$60.0	Reserve	$45.4	$212.6
ICE STORM & SUMMER STORMS	2004	14	$23.1	Deferred	$70.4	$196.2

Note: CAPITALIZED STORMS indicate multiple major storms in a year

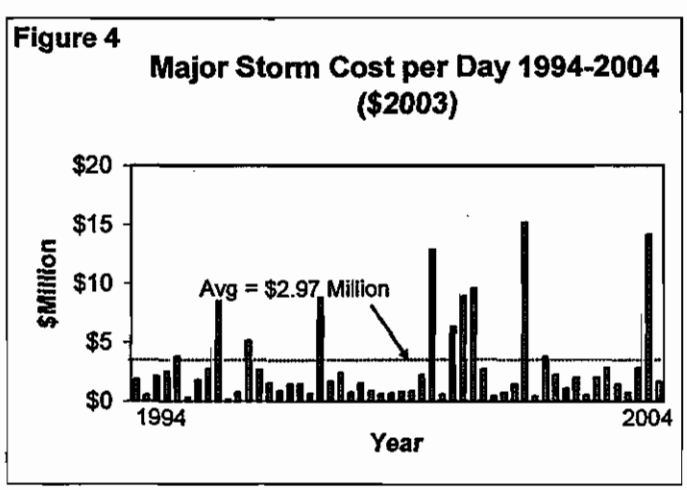
**Assumes storm costs deferred based on commissions prior treatment of costs for major storms*

Figure 3



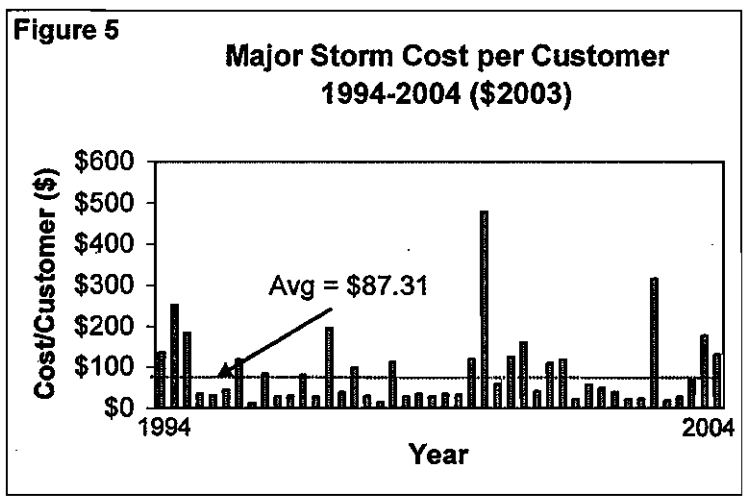
For another perspective on storm costs, consider that on average, utilities spent almost $3 million a day (constant $2003) to repair their systems, but several storm costs exceeded the $10 million per day range (*Figure 4*).

Figure 4



A final perspective on historical storm costs is obtained by calculating storm costs per customer. Figure 5 compares the total costs of the storm (in constant $2003) to the peak number of customers affected by the storm.[3] Average storm cost per peak customer from 1994 to 2004 was approximately $87—about the same amount of revenue that a utility receives each month from a typical residential customer.

Figure 5



Several important conclusions can be drawn from the historical data presented in these charts:

1. Based on the sample of storm data obtained from the surveys, it is evident that utilities incur substantial costs to repair their systems after major storms. Total storm costs between 1994 and 2004 were approximately $2.7 billion ($2003). A large portion of this cost is the result of the huge damage inflicted by a handful of storms that have occurred since 2000.
2. The magnitude of storm restoration costs appears to be random and varies greatly with the type and severity of storms.
3. Utilities mobilize substantial resources to repair their systems after major storms, as is evidenced by the rate at which utilities incur costs during a storm restoration.
4. Average utility storm restoration costs are significant from both a customer and a utility perspective as measured by a storm's cost per customer.

[3] "Peak customers" is used instead of "total customers" because total customers includes customers that incur power outages resulting from utility restoration efforts that may not be related to the storm, e.g. feeder switching.

DETERMINING THE POTENTIAL FINANCIAL IMPACT OF MAJOR STORMS

At an industry level, little is known about the financial impact of major storms. Based on recent media reports of major storms, the potential financial impacts are substantial, even catastrophic.

To better gauge the potential financial impact of major storms, let's examine the impact that very large storms occurring since 2000 had on four companies. Figure 6 evaluates company transmission and distribution (T&D) expenses and net earnings using data from media accounts of storm costs and FERC Form 1 financial data to compare the cost (including capital) of four large storms that occurred since 2000.

The data indicates that storm costs can have a large and potentially devastating financial impact. In some instances, storm costs exceed a company's total earnings and T&D expenses for the entire year.

Figure 6

Storm Description	Date	Storm Cost $Million ($2003)	Financial Impact	
			% of Annual T&D Expenses	% of Net Operating Income
Progress Energy NC Ice Storms	2000	$ 205	259.8%	96.7%
Dominion Energy Hurricane Isabel	2003	$ 212	72.3%	24.8%
Progress Energy Florida Hurricanes	2004	$ 366	303.8%	104.1%
FPL Hurricanes	2004	$ 890	305.2%	97.0%

Source: Press Accounts and FERC Form 1 Data

To assess the potential financial significance of major storms, storm-cost data was compared to net utility operating income and T&D expenses for each company that reported a major storm. *(See Figure 2, page 4.)* If a company reported more than one major storm in a year, the storm costs were combined. These results are summarized in the following charts.

Figure 7 compares storm costs to income and indicates that storm costs could have a significant impact on a utility company's earnings if all of the storm's cost were written off against current earnings. Average storm costs for the 1994-2004 period were approximately 13 percent of net utility operating income. *(See page 8.)*

The chart also indicates considerable volatility from year to year in the potential earnings impact of major storms. In many years, storm costs were significantly less than the 13 percent average, but in other years costs were significantly above average. For three storms, costs nearly equaled the company's operating income for the entire year.

Figure 7

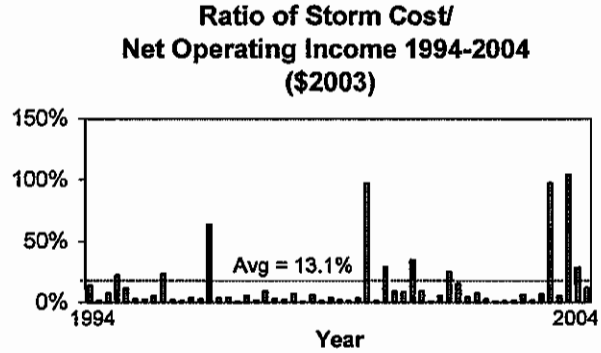
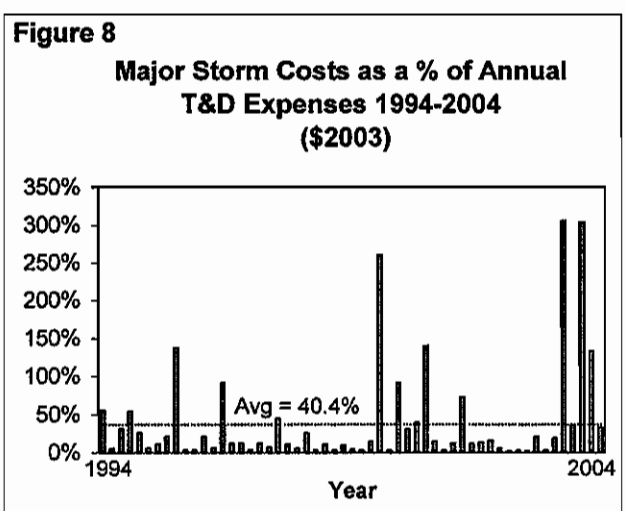


Figure 8 provides another way of gauging the potential impact of major storms by comparing the storm's costs to what the utility spends each year to operate and maintain its entire transmission and distribution system. The data provides another indication of the significant financial impact a storm can have on a utility's financial condition. For those companies hit by a major storm between 1994 and 2004, the costs averaged 40 percent of what the company spent during the year to operate and maintain its entire transmission and distribution system. Several storms exceeded company expenditures for T&D for the year.

Figure 8



The data depicted in these charts does not present a true picture, however, of the actual financial impact of a major storm on a utility. Many regulatory commissions allow accounting policies and special rate treatments that minimize the potentially significant financial costs that storms can inflict. Greater insight into these policies and practices and how they are deployed in the industry is provided in the next section of the report.

PAYING FOR MAJOR STORM RESTORATION

Special accounting and regulatory treatments for storm costs can play a major role in helping utilities recover from the financial impact of a major storm.

Even with the $1.4 billion price tag that the major Florida utilities were faced with for restoring their systems after the 2004 hurricanes (*Figure 9*), Wall Street did not feel compelled to change the credit ratings of any of the major Florida utilities. In deciding to maintain its current ratings, Standard and Poor's cited "storm damage reserves maintained by the utilities, the ability to recover storm-related expenses through rates, a favorable regulatory history with such recovery, and sound liquidity."[4]

However, Standard & Poor's did change its outlook for Progress Energy from stable to negative because of concerns that costs associated with the 2004 hurricanes would delay the company's progress in paying down its high debt levels. Moody's also put the company's ratings under review for possible downgrade, citing the timing of the recovery of storm costs as one of their concerns.

Figure 9
Cost of 2004 Hurricanes for Florida Investor Owned Utilities

	Storm Cost $Million
Florida Power & Light	$ 890
Progress Energy Florida	$ 366
Tampa Electric	$ 60
Gulf Power	$ 109
Total Storm Cost	$ 1,425

Source: Company reports

Accounting for Normal vs. Major Storms

Almost all utilities distinguish between "normal" storms and "major" storms. While there is an IEEE standard definition of a major storm, it is relatively new and not widely used. The general criteria for classifying a storm as "major" depends on whether the storm has a significant impact on a company's customers, i.e. a substantial number of customers are without power for a significant period of time. Baltimore Gas and Electric, for example, defines a major storm as one in which 10 percent of its customers are without power for a day or more. Public Service of New Hampshire defines a major storm as one that results in either (a) 10 percent or more of its customers losing power, resulting in 200 or more reported troubles, or (b) 300 or more reported troubles.[5] Storms that are not classified as major fall under normal accounting rules. Major storms, however, often receive special accounting treatment.

Distinguishing Between Storm Capital and O&M Costs

Major storm expenses are separated into capital and operations and maintenance (O&M) components. Storm capital costs, such as pole and transformer replacements, are treated similarly throughout the industry. They are capitalized on a company's books as a depreciable asset and in most cases are eligible for inclusion in a utility's rate base. Once these costs are included in the rate base, the utility can recover the capital portion of major storm costs from its rate payers.

[4] "Storms Likely to Have Little Effect on U.S. Utility Credit", Sept. 21, 2004, Jodi E. Hecht, Standard & Poor's, New York, New York.

[5] Information provided in company interviews.

In few instances, companies incurring extraordinary storm costs have been allowed to defer capital storm costs and recover them through a special customer surcharge.[6]

While the ratio of capital to O&M costs can vary significantly from storm to storm, a general rule of thumb appears to be that the capital component of a major storm's costs is approximately 20-25 percent of total storm costs.

Recovery of major storm-related O&M costs is different from capital costs. For many companies, expensing major storm costs in the period in which they occur could result in a huge financial burden that could jeopardize the financial standing of the company. The reaction on Wall Street, for example, would have likely been much different if the Florida utilities had been required to expense the O&M component of the 2004 hurricane costs in 2004. Even the possibility of having to incur such a charge could significantly change the level of risk that bondholders and stockholders perceive for a company and increase its overall financing costs.

Storm Insurance

Until Hurricane Andrew in 1992, commercial insurance was widely available at affordable rates to protect against catastrophic storms. FPL, for example had a transmission and distribution system policy with a limit of $350 million per occurrence. The 1992 premium for this policy was $3.5 million. After Hurricane Andrew, commercial insurance carriers stopped writing such policies altogether or made them so expensive that they could not be justified. For example, the quote FPL received in 1993, the year after Hurricane Andrew, was for $23 million for a transmission and distribution system policy with an aggregate annual loss of $100 million.

In lieu of paying for expensive storm insurance, FPL elected to self-insure. It currently funds its storm reserve account at a level of about $20 million a year. This amounts to about 20 cents per month for a typical residential customer.

To help minimize the potential financial consequences of major storms, some utility regulators have allowed their utilities to employ different types of accounting treatments for major storm O&M costs. Generally, major storm O&M expenses that are not expensed receive one of two types of accounting treatments:[7]

1. They are charged to a special storm reserve account, or
2. They are deferred and paid back over an extended period of time.

Each of these accounting treatments is described in more detail on the next page.

[6] Both FPL and Progress Energy Florida have requested that they be allowed to recover their incremental capital costs as well as O&M costs associated with the 2004 hurricanes through a special customer surcharge. In the past, the Florida Public Service Commission allowed capital costs associated with Hurricane Andrew to be recovered through storm reserve accounts.

[7] Co-ops and municipal utilities are an exception. They are eligible to recover 75 percent of their storm costs through FEMA

Utility Storm Reserves

A large number of investor-owned utilities were surveyed to determine how they were accounting and paying for major storm costs. Of the 28 companies contacted, approximately 12, or slightly less than half, indicated that their commissions allowed them to establish special storm reserves (*Figure 10*).

What are these reserves and how do they work?

A storm reserve is an accounting technique that allows utilities to smooth out the earnings impact of major storms. With the exception of FPL, storm reserves are not funded with cash and therefore do not minimize the cash-flow impact of having to pay the costs of a major storm.

When a utility establishes a storm reserve, it credits a fixed amount each year to the reserve through monthly accruals.[8] These monthly accruals are deducted from the current month's earnings even though no actual storm costs are incurred. When a major storm strikes, the storm costs are charged against the balance in the storm reserve account. The reserve, however, provides no cash to pay the actual storm costs.[9]

The big benefit of this type of accounting treatment is that it allows utilities to smooth out the earnings impact of major storms. When a big storm strikes, the only charge to earnings the utility incurs is its normal monthly accrual to its storm reserve account, assuming that it has a balance in its storm reserve account.

Figure 10
Companies with Storm Reserves

Company	Storm Reserve?[1]
Alabama Power	Yes
Avista	No
Baltimore Gas & Electric	No
Black Hills	No
Central Hudson	No
Central Maine Power	No
Cleco	Yes
Connecticut Light & Power	Yes
Duke Power Company	No
Entergy Arkansas	Yes
Florida Power & Light	Yes
Georgia Power	Yes
Gulf Power	Yes
Mississippi Power	Yes
Progress Energy Florida	Yes
Public Service New Hampshire	Yes
Puget Sound Energy	No
Rochester Gas & Electric	Yes
Sierra Pacific	No
Tampa Electric	Yes
Westar	Yes
Western Mass Electric	No
Conectiv	No
Progress Energy Carolinas	No
Dominion	No
Nevada Power	No
Kansas City Power & Light	No
Duquesne Power & Light	No

[1] *Note: Many companies have the opportunity to petition their commissions for deferrals of "significant" storm costs, but do not have a formal policy in place to establish a reserve or deferral. Only those companies with established policies for storm reserves are identified in this column.*

With the 2004 hurricanes, FPL, Progress Energy Florida, Tampa Electric and Gulf Power all incurred storm related O&M costs that exceeded the balance in their storm reserve accounts. (*See Figure 11, page 12.*) To avoid charging these non-accrued amounts against current earnings, the Florida Public Service Commission allowed each of the Florida utilities to account for the excess as a negative balance in the companies' storm reserve accounts. The Florida Commission indicated that it viewed the negative balance in the storm reserve account as a temporary solution until "an alternative accounting treatment for recovery of prudently incurred

[8] Most companies appear to accrue less than $5 million year. The highest accrual identified was $20 million per year for FPL.

[9] Even with the magnitude of the storm costs that FPL and Progress Energy incurred, rating agencies did not see these costs as a serious threat to overall liquidity; in other words, both companies had sufficient access to commercial paper and bank lines to pay the cash costs of the storms.

storm damage costs..." could be established.[10] This treatment allowed all three companies to avoid taking a charge to earnings in 2004 and helped the companies maintain their credit ratings.[11]

Figure 11
2004 Hurricane Costs vs. Reserve Balances

	Total Storm Cost ($Million)	Reserve Balance Before Storms ($Million)
FPL	$ 890.0	$ 345.0
Progress Energy Florida	$ 366.0	$ 45.4
Tampa Electric	$ 60.0	$ 42.7
Gulf Power	$ 109.0	$ 28.0

Had these reserve funds not been in place and had the Florida Commission not signaled that it was willing to work with the Florida companies to work out a plan for recovering prudently incurred storm costs carried as negative balances in storm-reserve accounts, it is likely that the companies would have suffered a much greater financial impact, which could have jeopardized their ratings and increased their financing costs.

Special Deferrals of Storm Costs

Another accounting technique used to minimize the financial impact of major storms is to defer all or a portion of the storm-related O&M costs. Unlike credits to storm reserve accounts, deferrals typically are not routine events and typically require the utility to ask its commission for special accounting treatment after a major storm causes a significant financial impact on the utility.

When a deferral is established, all or a portion of the storm-related O&M costs are amortized over an extended time period, usually two to three years. The rationale for establishing the deferral is to smooth out the earnings impact of the storm.

Storm costs that are deferred may or may not be recoverable from rate payers. In many instances, the deferred costs are paid for through a special surcharge assessed on each customer's bill until the storm reserve is paid off. Some utilities, however, are expected to pay off the deferred storm costs out of their earnings.

[10] Florida Public Service Commission order in Docket No. 041057-EI, Sept. 21, 2004.

[11] In November 2004, both FPL and Progress Energy requested permission from the Florida Public Service Commission to amortize the negative balances they were carrying in their storm reserve accounts over a two-year period. The amortization would result in a surcharge beginning in January 2005 of $2.09 per month for FPL customers and $3.81 per month for Florida Progress customers.

Figure 12
Examples of Deferred Treatment for Storm Costs

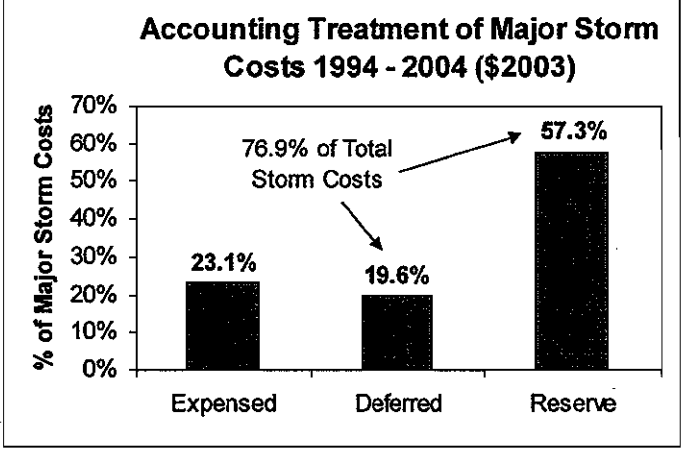
Company	Storm Cost Treatment
Central Maine Power	Total costs for 1998 ice storm were $56 million. FEMA reimbursed $20 million through the state, and $34 million O&M balance was deferred over three years.
Progress Energy Carolina	Usually expenses the first $10 million of O&M costs for large storms. Defers remainder of O&M costs for three years with utility commission approval.
Central Hudson	Deferred expenses for large snowstrom in 1997 and for Hurricane Floyd in 1999.
Kansas City Power & Light	Amortized expenses for 2002 ice storm over five years
Sierra Pacific	O&M portion of 2002 snowstorm ammortized over 4 years
Puget Sound Enegy	Deferred expenses for wind storms in 1996, 1999 and 2003
Conectiv and BG&E	In Maryland, Conectiv and BG&E are allowed to include a historical average of their previous storm costs in the test year costs they use for determining future revenue requirements.

Figure 12 summarizes the deferral accounting treatment some companies have received that allows them to defer their storm costs. Included in the table, even though it is not technically a deferral, is a summary of the special accounting treatment that Conectiv and BG&E receive from the Maryland Public Service Commission that allows them to include an average of historical storm costs in the test year they use for rate cases.

This accounting treatment essentially allows these companies to pre-pay at least a portion of their storm costs by collecting revenues from their customers to pay for storms that have not yet occurred. One shortcoming of this technique is that it does little to smooth out the earnings impact of severe storms such has Hurricane Isabel, which struck in 2003 and required both companies to incur significant charges to earnings in 2003.

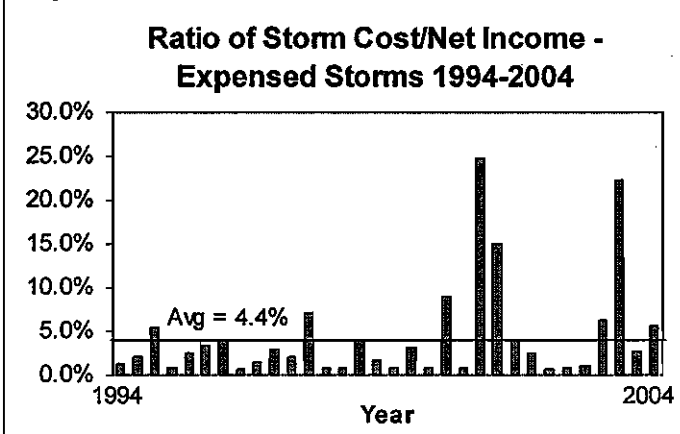
Based on the survey results presented in Figure 2, it appears that substantial portions of storm costs were recovered through existing storm reserves or were eligible for deferred accounting treatment. The data on storm cost accounting treatment is summarized in Figure 13 and indicates that almost 75 percent of total storm costs were covered by some type of storm reserve or deferred accounting treatment. *(See page 14.)* This significantly reduces the financial impact of the storm.

Figure 13



The remaining storms' costs are expensed. While the costs of these expensed storms were significant, they appear "manageable." Figure 14 compares the ratio of storm costs obtained from the survey to net operating income. On average the major storm costs that were expensed equaled 4.4 percent of net operating income. This is about a third of what the average would have been if the storm costs eligible for storm reserve and deferred accounting treatment had been included. (*See Figure 7, page 8.*) Equally significant, only a handful of the expensed storms were significantly above the 4.4 percent average.

Figure 14



There are no assurances, however, that utilities will continue to receive the favorable regulatory treatment for recovery of storm costs that they received in the past. The whole issue of storm cost recovery appears to be becoming more politicized in the current environment. For example, on Nov. 17, 2004, the Florida Office of Public Counsel and the Florida Industrial Power Users Group filed motions with the Florida Public Service Commission requesting that it deny FPL's and Progress Energy Florida's petitions to establish special customer surcharges to pay for hurricane costs.

CONCLUSION & RECOMMENDATIONS

Storms are expensive. The EEI survey identified 81 storms between 1994 and 2004 that caused approximately $2.7 billion ($2003) in damage to electric utility systems. While this is a big number, it is only a fraction of the regional economic losses resulting from being without power in the aftermath of a large storm. With this kind of societal impact, it is clearly in everyone's best interest to restore power as quickly as possible.

Because of the high costs utilities incur in their storm restoration efforts, there is a potential for large financial losses for individual utilities. For more than 75 percent of the major storm costs identified in the survey, the financial impacts were mitigated through storm reserves or deferral of storm costs. For the 25 percent of storm costs that were written off, the financial impact, with a few exceptions, did not appear to present a major financial hardship.

Of concern, however, is the uncertainty that surrounds storm cost recovery and the degree to which storm recovery is becoming politicized. The industry knows that large storms will occur and it knows that the financial consequences of these storms could be significant and in some cases catastrophic. Despite this, recovery of costs for most major storms is dealt with after the fact. This makes it difficult for utility managers to plan and creates uncertainty on Wall Street.

What is ironic, given the importance of storm restoration, is that more established and consistent policies regarding storm cost recovery are not in place. From a cost recovery standpoint, why is recovery of storm restoration costs any different than recovery of insurance premiums? Both represent a cost item for operating a modern utility. Yet, the industry has vastly different philosophies regarding cost recovery of these two items.

Given the lack of commercially available storm insurance at affordable rates, the industry should adopt a self-insurance mechanism for storms, either within individual companies or possibly on an industry basis. Looking at the establishment of a storm reserve with regulatory approvals for monthly reserve accruals or possibly even cash deposits is a good starting point.

The storm reserve funds identified in this report do what they were intended to do—minimize the financial impact of major storms at an affordable cost ($.20/month for a typical FPL residential customer). With Wall Street starting to focus on this issue, consideration must be given to establishing reserves as a type of "rainy day fund" for when it becomes necessary to offset the serious economic impact of future storm restoration.

ATTACHMENT A: SAMPLE SURVEY

EEI Major Storm Restoration Cost Survey

EEI is seeking member company support in obtaining historical data that can be used to quantify the financial impact of major storms on utilities and their customers (e.g., Hurricane Isabel, 2002 North Carolina ice storm).

Please complete the following survey for the 10 most severe storms your company has experienced since 1992. Use peak number of customers out of service to rank storm severity. Please provide all storm data at the operating company level, not the holding company level. Holding companies should complete a separate survey form for each operating company they are providing storm data for.

Completed surveys should be e-mailed to William Hayes at whayes@eei.org by November 5, 2004. All questions should be addressed to William Hayes at 202-508-5628.

Note: all specific company data will remain confidential. Only composite results will be released in summary form.

Operating company name: _____

Name of individual completing survey: _____

Telephone number: _____

Phone number: _____

Email address: _____

MAJOR STORM RESTORATION COST DATA

		STORM IMPACT					STORM COST
				CMI Data			
Major Storm Event	Date	Outage Duration (Days)	Peak Customers Out	Sum of Customer Outage Durations (days)	Total Customers Interrupted During Storm	MWhrs of Load Not Served (MWhrs)	Restoration Cost (Storm $)
Hurricane 1 (Sample Data)	8/04	4	370,000	2,500,000	450,000	6,000	$ 42,000,000

METHOD OF RECOVERING STORM COSTS

Major Storm Event	Method of Cost Recovery (expense, reserve, account, deferral account, other)	Brief summary of any special action taken with respect to recovering storm costs
Hurricane 1	Expensed	Commission during due to deferral of storm costs

Survey Instructions

Please complete the attached storm restoration survey form. All data should be provided at the operating company level. For holding companies, separate survey forms should be completed for each operating company for which storm data is being provided.

Major Storm Event:
A major storm event is defined as a storm resulting in a multi-day outage for a significant percentage of total customers. Please indicate the type of storm, e.g. hurricane, ice storm, snowstorm, or wind and lightning storm in your response.

Date:
Please indicate the month and year storm restoration work was completed.

Outage Duration:
Number of days to restore system following the storm.

Peak Number of Customers Out:
The largest number of customers simultaneously without power during the storm event.

Total Duration of Customer Interruptions:
The duration of customer outages is calculated by adding the customer-hours of interruptions experienced during the storm period. For example, if 200 customers were out of power for 30 hours and 500 customers were out of power for 20 hours, the duration of customer outages would be (200 x 30) + (500 x 20) = 16,000 customer hours. (Calculate in the same manner as the duration of customer interruptions is calculated for the CAIDI Index).

Total Customers Interrupted:
The total number of customers without power at some point during the storm event. Note: some customers may experience multiple outages during a storm event. These outages should be treated as separate outage incidents attributed to the storm. (Calculate in the same manner as the total number of customers is calculated for the CAIDI Index).

MWhrs of Load Not Served:
The estimate of the difference between the MWhr sales to ultimate customers that actually occurred during the storm restoration period and the sales that would have occurred if the storm had not happened.

Restoration Cost:
The estimate of the total direct costs incurred to provide storm restoration. Costs should be reported in storm year dollars, i.e. no escalation for inflation.

Accounting Treatment of Storm Costs:
Briefly describe how storm costs are accounted for, i.e. expensed against current year earnings, charged to a special reserve account set up to pay for storm costs, deferred through a special reserve account or any other accounting treatments that have been used for storm related costs. Briefly describe any special actions taken with respect to recovering storm costs such as requesting a rate increase to recover storm related costs.

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Notes to Financial Statements

As at April 30, 2007 (expressed in United States dollars)

3. Accounts Receivable - Trade

	2007	2006
	$	$
Billings to consumers	16,059,629	15,288,582
Employee Share Purchase Plan	17,606	39,983
Other receivables	505,043	353,426
	16,582,278	15,681,991

The Company's billings to consumers increased due to an increase in total customers in 2007 by 1,653 to 22,768, higher consumption and higher fuel factor rates.

Employee Share Purchase Plan

The Company provides interest-free advances to employees to purchase Class A Ordinary Shares, with such advances recovered through payroll deductions over the next 12 months. The maximum semi-annual participation is 1,000 Class A Ordinary Shares per employee. The plan is non-compensatory as shares purchased by the employee are obtained at the prevailing market value at the time of purchase.

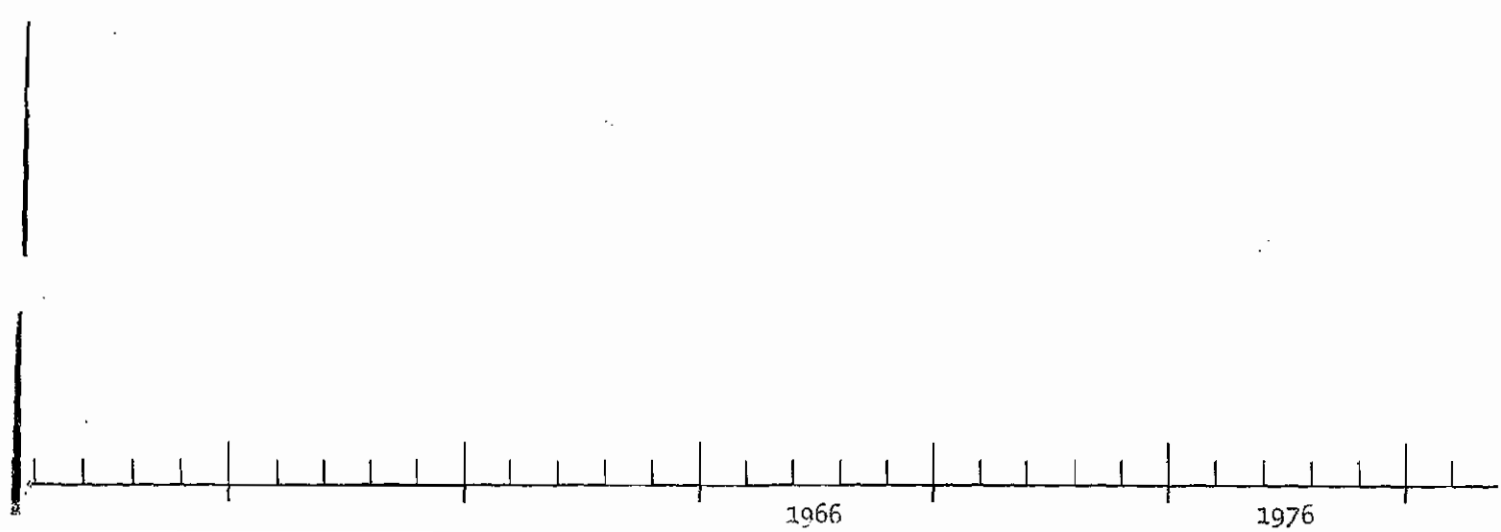
4. Other Receivable - Insurance

On September 12, 2004, a catastrophic category four hurricane hit Grand Cayman. As a result of the hurricane, the Company recognised an impairment of $19,463,554 in respect of damaged Property, Plant and Equipment ("PP&E") in fiscal 2005. During the negotiation process, it was established that an element of the initial claim filed with the insurer included betterment of some assets and certain duplications of the claim, which were adjusted in the final settlement. As a result, the Insurance Receivable balance in fiscal 2005 was overstated by $2,334,552 and the PP&E was understated by the same amount. Correction of these estimates were reflected in fiscal 2006 by adjusting PP&E and the Insurance Receivable by equal adjustment. These adjustments had no impact on net income reporting in fiscal 2005 or 2006.

The Other receivable - Insurance balance at April 30, 2006 represented both business interruption and property insurance claims relating to the hurricane net of $22.1 million of general advances made by the Company's insurers. In April 2006, the Company reached a preliminary agreement with its insurers for a settlement of $31.1 million on the hurricane claim. Overall, the terms of the settlement were:

Property Claim (net of deductible)	$16.3 million
Business Interruption Claim	$14.8 million
Total	$31.1 million

Further to this settlement, the insurers made a final payment of $9 million in June 2006. There are no outstanding balances related to the hurricane claim.



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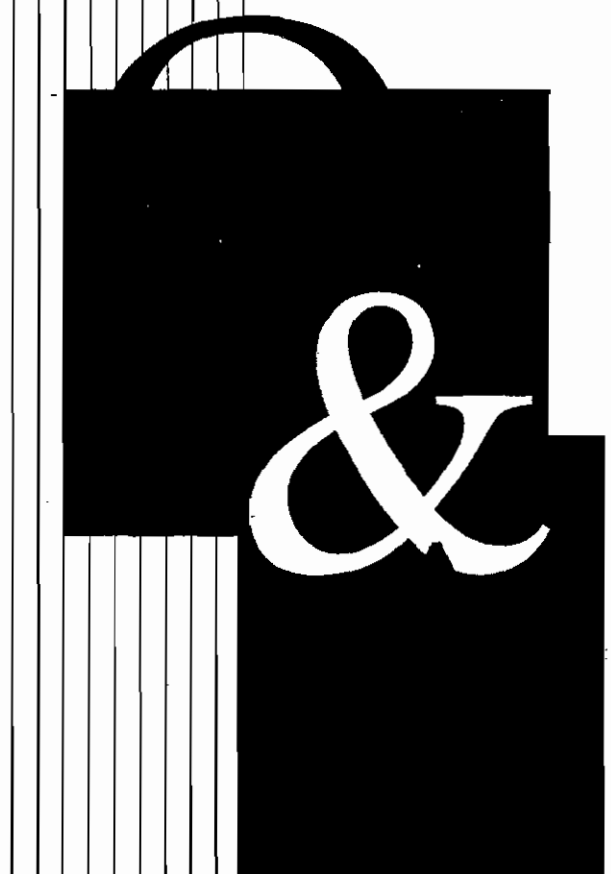
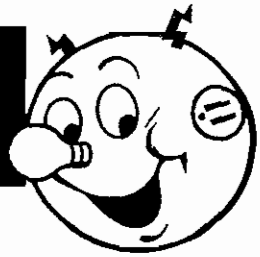


SECURITY & PAYMENTS

SECURITY PAYMENTS



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Following are the answers to some of the questions which are most often asked by our customers regarding security payments. Should you have any further questions or need clarification please do not hesitate to contact our Customer Service Representative at 430-4300.

Q. Why do Customers have to provide security for payment?

A. The method of billing for electricity after it has been used is convenient for the customer. The electric energy is supplied and used instantly on customer demand and it cannot be returned after it has been delivered. Therefore, in accordance with good business practice the Company may require security to be given by customers for payment of electricity bills. Section 15 (4), First Schedule of Caption 278 of the Electric Light and Power Act provides for the collection of security payments.

Q. How much security is required?

A. Security is normally required to cover three months of electricity bills.

Q. Which customers are required to provide security for payment?

A. All customers except Barbadian residents who are categorised under our Domestic Service tariff are normally required to provide security for payment. However, Barbadian residents under the Domestic Service tariff may be asked to provide

Q. How can this security be provided?

A. Security for payment may be provided in the form of a cash deposit, a banker's guarantee or a continuing bond issued by a commercial bank or other approved financial institution.

Q. When is the interest on cash deposits paid to the customer?

A. Interest is added to the cash deposit daily at the interest rate set by the Company and approved by the Public Utilities Board. At any time, a customer may request to have his or her deposit reviewed. If the level of the deposit plus accumulated interest is greater than the security requirement, and provided that no increase in usage is anticipated in the near future, the portion of the deposit plus interest that is in excess of the amount of security required, may be refunded to the customer.

Q. Are deposits reviewed only when the customer calls?

A. The company will review the security amounts from time to time. If the security provided is less than the amount required, a request may be made for additional security.

Q. When is the deposit refunded?

A. The cash deposit will be refunded with the accumulated interest when the account is terminated or arrangements are made to provide alternative security (such as a banker's guarantee).

REMINDERS!

- Outstanding balances on the account will be deducted from the deposit before refunding.
- Inform us when to terminate your service and claim any refund due.

25

320 U.S. 591

64 S.Ct. 281

88 L.Ed. 333

FEDERAL POWER COMMISSION et al.
v.
HOPE NATURAL GAS CO. CITY OF CLEVELAND v. SAME.

Nos. 34 and 35.

Argued Oct. 20, 21, 1943.
Decided Jan. 3, 1944.

Mr. Francis M. Shea, Asst. Atty. Gen., for petitioners Federal Power Com'n and others.

[Argument of Counsel from page 592 intentionally omitted]

Mr. Spencer W. Reeder, of Cleveland, Ohio, for petitioner City of cleveland.

Mr. William B. Cockley, of Cleveland, Ohio, for respondent.

Mr. M. M. Neeley, of Charleston, W. Va., for State of West Virginia, as amicus curiae by special leave of Court.

Mr. Justice DOUGLAS delivered the opinion of the Court.

1 The primary issue in these cases concerns the validity under the Natural Gas Act of 1938, 52 Stat. 821, 15 U.S.C. § 717 et seq., 15 U.S.C.A. § 717 et seq., of a rate order issued by the Federal Power Commission reducing the rates chargeable by Hope Natural Gas Co., 44 P.U.R.,N.S., 1. On a petition for review of the order made pursuant to § 19(b) of the Act, the Circuit Court of Appeals set it aside, one judge dissenting. 4 Cir., 134 F.2d 287. The cases are here on petitions for writs of certiorari which we granted because of the public importance of the questions presented. City of Cleveland v. Hope Natural Gas Co., 319 U.S. 735, 63 S.Ct. 1165.

2 Hope is a West Virginia corporation organized in 1898. It is a wholly owned subsidiary of Standard Oil Co. (N.J.). Since the date of its organization, it has been in the business of producing, purchasing and marketing natural gas in that state.[1] It sells some of that gas to local consumers in West Virginia. But the great bulk of it goes to five customer companies which receive it at the West Virginia line and distribute it in Ohio and in Pennsylvania.[2] In July, 1938, the cities of Cleveland and Akron filed complaints with the Commission charging that the rates collected by Hope from East Ohio Gas Co. (an affiliate of Hope which distributes gas in Ohio) were excessive and unreasonable. Later in 1938 the Commission on its own motion instituted an investigation to determine the reasonableness of all of Hope's interstate rates. In March 1939 the Public Utility Commission of Pennsylvania filed a complaint with the Commission charging that the rates collected by Hope from Peoples Natural Gas Co. (an affiliate of Hope distributing gas in Pennsylvania) and two non-affiliated companies were

unreasonable. The City of Cleveland asked that the challenged rates be declared unlawful and that just and reasonable rates be determined from June 30, 1939 to the date of the Commission's order. The latter finding was requested in aid of state regulation and to afford the Public Utilities Commission of Ohio a proper basic for disposition of a fund collected by East Ohio under bond from Ohio consumers since June 30, 1939. The cases were consolidated and hearings were held.

3 On May 26, 1942, the Commission entered its order and made its findings. Its order required Hope to decrease its future interstate rates so as to reflect a reduction, on an annual basis of not less than $3,609,857 in operating revenues. And it established 'just and reasonable' average rates per m.c.f. for each of the five customer companies.[3] In response to the prayer of the City of Cleveland the Commission also made findings as to the lawfulness of past rates, although concededly it had no authority under the Act to fix past rates or to award reparations. 44 P.U.R.,U.S., at page 34. It found that the rates collected by Hope from East Ohio were unjust, unreasonable, excessive and therefore unlawful, by $830,892 during 1939, $3,219,551 during 1940, and $2,815,789 on an annual basis since 1940. It further found that just, reasonable, and lawful rates for gas sold by Hope to East Ohio for resale for ultimate public consumption were those required to produce $11,528,608 for 1939, $11,507,185 for 1940 and $11.910,947 annually since 1940.

4 The Commission established an interstate rate base of $33,712,526 which, it found, represented the 'actual legitimate cost' of the company's interstate property less depletion and depreciation and plus unoperated acreage, working capital and future net capital additions. The Commission, beginning with book cost, made certain adjustments not necessary to relate here and found the 'actual legitimate cost' of the plant in interstate service to be $51,957,416, as of December 31, 1940. It deducted accrued depletion and depreciation, which it found to be $22,328,016 on an 'economic-service-life' basis. And it added $1,392,021 for future net capital additions, $566,105 for useful unoperated acreage, and $2,125,000 for working capital. It used 1940 as a test year to estimate future revenues and expenses. It allowed over $16,000,000 as annual operating expenses—about $1,300,000 for taxes, $1,460,000 for depletion and depreciation, $600,000 for exploration and development costs, $8,500,000 for gas purchased. The Commission allowed a net increase of $421,160 over 1940 operating expenses, which amount was to take care of future increase in wages, in West Virginia property taxes, and in exploration and development costs. The total amount of deductions allowed from interstate revenues was $13,495,584.

5 Hope introduced evidence from which it estimated reproduction cost of the property at $97,000,000. It also presented a so-called trended 'original cost' estimate which exceeded $105,000,000. The latter was designed 'to indicate what the original cost of the property would have been if 1938 material and labor prices had prevailed throughout the whole period of the piece-meal construction of the company's property since 1898.' 44 P.U.R.,N.S., at pages 8, 9. Hope estimated by the 'percent condition' method accrued depreciation at about 35% of reproduction cost new. On that basis Hope contended for a rate base of $66,000,000. The Commission refused to place any reliance on reproduction cost new, saying that it was 'not predicated upon facts' and was 'too conjectural and illusory to be given any weight in these proceedings.' Id., 44 P.U.R.,U.S., at page 8. It likewise refused to give any 'probative value' to trended 'original cost' since it was 'not founded in fact' but was 'basically erroneous' and produced 'irrational results.' Id., 44 P.U.R.,N.S., at page 9. In determining the amount of accrued depletion and depreciation the Commission, following Lindheimer v. Illinois Bell Telephone Co., 292 U.S. 151, 167-169, 54 S.Ct. 658, 664—666, 78 L.Ed. 1182; Federal Power Commission v. Natural Gas Pipeline

Co., 315 U.S. 575, 592, 593, 62 S.Ct. 736, 745, 746, 86 L.Ed. 1037, based its computation on 'actual legitimate cost'. It found that Hope during the years when its business was not under regulation did not observe 'sound depreciation and depletion practices' but 'actually accumulated an excessive reserve'[4] of about $46,000,000. Id., 44 P.U.R.,N.S., at page 18. One member of the Commission thought that the entire amount of the reserve should be deducted from 'actual legitimate cost' in determining the rate base.[5] The majority of the Commission concluded, however, that where, as here, a business is brought under regulation for the first time and where incorrect depreciation and depletion practices have prevailed, the deduction of the reserve requirement (actual existing depreciation and depletion) rather than the excessive reserve should be made so as to lay 'a sound basis for future regulation and control of rates.' Id., 44 P.U.R.,N.S., at page 18. As we have pointed out, it determined accrued depletion and depreciation to be $22,328,016; and it allowed approximately $1,460,000 as the annual operating expense for depletion and depreciation.[6]

6 Hope's estimate of original cost was about $69,735,000 approximately $17,000,000 more than the amount found by the Commission. The item of $17,000,000 was made up largely of expenditures which prior to December 31, 1938, were charged to operating expenses. Chief among those expenditures was some $12,600,000 expended in well-drilling prior to 1923. Most of that sum was expended by Hope for labor, use of drilling-rigs, hauling, and similar costs of well-drilling. Prior to 1923 Hope followed the general practice of the natural gas industry and charged the cost of drilling wells to operating expenses. Hope continued that practice until the Public Service Commission of West Virginia in 1923 required it to capitalize such expenditures, as does the Commission under its present Uniform System of Accounts.[7] The Commission refused to add such items to the rate base stating that 'No greater injustice to consumers could be done than to allow items as operating expenses and at a later date include them in the rate base, thereby placing multiple charges upon the consumers.' Id., 44 P.U.R.,N.S., at page 12. For the same reason the Commission excluded from the rate base about $1,600,000 of expenditures on properties which Hope acquired from other utilities, the latter having charged those payments to operating expenses. The Commission disallowed certain other overhead items amounting to over $3,000,000 which also had been previously charged to operating expenses. And it refused to add some $632,000 as interest during construction since no interest was in fact paid.

7 Hope contended that it should be allowed a return of not less than 8%. The Commission found that an 8% return would be unreasonable but that 6 1/2% was a fair rate of return. That rate of return, applied to the rate base of $33,712,526, would produce $2,191,314 annually, as compared with the present income of not less than $5,801,171.

8 The Circuit Court of Appeals set aside the order of the Commission for the following reasons. (1) It held that the rate base should reflect the 'present fair value' of the property, that the Commission in determining the 'value' should have considered reproduction cost and trended original cost, and that 'actual legitimate cost' (prudent investment) was not the proper measure of 'fair value' where price levels had changed since the investment. (2) It concluded that the well-drilling costs and overhead items in the amount of some $17,000,000 should have been included in the rate base. (3) It held that accrued depletion and depreciation and the annual allowance for that expense should be computed on the basis of 'present fair value' of the property not on the basis of 'actual legitimate cost'.

9 The Circuit Court of Appeals also held that the Commission had no power to

make findings as to past rates in aid of state regulation. But it concluded that those findings were proper as a step in the process of fixing future rates. Viewed in that light, however, the findings were deemed to be invalidated by the same errors which vitiated the findings on which the rate order was based.

10 Order Reducing Rates. Congress has provided in § 4(a) of the Natural Gas Act that all natural gas rates subject to the jurisdiction of the Commission 'shall be just and reasonable, and any such rate or charge that is not just and reasonable is hereby declared to be unlawful.' Sec. 5(a) gives the Commission the power, after hearing, to determine the 'just and reasonable rate' to be thereafter observed and to fix the rate by order. Sec. 5(a) also empowers the Commission to order a 'decrease where existing rates are unjust * * * unlawful, or are not the lowest reasonable rates.' And Congress has provided in § 19(b) that on review of these rate orders the 'finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive.' Congress, however, has provided no formula by which the 'just and reasonable' rate is to be determined. It has not filled in the details of the general prescription[8] of § 4(a) and § 5(a). It has not expressed in a specific rule the fixed principle of 'just and reasonable'.

11 When we sustained the constitutionality of the Natural Gas Act in the Natural Gas Pipeline Co. case, we stated that the 'authority of Congress to regulate the prices of commodities in interstate commerce is at least as great under the Fifth Amendment as is that of the states under the Fourteenth to regulate the prices of commodities in intrastate commerce.' 315 U.S. at page 582, 62 S.Ct. at page 741, 86 L.Ed. 1037. Rate-making is indeed but one species of price-fixing. Munn v. Illinois, 94 U.S. 113, 134, 24 L.Ed. 77. The fixing of prices, like other applications of the police power, may reduce the value of the property which is being regulated. But the fact that the value is reduced does not mean that the regulation is invalid. *Block v. Hirsh*, 256 U.S. 135, 155—157, 41 S.Ct. 458, 459, 460, 65 L.Ed. 865, 16 A.L.R. 165; Nebbia v. New York, 291 U.S. 502, 523—539, 54 S.Ct. 505, 509—517, 78 L.Ed. 940, 89 A.L.R. 1469, and cases cited. It does, however, indicate that 'fair value' is the end product of the process of rate-making not the starting point as the Circuit Court of Appeals held. The heart of the matter is that rates cannot be made to depend upon 'fair value' when the value of the going enterprise depends on earnings under whatever rates may be anticipated.[9]

12 We held in Federal Power Commission v. Natural Gas Pipeline Co., supra, that the Commission was not bound to the use of any single formula or combination of formulae in determining rates. Its rate-making function, moreover, involves the making of 'pragmatic adjustments.' Id., 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. And when the Commission's order is challenged in the courts, the question is whether that order 'viewed in its entirety' meets the requirements of the Act. Id., 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. Under the statutory standard of 'just and reasonable' it is the result reached not the method employed which is controlling. Cf. Los Angeles Gas & Electric Corp. v. Railroad Commission, 289 U.S. 287, 304, 305, 314, 53 S.Ct. 637, 643, 644, 647, 77 L.Ed. 1180; West Ohio Gas Co. v. Public Utilities Commission (No. 1), 294 U.S. 63, 70, 55 S.Ct. 316, 320, 79 L.Ed. 761; West v. Chesapeake & Potomac Tel. Co., 295 U.S. 662, 692, 693, 55 S.Ct. 894, 906, 907, 79 L.Ed. 1640 (dissenting opinion). It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important. Moreover, the Commission's order does not become suspect by reason of the fact that it is challenged. It is the product of expert judgment which carries a presumption of validity. And he who would upset the rate order under the Act carries the heavy burden of making a convincing showing that it is

invalid because it is unjust and unreasonable in its consequences. Cf. Railroad Commission v. Cumberland Tel. & T. Co., 212 U.S. 414, 29 S.Ct. 357, 53 L.Ed. 577; Lindheimer v. Illinois Bell Tel. Co., supra, 292 U.S. at pages 164, 169, 54 S.Ct. at pages 663, 665, 78 L.Ed. 1182; Railroad Commission v. Pacific Gas & E. Co., 302 U.S. 388, 401, 58 S.Ct. 334, 341, 82 L.Ed. 319.

13 The rate-making process under the Act, i.e., the fixing of 'just and reasonable' rates, involves a balancing of the investor and the consumer interests. Thus we stated in the Natural Gas Pipeline Co. case that 'regulation does not insure that the business shall produce net revenues.' 315 U.S. at page 590, 62 S.Ct. at page 745, 86 L.Ed. 1037. But such considerations aside, the investor interest has a legitimate concern with the financial integrity of the company whose rates are being regulated. From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. Cf. Chicago & Grand Trunk R. Co. v. Wellman, 143 U.S. 339, 345, 346, 12 S.Ct. 400, 402, 36 L.Ed. 176. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. See State of Missouri ex rel. South-western Bell Tel. Co. v. Public Service Commission, 262 U.S. 276, 291, 43 S.Ct. 544, 547, 67 L.Ed. 981, 31 A.L.R. 807 (Mr. Justice Brandeis concurring). The conditions under which more or less might be allowed are not important here. Nor is it important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at. For we are of the view that the end result in this case cannot be condemned under the Act as unjust and unreasonable from the investor or company viewpoint.

14 We have already noted that Hope is a wholly owned subsidiary of the Standard Oil Co. (N.J.). It has no securities outstanding except stock. All of that stock has been owned by Standard since 1908. The par amount presently outstanding is approximately $28,000,000 as compared with the rate base of $33,712,526 established by the Commission. Of the total outstanding stock $11,000,000 was issued in stock dividends. The balance, or about $17,000,000, was issued for cash or other assets. During the four decades of its operations Hope has paid over $97,000,000 in cash dividends. It had, moreover, accumulated by 1940 an earned surplus of about $8,000,000. It had thus earned the total investment in the company nearly seven times. Down to 1940 it earned over 20% per year on the average annual amount of its capital stock issued for cash or other assets. On an average invested capital of some $23,000,000 Hope's average earnings have been about 12% a year. And during this period it had accumulated in addition reserves for depletion and depreciation of about $46,000,000. Furthermore, during 1939, 1940 and 1941, Hope paid dividends of 10% on its stock. And in the year 1942, during about half of which the lower rates were in effect, it paid dividends of 7 1/2%. From 1939-1942 its earned surplus increased from $5,250,000 to about $13,700,000, i.e., to almost half the par value of its outstanding stock.

15 As we have noted, the Commission fixed a rate of return which permits Hope to earn $2,191,314 annually. In determining that amount it stressed the importance of maintaining the financial integrity of the company. It considered the financial history of Hope and a vast array of data bearing on the natural gas industry, related businesses, and general economic conditions. It noted that the yields on better issues of bonds of natural gas companies sold in the last few years were 'close to 3 per cent', 44 P.U.R.,N.S., at page 33. It stated that the company was a 'seasoned enterprise whose risks have been minimized' by adequate provisions for depletion and depreciation (past and present) with

'concurrent high profits', by 'protected established markets, through affiliated distribution companies, in populous and industralized areas', and by a supply of gas locally to meet all requirements, 'except on certain peak days in the winter, which it is feasible to supplement in the future with gas from other sources.' Id., 44 P.U.R.,N.S., at page 33. The Commission concluded, 'The company's efficient management, established markets, financial record, affiliations, and its prospective business place it in a strong position to attract capital upon favorable terms when it is required.' Id., 44 P.U.R.,N.S., at page 33.

16 In view of these various considerations we cannot say that an annual return of $2,191,314 is not 'just and reasonable' within the meaning of the Act. Rates which enable the company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed certainly cannot be condemned as invalid, even though they might produce only a meager return on the so-called 'fair value' rate base. In that connection it will be recalled that Hope contended for a rate base of $66,000,000 computed on reproduction cost new. The Commission points out that if that rate base were accepted, Hope's average rate of return for the four-year period from 1937-1940 would amount to 3.27%. During that period Hope earned an annual average return of about 9% on the average investment. It asked for no rate increases. Its properties were well maintained and operated. As the Commission says such a modest rate of 3.27% suggests an 'inflation of the base on which the rate has been computed.' Dayton Power & Light Co. v. Public Utilities Commission, 292 U.S. 290, 312, 54 S.Ct. 647, 657, 78 L.Ed. 1267. Cf. Lindheimer v. Illinois Bell Tel. Co., supra, 292 U.S. at page 164, 54 S.Ct. at page 663, 78 L.Ed. 1182. The incongruity between the actual operations and the return computed on the basis of reproduction cost suggests that the Commission was wholly justified in rejecting the latter as the measure of the rate base.

17 In view of this disposition of the controversy we need not stop to inquire whether the failure of the Commission to add the $17,000,000 of well-drilling and other costs to the rate base was consistent with the prudent investment theory as developed and applied in particular cases.

18 Only a word need be added respecting depletion and depreciation. We held in the Natural Gas Pipeline Co. case that there was no constitutional requirement 'that the owner who embarks in a wasting-asset business of limited life shall receive at the end more than he has put into it.' 315 U.S. at page 593, 62 S.C. at page 746, 86 L.Ed. 1037. The Circuit Court of Appeals did not think that that rule was applicable here because Hope was a utility required to continue its service to the public and not scheduled to end its business on a day certain as was stipulated to be true of the Natural Gas Pipeline Co. But that distinction is quite immaterial. The ultimate exhaustion of the supply is inevitable in the case of all natural gas companies. Moreover, this Court recognized in Lindheimer v. Illinois Bell Tel. Co., supra, the propriety of basing annual depreciation on cost.[10] By such a procedure the utility is made whole and the integrity of its investment maintained.[11] No more is required.[12] We cannot approve the contrary holding of United Railways & Electric Co. v. West, 280 U.S. 234, 253, 254, 50 S.Ct. 123, 126, 127, 74 L.Ed. 390. Since there are no constitutional requirements more exacting than the standards of the Act, a rate order which conforms to the latter does not run afoul of the former.

19 The Position of West Virginia. The State of West Virginia, as well as its Public Service Commission, intervened in the proceedings before the Commission and participated in the hearings before it. They have also filed a brief amicus curiae here and have participated in the argument at the bar. Their contention is that the result achieved by the rate order 'brings consequences which are unjust to

West Virginia and its citizens' and which 'unfairly depress the value of gas, gas lands and gas leaseholds, unduly restrict development of their natural resources, and arbitrarily transfer their properties to the residents of other states without just compensation therefor.'

20 West Virginia points out that the Hope Natural Gas Co. holds a large number of leases on both producing and unoperated properties. The owner or grantor receives from the operator or grantee delay rentals as compensation for postponed drilling. When a producing well is successfully brought in, the gas lease customarily continues indefinitely for the life of the field. In that case the operator pays a stipulated gas-well rental or in some cases a gas royalty equivalent to one-eighth of the gas marketed.[13] Both the owner and operator have valuable property interests in the gas which are separately taxable under West Virginia law. The contention is that the reversionary interests in the leaseholds should be represented in the rate proceedings since it is their gas which is being sold in interstate commerce. It is argued, moreover, that the owners of the reversionary interests should have the benefit of the 'discovery value' of the gas leaseholds, not the interstate consumers. Furthermore, West Virginia contends that the Commission in fixing a rate for natural gas produced in that State should consider the effect of the rate order on the economy of West Virginia. It is pointed out that gas is a wasting asset with a rapidly diminishing supply. As a result West Virginia's gas deposits are becoming increasingly valuable. Nevertheless the rate fixed by the Commission reduces that value. And that reduction, it is said, has severe repercussions on the economy of the State. It is argued in the first place that as a result of this rate reduction Hope's West Virginia property taxes may be decreased in view of the relevance which earnings have under West Virginia law in the assessment of property for tax purposes.[14] Secondly, it is pointed out that West Virginia has a production tax[15] on the 'value' of the gas exported from the State. And we are told that for purposes of that tax 'value' becomes under West Virginia law 'practically the substantial equivalent of market value.' Thus West Virginia argues that undervaluation of Hope's gas leaseholds will cost the State many thousands of dollars in taxes. The effect, it is urged, is to impair West Virginia's tax structure for the benefit of Ohio and Pennsylvania consumers. West Virginia emphasizes, moreover, its deep interest in the conservation of its natural resources including its natural gas. It says that a reduction of the value of these leasehold values will jeopardize these conservation policies in three respects: (1) exploratory development of new fields will be discouraged; (2) abandonment of lowyield high-cost marginal wells will be hastened; and (3) secondary recovery of oil will be hampered. Furthermore, West Virginia contends that the reduced valuation will harm one of the great industries of the State and that harm to that industry must inevitably affect the welfare of the citizens of the State. It is also pointed out that West Virginia has a large interest in coal and oil as well as in gas and that these forms of fuel are competitive. When the price of gas is materially cheapened, consumers turn to that fuel in preference to the others. As a result this lowering of the price of natural gas will have the effect of depreciating the price of West Virginia coal and oil.

21 West Virginia insists that in neglecting this aspect of the problem the Commission failed to perform the function which Congress entrusted to it and that the case should be remanded to the Commission for a modification of its order.[16]

22 We have considered these contentions at length in view of the earnestness with which they have been urged upon us. We have searched the legislative history of the Natural Gas Act for any indication that Congress entrusted to the Commission the various considerations which West Virginia has advanced here. And our conclusion is that Congress did not.

23

We pointed out in Illinois Natural Gas Co. v. Central Illinois Public Service Co., 314 U.S. 498, 506, 62 S.Ct. 384, 387, 86 L.Ed. 371, that the purpose of the Natural Gas Act was to provide, 'through the exercise of the national power over interstate commerce, an agency for regulating the wholesale distribution to public service companies of natural gas moving interstate, which this Court had declared to be interstate commerce not subject to certain types of state regulation.' As stated in the House Report the 'basic purpose' of this legislation was 'to occupy' the field in which such cases as State of Missouri v. Kansas Natural Gas Co., 265 U.S. 298, 44 S.Ct. 544, 68 L.Ed. 1027, and Public Utilities Commission v. Attleboro Steam & Electric Co., 273 U.S. 83, 47 S.Ct. 294, 71 L.Ed. 549, had held the States might not act. H.Rep. No. 709, 75th Cong., 1st Sess., p. 2. In accomplishing that purpose the bill was designed to take 'no authority from State commissions' and was 'so drawn as to complement and in no manner usurp State regulatory authority.' Id., p. 2. And the Federal Power Commission was given no authority over the 'production or gathering of natural gas.' § 1(b).

24 The primary aim of this legislation was to protect consumers against exploitation at the lands of natural gas companies. Due to the hiatus in regulation which resulted from the Kansas Natural Gas Co. case and related decisions state commissions found it difficult or impossible to discover what it cost interstate pipe-line companies to deliver gas within the consuming states; and thus they were thwarted in local regulation. H.Rep., No. 709, supra, p. 3. Moreover, the investigations of the Federal Trade Commission had disclosed that the majority of the pipe-line mileage in the country used to transport natural gas, together with an increasing percentage of the natural gas supply for pipe-line transportation, had been acquired by a handful of holding companies.[17] State commissions, independent producers, and communities having or seeking the service were growing quite helpless against these combinations.[18] These were the types of problems with which those participating in the hearings were pre-occupied.[19] Congress addressed itself to those specific evils.

25 The Federal Power Commission was given broad powers of regulation. The fixing of 'just and reasonable' rates (§ 4) with the powers attendant thereto[20] was the heart of the new regulatory system. Moreover, the Commission was given certain authority by § 7(a), on a finding that the action was necessary or desirable 'in the public interest,' to require natural gas companies to extend or improve their transportation facilities and to sell gas to any authorized local distributor. By § 7(b) it was given control over the abandonment of facilities or of service. And by § 7(c), as originally enacted, no natural gas company could undertake the construction or extension of any facilities for the transportation of natural gas to a market in which natural gas was already being served by another company, or sell any natural gas in such a market, without obtaining a certificate of public convenience and necessity from the Commission. In passing on such applications for certificates of convenience and necessity the Commission was told by § 7(c), as originally enacted, that it was 'the intention of Congress that natural gas shall be sold in interstate commerce for resale for ultimate public consumption for domestic, commercial, industrial, or any other use at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.' The latter provision was deleted from § 7 (c) when that subsection was amended by the Act of February 7, 1942, 56 Stat. 83. By that amendment limited grandfather rights were granted companies desiring to extend their facilities and services over the routes or within the area which they were already serving. Moreover, § 7(c) was broadened so as to require certificates of public convenience and necessity not only where the extensions were being made to markets in which natural gas was already being

sold by another company but in other situations as well.

26 These provisions were plainly designed to protect the consumer interests against exploitation at the hands of private natural gas companies. When it comes to cases of abandonment or of extensions of facilities or service, we may assume that, apart from the express exemptions[21] contained in § 7, considerations of conservation are material to the issuance of certificates of public convenience and necessity. But the Commission was not asked here for a certificate of public convenience and necessity under § 7 for any proposed construction or extension. It was faced with a determination of the amount which a private operator should be allowed to earn from the sale of natural gas across state lines through an established distribution system. Secs. 4 and 5, not § 7, provide the standards for that determination. We cannot find in the words of the Act or in its history the slightest intimation or suggestion that the exploitation of consumers by private operators through the maintenance of high rates should be allowed to continue provided the producing states obtain indirect benefits from it. That apparently was the Commission's view of the matter, for the same arguments advanced here were presented to the Commission and not adopted by it.

27 We do not mean to suggest that Congress was unmindful of the interests of the producing states in their natural gas supplies when it drafted the Natural Gas Act. As we have said, the Act does not intrude on the domain traditionally reserved for control by state commissions; and the Federal Power Commission was given no authority over 'the production or gathering of natural gas.' § 1(b). In addition, Congress recognized the legitimate interests of the States in the conservation of natural gas. By § 11 Congress instructed the Commission to make reports on compacts between two or more States dealing with the conservation, production and transportation of natural gas.[22] The Commission was also directed to recommend further legislation appropriate or necessary to carry out any proposed compact and 'to aid in the conservation of natural-gas resources within the United States and in the orderly, equitable, and economic production, transportation, and distribution of natural gas.' § 11(a). Thus Congress was quite aware of the interests of the producing states in their natural gas supplies.[23] But it left the protection of those interests to measures other than the maintenance of high rates to private companies. If the Commission is to be compelled to let the stockholders of natural gas companies have a feast so that the producing states may receive crumbs from that table, the present Act must be redesigned. Such a project raises questions of policy which go beyond our province.

28 It is hardly necessary to add that a limitation on the net earnings of a natural gas company from its interstate business is not a limitation on the power of the producing state either to safeguard its tax revenues from that industry[24] or to protect the interests of those who sell their gas to the interstate operator.[25] The return which the Commission allowed was the net return after all such charges.

29 It is suggested that the Commission has failed to perform its duty under the Act in that it has not allowed a return for gas production that will be enough to induce private enterprise to perform completely and efficiently its functions for the public. The Commission, however, was not oblivious of those matters. It considered them. It allowed, for example, delay rentals and exploration and development costs in operating expenses.[26] No serious attempt has been made here to show that they are inadequate. We certainly cannot say that they are, unless we are to substitute our opinions for the expert judgment of the administrators to whom Congress entrusted the decision. Moreover, if in light of experience they turn out to be inadequate for development of new sources of supply, the doors of the Commission are open for increased allowances. This is

not an order for all time. The Act contains machinery for obtaining rate adjustments. § 4.

30 But it is said that the Commission placed too low a rate on gas for industrial purposes as compared with gas for domestic purposes and that industrial uses should be discouraged. It should be noted in the first place that the rates which the Commission has fixed are Hope's interstate wholesale rates to distributors not interstate rates to industrial users[27] and domestic consumers. We hardly can assume, in view of the history of the Act and its provisions, that the resales intrastate by the customer companies which distribute the gas to ultimate consumers in Ohio and Pennsylvania are subject to the rate-making powers of the Commission.[28] But in any event those rates are not in issue here. Moreover, we fail to find in the power to fix 'just and reasonable' rates the power to fix rates which will disallow or discourage resales for industrial use. The Committee Report stated that the Act provided 'for regulation along recognized and more or less standardized lines' and that there was 'nothing novel in its provisions'. H.Rep.No.709, supra, p. 3. Yet if we are now to tell the Commission to fix the rates so as to discourage particular uses, we would indeed be injecting into a rate case a 'novel' doctrine which has no express statutory sanction. The same would be true if we were to hold that the wasting-asset nature of the industry required the maintenance of the level of rates so that natural gas companies could make a greater profit on each unit of gas sold. Such theories of rate-making for this industry may or may not be desirable. The difficulty is that § 4 (a) and § 5(a) contain only the conventional standards of rate-making for natural gas companies.[29] The Act of February 7, 1942, by broadening § 7 gave the Commission some additional authority to deal with the conservation aspects of the problem.[30] But § 4(a) and § 5(a) were not changed. If the standard of 'just and reasonable' is to sanction the maintenance of high rates by a natural gas company because they restrict the use of natural gas for certain purposes, the Act must be further amended.

31 It is finally suggested that the rates charged by Hope are discriminatory as against domestic users and in favor of industrial users. That charge is apparently based on § 4(b) of the Act which forbids natural gas companies from maintaining 'any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service.' The power of the Commission to eliminate any such unreasonable differences or discriminations is plain. § 5(a). The Commission, however, made no findings under § 4(b). Its failure in that regard was not challenged in the petition to review. And it has not been raised or argued here by any party. Hence the problem of discrimination has no proper place in the present decision. It will be time enough to pass on that issue when it is presented to us. Congress has entrusted the administration of the Act to the Commission not to the courts. Apart from the requirements of judicial review it is not for us to advise the Commission how to discharge its functions.

32 Findings as to the Lawfulness of Past Rates. As we have noted, the Commission made certain findings as to the lawfulness of past rates which Hope had charged its interstate customers. Those findings were made on the complaint of the City of Cleveland and in aid of state regulation. It is conceded that under the Act the Commission has no power to make reparation orders. And its power to fix rates admittedly is limited to those 'to be thereafter observed and in force.' § 5(a). But the Commission maintains that it has the power to make findings as to the lawfulness of past rates even though it has no power to fix those rates.[31] However that may be, we do not think that these findings were reviewable under § 19(b) of the Act. That section gives any party 'aggrieved by an order' of the Commission a review 'of such order' in the circuit court of appeals for the circuit where the natural gas company is located or has

its principal place of business or in the United States Court of Appeals for the District of Columbia. We do not think that the findings in question fall within that category.

33 The Court recently summarized the various types of administrative action or determination reviewable as orders under the Urgent Deficiencies Act of October 22, 1913, 28 U.S.C. §§ 45, 47a, 28 U.S.C.A. §§ 45, 47a, and kindred statutory provisions. Rochester Tel. Corp. v. United States, 307 U.S. 125, 59 S.Ct. 754, 83 L.Ed. 1147. It was there pointed out that where 'the order sought to be reviewed does not of itself adversely affect complainant but only affects his rights adversely on the contingency of future administrative action', it is not reviewable. Id., 307 U.S. at page 130, 59 S.Ct. at page 757, 83 L.Ed. 1147. The Court said, 'In view of traditional conceptions of federal judicial power, resort to the courts in these situations is either premature or wholly beyond their province.' Id., 307 U.S. at page 130, 59 S.Ct. at page 757, 83 L.Ed. 1147. And see United States v. Los Angeles & S.L.R. Co., 273 U.S. 299, 309, 310, 47 S.Ct. 413, 414, 415, 71 L.Ed. 651; Shannahan v. United States, 303 U.S. 596, 58 S.Ct. 732, 82 L.Ed. 1039. These considerations are apposite here. The Commission has no authority to enforce these findings. They are 'the exercise solely of the function of investigation.' United States v. Los Angeles & S.L.R. Co., supra, 273 U.S. at page 310, 47 S.Ct. at page 414, 71 L.Ed. 651. They are only a preliminary, interim step towards possible future action action not by the Commission but by wholly independent agencies. The outcome of those proceedings may turn on factors other than these findings. These findings may never result in the respondent feeling the pinch of administrative action.

34 Reversed.

35 Mr. Justice ROBERTS took no part in the consideration or decision of this case.

36 Opinion of Mr. Justice BLACK and Mr. Justice MURPHY.

37 We agree with the Court's opinion and would add nothing to what has been said but for what is patently a wholly gratuitous assertion as to Constitutional law in the dissent of Mr. Justice FRANKFURTER. We refer to the statement that 'Congressional acquiescence to date in the doctrine of Chicago, etc., R. Co. v. Minnesota, supra (134 U.S. 418, 10 S.Ct. 462, 702, 33 L.Ed. 970), may fairly be claimed.' That was the case in which a majority of this Court was finally induced to expand the meaning of 'due process' so as to give courts power to block efforts of the state and national governments to regulate economic affairs. The present case does not afford a proper occasion to discuss the soundness of that doctrine because, as stated in Mr. Justice FRANKFURTER'S dissent, 'That issue is not here in controversy.' The salutary practice whereby courts do not discuss issues in the abstract applies with peculiar force to Constitutional questions. Since, however, the dissent adverts to a highly controversial due process doctrine and implies its acceptance by Congress, we feel compelled to say that we do not understand that Congress voluntarily has acquiesced in a Constitutional principle of government that courts, rather than legislative bodies, possess final authority over regulation of economic affairs. Even this Court has not always fully embraced that principle, and we wish to repeat that we have never acquiesced in it, and do not now. See Federal Power Commission v. Natural Gas Pipeline Co., 315 U.S. 575, 599-601, 62 S.Ct. 736, 749, 750, 86 L.Ed. 1037.

38 Mr. Justice REED, dissenting.

39 This case involves the problem of rate making under the Natural Gas Act. Added importance arises from the obvious fact that the principles stated are

generally applicable to all federal agencies which are entrusted with the determination of rates for utilities. Because my views differ somewhat from those of my brethren, it may be of some value to set them out in a summary form.

40 The Congress may fix utility rates in situations subject to federal control without regard to any standard except the constitutional standards of due process and for taking private property for public use without just compensation. Wilson v. New, 243 U.S. 332, 350, 37 S.Ct. 298, 302, 61 L.Ed. 755, L.R.A.1917E, 938, Ann.Cas.1918A, 1024. A Commission, however, does not have this freedom of action. Its powers are limited not only by the constitutional standards but also by the standards of the delegation. Here the standard added by the Natural Gas Act is that the rate be 'just and reasonable.'[1] Section 6[2] throws additional light on the meaning of these words.

41 When the phrase was used by Congress to describe allowable rates, it had relation to something ascertainable. The rates were not left to the whim of the Commission. The rates fixed would produce an annual return and that annual return was to be compared with a theoretical just and reasonable return, all risks considered, on the fair value of the property used and useful in the public service at the time of the determination.

42 Such an abstract test is not precise. The agency charged with its determination has a wide range before it could properly be said by a court that the agency had disregarded statutory standards or had confiscated the property of the utility for public use. Cf. Chicago, M. & St. P.R. Co. v. Minnesota, 134 U.S. 418, 461—466, 10 S.Ct. 462, 702, 703—705, 33 L.Ed. 970, dissent. This is as Congress intends. Rates are left to an experienced agency particularly competent by training to appraise the amount required.

43 The decision as to a reasonable return had not been a source of great difficulty, for borrowers and lenders reached such agreements daily in a multitude of situations; and although the determination of fair value had been troublesome, its essentials had been worked out in fairness to investor and consumer by the time of the enactment of this Act. Cf. Los Angeles G. & E. Corp. v. Railroad Comm., 289 U.S. 287, 304 et seq., 53 S.Ct. 637, 643 et seq., 77 L.Ed. 1180. The results were well known to Congress and had that body desired to depart from the traditional concepts of fair value and earnings, it would have stated its intention plainly. Helvering v. Griffiths, 318 U.S. 371, 63 S.Ct. 636.

44 It was already clear that when rates are in dispute, 'earnings produced by rates do not afford a standard for decision.' 289 U.S. at page 305, 53 S.Ct. at page 644, 77 L.Ed. 1180. Historical cost, prudent investment and reproduction cost[3] were all relevant factors in determining fair value. Indeed, disregarding the pioneer investor's risk, if prudent investment and reproduction cost were not distorted by changes in price levels or technology, each of them would produce the same result. The realization from the risk of an investment in a speculative field, such as natural gas utilities, should be reflected in the present fair value.[4] The amount of evidence to be admitted on any point was of course in the agency's reasonable discretion, and it was free to give its own weight to these or other factors and to determine from all the evidence its own judgment as to the necessary rates.

45 I agree with the Court in not imposing a rule of prudent investment alone in determining the rate base. This leaves the Commission free, as I understand it, to use any available evidence for its finding of fair value, including both prudent investment and the cost of installing at the present time an efficient system for furnishing the needed utility service.

46

My disagreement with the Court arises primarily from its view that it makes no difference how the Commission reached the rate fixed so long as the result is fair and reasonable. For me the statutory command to the Commission is more explicit. Entirely aside from the constitutional problem of whether the Congress could validly delegate its rate making power to the Commission, in toto and without standards, it did legislate in the light of the relation of fair and reasonable to fair value and reasonable return. The Commission must therefore make its findings in observance of that relationship.

47 The Federal Power Commission did not, as I construe their action, disregard its statutory duty. They heard the evidence relating to historical and reproduction cost and to the reasonable rate of return and they appraised its weight. The evidence of reproduction cost was rejected as unpersuasive, but from the other evidence they found a rate base, which is to me a determination of fair value. On that base the earnings allowed seem fair and reasonable. So far as the Commission went in appraising the property employed in the service, I find nothing in the result which indicates confiscation, unfairness or unreasonableness. Good administration of rate making agencies under this method would avoid undue delay and render revaluations unnecessary except after violent fluctuations of price levels. Rate making under this method has been subjected to criticism. But until Congress changes the standards for the agencies, these rate making bodies should continue the conventional theory of rate making. It will probably be simpler to improve present methods than to devise new ones.

48 But a major error, I think was committed in the disregard by the Commission of the investment in exploratory operations and other recognized capital costs. These were not considered by the Commission because they were charged to operating expenses by the company at a time when it was unregulated. Congress did not direct the Commission in rate making to deduct from the rate base capital investment which had been recovered during the unregulated period through excess earnings. In my view this part of the investment should no more have been disregarded in the rate base than any other capital investment which previously had been recovered and paid out in dividends or placed to surplus. Even if prudent investment throughout the life of the property is accepted as the formula for figuring the rate base, it seems to me illogical to throw out the admittedly prudent cost of part of the property because the earnings in the unregulated period had been sufficient to return the prudent cost to the investors over and above a reasonable return. What would the answer be under the theory of the Commission and the Court, if the only prudent investment in this utility had been the seventeen million capital charges which are now disallowed?

49 For the reasons heretofore stated, I should affirm the action of the Circuit Court of Appeals in returning the proceeding to the Commission for further consideration and should direct the Commission to accept the disallowed capital investment in determining the fair value for rate making purposes.

50 Mr. Justice FRANKFURTER, dissenting.

51 My brother JACKSON has analyzed with particularity the economic and social aspects of natural gas as well as the difficulties which led to the enactment of the Natural Gas Act, especially those arising out of the abortive attempts of States to regulate natural gas utilities. The Natural Gas Act of 1938 should receive application in the light of this analysis, and Mr. Justice JACKSON has, I believe, drawn relevant inferences regarding the duty of the Federal Power Commission in fixing natural gas rates. His exposition seems to me unanswered, and I shall say only a few words to emphasize my basic agreement with him.

52

For our society the needs that are met by public utilities are as truly public services as the traditional governmental functions of police and justice. They are not less so when these services are rendered by private enterprise under governmental regulation. Who ultimately determines the ways of regulation, is the decisive aspect in the public supervision of privately-owned utilities. Foreshadowed nearly sixty years ago, Railroad Commission Cases (Stone v. Farmers' Loan & Trust Co.), 116 U.S. 307, 331, 6 S.Ct. 334, 344, 388, 1191, 29 L.Ed. 636, it was decided more than fifty years ago that the final say under the Constitution lies with the judiciary and not the legislature. Chicago, etc., R. Co. v. Minnesota , 134 U.S. 418, 10 S.Ct. 462, 702, 33 L.Ed. 970.

53 While legal issues touching the proper distribution of governmental powers under the Constitution may always be raised, Congressional acquiescence to date in the doctrine of Chicago, etc., R. Co. v. Minnesota, supra, may fairly be claimed. But in any event that issue is not here in controversy. As pointed out in the opinions of my brethren, Congress has given only limited authority to the Federal Power Commission and made the exercise of that authority subject to judicial review. The Commission is authorized to fix rates chargeable for natural gas. But the rates that it can fix must be 'just and reasonable'. § 5 of the Natural Gas Act, 15 U.S.C. § 717d, 15 U.S.C.A. § 717d. Instead of making the Commission's rate determinations final, Congress specifically provided for court review of such orders. To be sure, 'the finding of the Commission as to the facts, if supported by substantial evidence' was made 'conclusive', § 19 of the Act, 15 U.S.C. § 717r; 15 U.S.C.A. § 717r. But obedience of the requirement of Congress that rates be 'just and reasonable' is not an issue of fact of which the Commission's own determination is conclusive. Otherwise, there would be nothing for a court to review except questions of compliance with the procedural provisions of the Natural Gas Act. Congress might have seen fit so to cast its legislation. But it has not done so. It has committed to the administration of the Federal Power Commission the duty of applying standards of fair dealing and of reasonableness relevant to the purposes expressed by the Natural Gas Act. The requirement that rates must be 'just and reasonable' means just and reasonable in relation to appropriate standards. Otherwise Congress would have directed the Commission to fix such rates as in the judgment of the Commission are just and reasonable; it would not have also provided that such determinations by the Commission are subject to court review.

54 To what sources then are the Commission and the courts to go for ascertaining the standards relevant to the regulation of natural gas rates? It is at this point that Mr. Justice JACKSON'S analysis seems to me pertinent. There appear to be two alternatives. Either the fixing of natural gas rates must be left to the unguided discretion of the Commission so long as the rates it fixes do not reveal a glaringly had prophecy of the ability of a regulated utility to continue its service in the future. Or the Commission's rate orders must be founded on due consideration of all the elements of the public interest which the production and distribution of natural gas involve just because it is natural gas. These elements are reflected in the Natural Gas Act, if that Act be applied as an entirety. See, for instance, §§ 4(a)(b)(c)(d), 6, and 11, 15 U.S.C. §§ 717c(a)(b)(c)(d), 717e, and 717j, 15 U.S.C.A. §§ 717c(a—d), 717e, 717j. Of course the statute is not concerned with abstract theories of ratemaking. But its very foundation is the 'public interest', and the public interest is a texture of multiple strands. It includes more than contemporary investors and contemporary consumers. The needs to be served are not restricted to immediacy, and social as well as economic costs must be counted.

55 It will not do to say that it must all be left to the skill of experts. Expertise is a rational process and a rational process implies expressed reasons for judgment.

It will little advance the public interest to substitute for the hodge-podge of the rule in Smyth v. Ames, 169 U.S. 466, 18 S.Ct. 418, 42 L.Ed. 819, an encouragement of conscious obscurity or confusion in reaching a result, on the assumption that so long as the result appears harmless its basis is irrelevant. That may be an appropriate attitude when state action is challenged as unconstitutional. Cf. Driscoll v. Edison Light & Power Co., 307 U.S. 104, 59 S.Ct. 715, 83 L.Ed. 1134. But it is not to be assumed that it was the design of Congress to make the accommodation of the conflicting interests exposed in Mr. Justice JACKSON'S opinion the occasion for a blind clash of forces or a partial assessment of relevant factors, either before the Commission or here.

56 The objection to the Commission's action is not that the rates it granted were too low but that the range of its vision was too narrow. And since the issues before the Commission involved no less than the total public interest, the proceedings before it should not be judged by narrow conceptions of common law pleading. And so I conclude that the case should be returned to the Commission. In order to enable this Court to discharge its duty of reviewing the Commission's order, the Commission should set forth with explicitness the criteria by which it is guided in determining that rates are 'just and reasonable', and it should determine the public interest that is in its keeping in the perspective of the considerations set forth by Mr. Justice JACKSON.

57 By Mr. Justice JACKSON.

58 Certainly the theory of the court below that ties rate-making to the fair-value-reproduction-cost formula should be overruled as in conflict with Federal Power Commission v. Natural Gas Pipeline Co.[1] But the case should, I think, be the occasion for reconsideration of our rate-making doctrine as applied to natural gas and should be returned to the Commission for further consideration in the light thereof.

59 The Commission appears to have understood the effect of the two opinions in the Pipeline case to be at least authority and perhaps direction to fix natural gas rates by exclusive application of the 'prudent investment' rate base theory. This has no warrant in the opinion of the Chief Justice for the Court, however, which released the Commission from subservience to 'any single formula or combination of formulas' provided its order, 'viewed in its entirety, produces no arbitrary result.' 315 U.S. at page 586, 62 S.Ct. at page 743, 86 L.Ed. 1037. The minority opinion I understood to advocate the 'prudent investment' theory as a sufficient guide in a natural gas case. The view was expressed in the court below that since this opinion was not expressly controverted it must have been approved.[2] I disclaim this imputed approval with some particularity, because I attach importance at the very beginning of federal regulation of the natural gas industry to approaching it as the performance of economic functions, not as the performance of legalistic rituals.

I.

60 Solutions of these cases must consider eccentricities of the industry which gives rise to them and also to the Act of Congress by which they are governed.

61 The heart of this problem is the elusive, exhaustible, and irreplaceable nature of natural gas itself. Given sufficient money, we can produce any desired amount of railroad, bus, or steamship transportation, or communications facilities, or capacity for generation of electric energy, or for the manufacture of gas of a kind. In the service of such utilities one customer has little concern with the amount taken by another, one's waste will not deprive another, a volume of service and be created equal to demand, and today's demands will not exhaust or lessen capacity to serve tomorrow. But the wealth of Midas and the wit of

man cannot produce or reproduce a natural gas field. We cannot even reproduce the gas, for our manufactured product has only about half the heating value per unit of nature's own.[3]

62 Natural gas in some quantity is produced in twenty-four states. It is consumed in only thirty-five states, and is available only to about 7,600,000 consumers.[4] Its availability has been more localized than that of any other utility service because it has depended more on the caprice of nature.

63 The supply of the Hope Company is drawn from that old and rich and vanishing field that flanks the Appalachian mountains. Its center of production is Pennsylvania and West Virginia, with a fringe of lesser production in New York, Ohio, Kentucky, Tennessee, and the north end of Alabama. Oil was discovered in commercial quantities at a depth of only 69 1/2 feet near Titusville, Pennsylvania, in 1859. Its value then was about $16 per barrel.[5] The oil branch of the petroleum industry went forward at once, and with unprecedented speed. The area productive of oil and gas was roughed out by the drilling of over 19,000 'wildcat' wells, estimated to have cost over $222,000,000. Of these, over 18,000 or 94.9 per cent, were 'dry holes.' About five per cent, or 990 wells, made discoveries of commercial importance, 767 of them resulting chiefly in oil and 223 in gas only.[6] Prospecting for many years was a search for oil, and to strike gas was a misfortune. Waste during this period and even later is appalling. Gas was regarded as having no commercial value until about 1882, in which year the total yield was valued only at about $75,000.[7] Since then, contrary to oil, which has become cheaper gas in this field has pretty steadily advanced in price.

64 While for many years natural gas had been distributed on a small scale for lighting,[8] its acceptance was slow, facilities for its utilization were primitive, and not until 1885 did it take on the appearance of a substantial industry.[9] Soon monopoly of production or markets developed.[10] To get gas from the mountain country, where it was largely found, to centers of population, where it was in demand, required very large investment. By ownership of such facilities a few corporate systems, each including several companies, controlled access to markets. Their purchases became the dominating factor in giving a market value to gas produced by many small operators. Hope is the market for over 300 such operators. By 1928 natural gas in the Appalachian field commanded an average price of 21.1 cents per m.c.f. at points of production and was bringing 45.7 cents at points of consumption.[11] The companies which controlled markets, however, did not rely on gas purchases alone. They acquired and held in fee or leasehold great acreage in territory proved by 'wildcat' drilling. These large marketing system companies as well as many small independent owners and operators have carried on the commercial development of proved territory. The development risks appear from the estimate that up to 1928, 312,318 proved area wells had been sunk in the Appalachian field of which 48,962, or 15.7 per cent, failed to produce oil or gas in commercial quantity.[12]

65 With the source of supply thus tapped to serve centers of large demand, like Pittsburgh, Buffalo, Cleveland, Youngstown, Akron, and other industrial communities, the distribution of natural gas fast became big business. Its advantages as a fuel and its price commended it, and the business yielded a handsome return. All was merry and the goose hung high for consumers and gas companies alike until about the time of the first. World War. Almost unnoticed by the consuming public, the whole Appalachian field passed its peak of production and started to decline. Pennsylvania, which to 1928 had given off about 38 per cent of the natural gas from this field, had its peak in 1905; Ohio, which had produced 14 per cent, had its peak in 1915; and West Virginia,

greatest producer of all, with 45 per cent to its credit, reached its peak in 1917.[13]

66 Western New York and Eastern Ohio, on the fringe of the field, had some production but relied heavily on imports from Pennsylvania and West Virginia. Pennsylvania, a producing and exporting state, was a heavy consumer and supplemented her production with imports from West Virginia. West Virginia was a consuming state, but the lion's share of her production was exported. Thus the interest of the states in the North Appalachian supply was in conflict.

67 Competition among localities to share in the failing supply and the helplessness of state and local authorities in the presence of state lines and corporate complexities is a part of the background of federal intervention in the industry.[14] West Virginia took the boldest measure. It legislated a priority in its entire production in favor of its own inhabitants. That was frustrated by an injunction from this Court.[15] Throughout the region clashes in the courts and conflicting decisions evidenced public anxiety and confusion. It was held that the New York Public Service Commission did not have power to classify consumers and restrict their use of gas.[16] That Commission held that a company could not abandon a part of its territory and still serve the rest.[17] Some courts admonished the companies to take action to protect consumers.[18] Several courts held that companies, regardless of failing supply, must continue to take on customers, but such compulsory additions were finally held to be within the Public Service Commission's discretion.[19] There were attempts to throw up franchises and quit the service, and municipalities resorted to the courts with conflicting results.[20] Public service commissions of consuming states were handicapped, for they had no control of the supply.[21]

68 Shortages during World War I occasioned the first intervention in the natural gas industry by the Federal Government. Under Proclamation of President Wilson the United States Fuel Administrator took control, stopped extensions, classified consumers and established a priority for domestic over industrial use.[22] After the war federal control was abandoned. Some cities once served with natural gas became dependent upon mixed gas of reduced heating value and relatively higher price.[23]

69 Utilization of natural gas of highest social as well as economic return is domestic use for cooking and water heating, followed closely by use for space heating in homes. This is the true public utility aspect of the enterprise, and its preservation should be the first concern of regulation. Gas does the family cooking cheaper than any other fuel.[24] But its advantages do not end with dollars and cents cost. It is delivered without interruption at the meter as needed and is paid for after it is used. No money is tied up in a supply, and no space is used for storage. It requires no handling, creates no dust, and leaves no ash. It responds to thermostatic control. It ignites easily and immediately develops its maximum heating capacity. These incidental advantages make domestic life more liveable.

70 Industrial use is induced less by these qualities than by low cost in competition with other fuels. Of the gas exported from West Virginia by the Hope Company a very substantial part is used by industries. This wholesale use speeds exhaustion of supply and displaces other fuels. Coal miners and the coal industry, a large part of whose costs are wages, have complained of unfair competition from low-priced industrial gas produced with relatively little labor cost.[25]

71 Gas rate structures generally have favored industrial users. In 1932, in Ohio, the average yield on gas for domestic consumption was 62.1 cents per m.c.f. and

on industrial, 38.7. In Pennsylvania, the figures were 62.9 against 31.7. West Virginia showed the least spread, domestic consumers paying 36.6 cents; and industrial, 27.7.[26] Although this spread is less than in other parts of the United States,[27] it can hardly be said to be self-justifying. It certainly is a very great factor in hastening decline of the natural gas supply.

72 About the time of World War I there were occasional and short-lived efforts by some hard-pressed companies to reverse this discrimination and adopt graduated rates, giving a low rate to quantities adequate for domestic use and graduating it upward to discourage industrial use.[28] These rates met opposition from industrial sources, of course, and since diminished revenues from industrial sources tended to increase the domestic price, they met little popular or commission favor. The fact is that neither the gas companies nor the consumers nor local regulatory bodies can be depended upon to conserve gas. Unless federal regulation will take account of conservation, its efforts seem, as in this case, actually to constitute a new threat to the life of the Appalachian supply.

II.

73 Congress in 1938 decided upon federal regulation of the industry. It did so after an exhaustive investigation of all aspects including failing supply and competition for the use of natural gas intensified by growing scarcity.[29] Pipelines from the Appalachian area to markets were in the control of a handful of holding company systems.[30] This created a highly concentrated control of the producers' market and of the consumers' supplies. While holding companies dominated both production and distribution they segregated those activities in separate subsidiaries,[31] the effect of which, if not the purpose, was to isolate some end of the business from the reach of any one state commission. The cost of natural gas to consumers moved steadily upwards over the years, out of proportion to prices of oil, which, except for the element of competition, is produced under somewhat comparable conditions. The public came to feel that the companies were exploiting the growing scarcity of local gas. The problems of this region had much to do with creating the demand for federal regulation.

74 The Natural Gas Act declared the natural gas business to be 'affected with a public interest,' and its regulation 'necessary in the public interest.'[32] Originally, and at the time this proceeding was commenced and tried, it also declared 'the intention of Congress that natural gas shall be sold in interstate commerce for resale for ultimate public consumption for domestic, commercial, industrial, or any other use at the lowest possible reasonable rate consistent with the maintenance of adequate service in the public interest.'[33] While this was later dropped, there is nothing to indicate that it was not and is not still an accurate statement of purpose of the Act. Extension or improvement of facilities may be ordered when 'necessary or desirable in the public interest,' abandonment of facilities may be ordered when the supply is 'depleted to the extent that the continuance of service is unwarranted, or that the present or future public convenience or necessity permit' abandonment and certain extensions can only be made on finding of 'the present or future public convenience and necessity.'[34] The Commission is required to take account of the ultimate use of the gas. Thus it is given power to suspend new schedules as to rates, charges, and classification of services except where the schedules are for the sale of gas 'for resale for industrial use only,'[35] which gives the companies greater freedom to increase rates on industrial gas than on domestic gas. More particularly, the Act expressly forbids any undue preference or advantage to any person or 'any unreasonable difference in rates * * * either as between localities or as between classes of service.'[36] And the power of the

Commission expressly includes that to determine the 'just and reasonable rate, charge, classification, rule, regulation, practice, or contract to be thereafter observed and in force.'[37]

75 In view of the Court's opinion that the Commission in administering the Act may ignore discrimination, it is interesting that in reporting this Bill both the Senate and the House Committees on Interstate Commerce pointed out that in 1934, on a nationwide average the price of natural gas per m.c.f. was 74.6 cents for domestic use, 49.6 cents for commercial use, and 16.9 for industrial use.[38] I am not ready to think that supporters of a bill called attention to the striking fact that householders were being charged five times as much for their gas as industrial users only as a situation which the Bill would do nothing to remedy. On the other hand the Act gave to the Commission what the Court aptly describes as 'broad powers of regulation.'

III.

76 This proceeding was initiated by the Cities of Cleveland and Akron. They alleged that the price charged by Hope for natural gas 'for resale to domestic, commercial and small industrial consumers in Cleveland and elsewhere is excessive, unjust, unreasonable, greatly in excess of the price charged by Hope to nonaffiliated companies at wholesale for resale to domestic, commercial and small industrial consumers, and greatly in excess of the price charged by Hope to East Ohio for resale to certain favored industrial consumers in Ohio, and therefore is further unduly discriminatory between consumers and between classes of service' (italics supplied). The company answered admitting differences in prices to affiliated and nonaffiliated companies and justifying them by differences in conditions of delivery. As to the allegation that the contract price is 'greatly in excess of the price charged by Hope to East Ohio for resale to certain favored industrial consumers in Ohio,' Hope did not deny a price differential, but alleged that industrial gas was not sold to 'favored consumers' but was sold under contract and schedules filed with and approved by the Public Utilities Commission of Ohio, and that certain conditions of delivery made it not 'unduly discriminatory.'

77 The record shows that in 1940 Hope delivered for industrial consumption 36,523,792 m.c.f. and for domestic and commercial consumption, 50,343,652 m.c.f. I find no separate figure for domestic consumption. It served 43,767 domestic consumers directly, 511,521 through the East Ohio Gas Company, and 154,043 through the Peoples Natural Gas Company, both affiliates owned by the same parent. Its special contracts for industrial consumption, so far as appear, are confined to about a dozen big industries.

78 Hope is responsible for discrimination as exists in favor of these few industrial consumers. It controls both the resale price and use of industrial gas by virtue of the very interstate sales contracts over which the Commission is exercising its jurisdiction.

79 Hope's contract with East Ohio Company is an example. Hope agrees to deliver, and the Ohio Company to take, '(a) all natural gas requisite for the supply of the domestic consumers of the Ohio Company; (b) such amounts of natural gas as may be requisite to fulfill contracts made with the consent and approval of the Hope Company by the Ohio Company, or companies which it supplies with natural gas, for the sale of gas upon special terms and conditions for manufacturing purposes.' The Ohio company is required to read domestic customers' meters once a month and meters of industrial customers daily and to furnish all meter readings to Hope. The Hope Company is to have access to meters of all consumers and to all of the Ohio Company's accounts. The

domestic consumers of the Ohio Company are to be fully supplied in preference to consumers purchasing for manufacturing purposes and 'Hope Company can be required to supply gas to be used for manufacturing purposes only where the same is sold under special contracts which have first been submitted to and approved in writing by the Hope Company and which expressly provide that natural gas will be supplied thereunder only in so far as the same is not necessary to meet the requirements of domestic consumers supplied through pipe lines of the Ohio Company.' This basic contract was supplemented from time to time, chiefly as to price. The last amendment was in a letter from Hope to East Ohio in 1937. It contained a special discount on industrial gas and a schedule of special industrial contracts, Hope reserving the right to make eliminations therefrom and agreeing that others might be added from time to time with its approval in writing. It said, 'It is believed that the price concessions contained in this letter, while not based on our costs, are under certain conditions, to our mutual advantage in maintaining and building up the volumes of gas sold by us (italics supplied).'[39]

80 The Commission took no note of the charges of discrimination and made no disposition of the issue tendered on this point. It ordered a flat reduction in the price per m.c.f. of all gas delivered by Hope in interstate commerce. It made no limitation, condition, or provision as to what classes of consumers should get the benefit of the reduction. While the cities have accepted and are defending the reduction, it is my view that the discrimination of which they have complained is perpetuated and increased by the order of the Commission and that it violates the Act in so doing.

81 The Commission's opinion aptly characterizes its entire objective by saying that 'bona fide investment figures now become all-important in the regulation of rates.' It should be noted that the all-importance of this theory is not the result of any instruction from Congress. When the Bill to regulate gas was first before Congress it contained the following: 'In determining just and reasonable rates the Commission shall fix such rate as will allow a fair return upon the actual legitimate prudent cost of the property used and useful for the service in question.' H.R. 5423, 74th Cong., 1st Sess. Title III, § 312(c). Congress rejected this language. See H.R. 5423, § 213 (211(c)), and H.R. Rep. No. 1318, 74th Cong., 1st Sess. 30.

82 The Commission contends nevertheless that the 'all important' formula for finding a rate base is that of prudent investment. But it excluded from the investment base an amount actually and admittedly invested of some $17,000,000. It did so because it says that the Company recouped these expenditures from customers before the days of regulation from earnings above a fair return. But it would not apply all of such 'excess earnings' to reduce the rate base as one of the Commissioners suggested. The reason for applying excess earnings to reduce the investment base roughly from $69,000,000 to $52,000,000 but refusing to apply them to reduce it from that to some $18,000,000 is not found in a difference in the character of the earnings or in their reinvestment. The reason assigned is a difference in bookkeeping treatment many years before the Company was subject to regulation. The $17,000,000, reinvested chiefly in well drilling, was treated on the books as expense. (The Commission now requires that drilling costs be carried to capital account.) The allowed rate base thus actually was determined by the Company's bookkeeping, not its investment. This attributes a significance to formal classification in account keeping that seems inconsistent with rational rate regulation.[40] Of course, the Commission would not and should not allow a rate base to be inflated by bookkeeping which had improperly capitalized expenses. I have doubts about resting public regulation upon any rule that is to be used or not depending on which side it favors.

83

The Company on the other hand, has not put its gas fields into its calculations on the present-value basis, although that, it contends, is the only lawful rule for finding a rate base. To do so would result in a rate higher than it has charged or proposes as a matter of good business to charge.

84 The case before us demonstrates the lack of rational relationship between conventional rate-base formulas and natural gas production and the extremities to which regulating bodies are brought by the effort to rationalize them. The Commission and the Company each stands on a different theory, and neither ventures to carry its theory to logical conclusion as applied to gas fields.

IV.

85 This order is under judicial review not because we interpose constitutional theories between a State and the business it seeks to regulate, but because Congress put upon the federal courts a duty toward administration of a new federal regulatory Act. If we are to hold that a given rate is reasonable just because the Commission has said it was reasonable, review becomes a costly, time-consuming pageant of no practical value to anyone. If on the other hand we are to bring judgment of our own to the task, we should for the guidance of the regulators and the regulated reveal something of the philosophy, be it legal or economic or social, which guides us. We need not be slaves to a formula but unless we can point out a rational way of reaching our conclusions they can only be accepted as resting on intuition or predilection. I must admit that I possess no instinct jby which to know the 'reasonable' from the 'unreasonable' in prices and must seek some conscious design for decision.

86 The Court sustains this order as reasonable, but what makes it so or what could possibly make it otherwise, I cannot learn. It holds that: 'it is the result reached not the method employed which is controlling'; 'the fact that the method employed to reach that result may contain infirmities is not then important' and it is not 'important to this case to determine the various permissible ways in which any rate base on which the return is computed might be arrived at.' The Court does lean somewhat on considerations of capitalization and dividend history and requirements for dividends on outstanding stock. But I can give no real weight to that for it is generally and I think deservedly in discredit as any guide in rate cases.[41]

87 Our books already contain so much talk of methods of rationalizing rates that we must appear ambiguous if we announce results without our working methods. We are confronted with regulation of a unique type of enterprise which I think requires considered rejection of much conventional utility doctrine and adoption of concepts of 'just and reasonable' rates and practices and of the 'public interest' that will take account of the peculiarities of the business.

88 The Court rejects the suggestions of this opinion. It says that the Committees in reporting the bill which became the Act said it provided 'for regulation along recognized and more or less standardized lines' and that there was 'nothing novel in its provisions.' So saying it sustains a rate calculated on a novel variation of a rate base theory which itself had at the time of enactment of the legislation been recognized only in dissenting opinions. Our difference seems to be between unconscious innovation,[42] and the purposeful and deliberate innovation I would make to meet the necessities of regulating the industry before us.

89 Hope's business has two components of quite divergent character. One, while not a conventional common-carrier undertaking, is essentially a transportation enterprise consisting of conveying gas from where it is produced to point of

delivery to the buyer. This is a relatively routine operation not differing substantially from many other utility operations. The service is produced by an investment in compression and transmission facilities. Its risks are those of investing in a tested means of conveying a discovered supply of gas to a known market. A rate base calculated on the prudent investment formula would seem a reasonably satisfactory measure for fixing a return from that branch of the business whose service is roughly proportionate to the capital invested. But it has other consequences which must not be overlooked. It gives marketability and hence 'value' to gas owned by the company and gives the pipeline company a large power over the marketability and hence 'value' of the production of others.

90 The other part of the business—to reduce to possession an adequate supply of natural gas—is of opposite character, being more erratic and irregular and unpredictable in relation to investment than any phase of any other utility business. A thousand feet of gas captured and severed from real estate for delivery to consumers is recognized under our law as property of much the same nature as a ton of coal, a barrel of oil, or a yard of sand. The value to be allowed for it is the real battleground between the investor and consumer. It is from this part of the business that the chief difference between the parties as to a proper rate base arises.

91 It is necessary to a 'reasonable' price for gas that it be anchored to a rate base of any kind? Why did courts in the first place begin valuing 'rate bases' in order to 'value' something else? The method came into vogue in fixing rates for transportation service which the public obtained from common carriers. The public received none of the carriers' physical property but did make some use of it. The carriage was often a monopoly so there were no open market criteria as to reasonableness. The 'value' or 'cost' of what was put to use in the service by the carrier was not a remote or irrelevant consideration in making such rates. Moreover the difficulty of appraising an intangible service was thought to be simplified if it could be related to physical property which was visible and measurable and the items of which might have market value. The court hoped to reason from the known to the unknown. But gas fields turn this method topsy turvy. Gas itself is tangible, possessible, and does have a market and a price in the field. The value of the rate base is more elusive than that of gas. It consists of intangibles—leaseholds and freeholds—operated and unoperated—of little use in themselves except as rights to reach and capture gas. Their value lies almost wholly in predictions of discovery, and of price of gas when captured, and bears little relation to cost of tools and supplies and labor to develop it. Gas is what Hope sells and it can be directly priced more reasonably and easily and accurately than the components of a rate base can be valued. Hence the reason for resort to a roundabout way of rate base price fixing does not exist in the case of gas in the field.

92 But if found, and by whatever method found, a rate base is little help in determining reasonableness of the price of gas. Appraisal of present value of these intangible rights to pursue fugitive gas depends on the value assigned to the gas when captured. The 'present fair value' rate base, generally in ill repute,[43] is not even urged by the gas company for valuing its fields.

93 The prudent investment theory has relative merits in fixing rates for a utility which creates its service merely by its investment. The amount and quality of service rendered by the usual utility will, at least roughly, be measured by the amount of capital it puts into the enterprise. But it has no rational application where there is no such relationship between investment and capacity to serve. There is no such relationship between investment and amount of gas produced. Let us assume that Doe and Roe each produces in West Virginia for delivery to

Cleveland the same quantity of natural gas per day. Doe, however, through luck or foresight or whatever it takes, gets his gas from investing $50,000 in leases and drilling. Roe drilled poorer territory, got smaller wells, and has invested $250,000. Does anybody imagine that Roe can get or ought to get for his gas five times as much as Doe because he has spent five times as much? The service one renders to society in the gas business is measured by what he gets out of the ground, not by what he puts into it, and there is little more relation between the investment and the results than in a game of poker.

94 Two-thirds of the gas Hope handles it buys from about 340 independent producers. It is obvious that the principle of rate-making applied to Hope's own gas cannot be applied, and has not been applied, to the bulk of the gas Hope delivers. It is not probable that the investment of any two of these producers will bear the same ratio to their investments. The gas, however, all goes to the same use, has the same utilization value and the same ultimate price.

95 To regulate such an enterprise by undiscriminatingly transplanting any body of rate doctrine conceived and adapted to the ordinary utility business can serve the 'public interest' as the Natural Gas Act requires, if at all, only by accident. Mr. Justice Brandeis, the pioneer juristic advocate of the prudent investment theory for man-made utilities, never, so far as I am able to discover, proposed its application to a natural gas case. On the other hand, dissenting in Commonwealth of Pennsylvania v. West Virginia, he reviewed the problems of gas supply and said, 'In no other field of public service regulation is the controlling body confronted with factors so baffling as in the natural gas industry, and in none is continuous supervision and control required in so high a degree.' 262 U.S. 553, 621, 43 S.Ct. 658, 674, 67 L.Ed. 1117, 32 A.L.R. 300. If natural gas rates are intelligently to be regulated we must fit our legal principles to the economy of the industry and not try to fit the industry to our books.

96 As our decisions stand the Commission was justified in believing that it was required to proceed by the rate base method even as to gas in the field. For this reason the Court may not merely wash its hands of the method and rationale of rate making. The fact is that this Court, with no discussion of its fitness, simply transferred the rate base method to the natural gas industry. It happened in Newark Natural Gas & Fuel Co. v. City of Newark, Ohio, 1917, 242 U.S. 405, 37 S.Ct. 156, 157, 61 L.Ed. 393, Ann.Cas.1917B, 1025, in which the company wanted 25 cents per m.c.f., and under the Fourteenth Amendment challenged the reduction to 18 cents by ordinance. This Court sustained the reduction because the court below 'gave careful consideration to the questions of the value of the property * * * at the time of the inquiry,' and whether the rate 'would be sufficient to provide a fair return on the value of the property.' The Court said this method was 'based upon principles thoroughly established by repeated secisions of this court,' citing many cases, not one of which involved natural gas or a comparable wasting natural resource. Then came issues as to state power to regulate as affected by the commerce clause. Public Utilities Commission v. Landon, 1919, 249 U.S. 236, 39 S.Ct. 268, 63 L.Ed. 577; Pennsylvania Gas Co. v. Public Service Commission, 1920, 252 U.S. 23, 40 S.Ct. 279, 64 L.Ed. 434. These questions settled, the Court again was called upon in natural gas cases to consider state rate-making claimed to be invalid under the Fourteenth Amendment. United Fuel Gas Co. v. Railroad Commission of Kentucky, 1929, 278 U.S. 300, 49 S.Ct. 150, 73 L.Ed. 390; United Fuel Gas Company v. Public Service Commission of West Virginia, 1929, 278 U.S. 322, 49 S.Ct. 157, 73 L.Ed. 402. Then, as now, the differences were 'due chiefly to the difference in value ascribed by each to the gas rights and leaseholds.' 278 U.S. 300, 311, 49 S.Ct. 150, 153, 73 L.Ed. 390. No one seems to have questioned that the rate base method must be pursued and the controversy was at what rate base must be used. Later the 'value' of gas in the field was questioned in determining the

amount a regulated company should be allowed to pay an affiliate therefor—a state determination also reviewed under the Fourteenth Amendment. Dayton Power & Light Co. v. Public Utilities Commission of Ohio, 1934, 292 U.S. 290, 54 S.Ct. 647, 78 L.Ed. 1267; Columbus Gas & Fuel Co. v. Public Utilities Commission of Ohio, 1934, 292 U.S. 398, 54 S.Ct. 763, 78 L.Ed. 1327, 91 A.L.R. 1403. In both cases, one of which sustained, and one of which struck down a fixed rate the Court assumed the rate base method, as the legal way of testing reasonableness of natural gas prices fixed by public authority, without examining its real relevancy to the inquiry.

97 Under the weight of such precedents we cannot expect the Commission to initiate economically intelligent methods of fixing gas prices. But the Court now faces a new plan of federal regulation based on the power to fix the price at which gas shall be allowed to move in interstate commerce. I should now consider whether these rules devised under the Fourteenth Amendment are the exclusive tests of a just and reasonable rate under the federal statute, inviting reargument directed to that point if necessary. As I see it now I would be prepared to hold that these rules do not apply to a natural gas case arising under the Natural Gas Act.

98 Such a holding would leave the Commission to fix the price of gas in the field as one would fix maximum prices of oil or milk or coal, or any other commodity. Such a price is not calculated to produce a fair return on the synthetic value of a rate base of any individual producer, and would not undertake to assure a fair return to any producer. The emphasis would shift from the producer to the product, which would be regulated with an eye to average or typical producing conditions in the field.

99 Such a price fixing process on economic lines would offer little temptation to the judiciary to become back seat drivers of the price fixing machine. The unfortunate effect of judicial intervention in this field is to divert the attention of those engaged in the process from what is economically wise to what is legally permissible. It is probable that price reductions would reach economically unwise and self-defeating limits before they would reach constitutional ones. Any constitutional problems growing out of price fixing are quite different than those that have heretofore been considered to inhere in rate making. A producer would have difficulty showing the invalidity of such a fixed price so long as he voluntarily continued to sell his product in interstate commerce. Should he withdraw and other authority be invoked to compel him to part with his property, a different problem would be presented.

100 Allowance in a rate to compensate for gas removed from gas lands, whether fixed as of point of production or as of point of delivery, probably best can be measured by a functional test applied to the whole industry. For good or ill we depend upon private enterprise to exploit these natural resources for public consumption. The function which an allowance for gas in the field should perform for society in such circumstances is to be enough and no more than enough to induce private enterprise completely and efficiently to utilize gas resources, to acquire for public service any available gas or gas rights and to deliver gas at a rate and for uses which will be in the future as well as in the present public interest.

101 The Court fears that 'if we are now to tell the Commission to fix the rates so as to discourage particular uses, we would indeed be injecting into a rate case a 'novel' doctrine * * *.' With due deference I suggest that there is nothing novel in the idea that any change in price of a service or commodity reacts to encourage or discourage its use. The question is not whether such consequences will or will not follow; the question is whether effects must be suffered blindly or may be

intelligently selected, whether price control shall have targets at which it deliberately aims or shall be handled like a gun in the hands of one who does not know it is loaded.

102 We should recognize 'price' for what it is—a tool, a means, an expedient. In public hands it has much the same economic effects as in private hands. Hope knew that a concession in industrial price would tend to build up its volume of sales. It used price as an expedient to that end. The Commission makes another cut in that same price but the Court thinks we should ignore the effect that it will have on exhaustion of supply. The fact is that in natural gas regulation price must be used to reconcile the private property right society has permitted to vest in an important natural resource with the claims of society upon it—price must draw a balance between wealth and welfare.

103 To carry this into techniques of inquiry is the task of the Commissioner rather than of the judge, and it certainly is no task to be solved by mere bookkeeping but requires the best economic talent available. There would doubtless be inquiry into the price gas is bringing in the field, how far that price is established by arms' length bargaining and how far it may be influenced by agreements in restraint of trade or monopolistic influences. What must Hope really pay to get and to replace gas it delivers under this order? If it should get more or less than that for its own, how much and why? How far are such prices influenced by pipe line access to markets and if the consumers pay returns on the pipe lines how far should the increment they cause go to gas producers? East Ohio is itself a producer in Ohio.[44] What do Ohio authorities require Ohio consumers to pay for gas in the field? Perhaps these are reasons why the Federal Government should put West Virginia gas at lower or at higher rates. If so what are they? Should East Ohio be required to exploit its half million acres of unoperated reserve in Ohio before West Virginia resources shall be supplied on a devalued basis of which that State complains and for which she threatens measures of self keep? What is gas worth in terms of other fuels it displaces?

104 A price cannot be fixed without considering its effect on the production of gas. Is it an incentive to continue to exploit vast unoperated reserves? Is it conducive to deep drilling tests the result of which we may know only after trial? Will it induce bringing gas from afar to supplement or even to substitute for Appalachian gas?[45] Can it be had from distant fields as cheap or cheaper? If so, that competitive potentiality is certainly a relevant consideration. Wise regulation must also consider, as a private buyer would, what alternatives the producer has if the price is not acceptable. Hope has intrastate business and domestic and industrial customers. What can it do by way of diverting its supply to intrastate sales? What can it do by way of disposing of its operated or reserve acreage to industrial concerns or other buyers? What can West Virginia do by way of conservation laws, severance or other taxation, if the regulated rate offends? It must be borne in mind that while West Virginia was prohibited from giving her own inhabitants a priority that discriminated against interstate commerce, we have never yet held that a good faith conservation act, applicable to her own, as well as to others, is not valid. In considering alternatives, it must be noted that federal regulation is very incomplete, expressly excluding regulation of 'production or gathering of natural gas,' and that the only present way to get the gas seems to be to call it forth by price inducements. It is plain that there is a downward economic limit on a safe and wise price.

105 But there is nothing in the law which compels a commission to fix a price at that 'value' which a company might give to its product by taking advantage of scarcity, or monopoly of supply. The very purpose of fixing maximum prices is to take away from the seller his opportunity to get all that otherwise the market would award him for his goods. This is a constitutional use of the power to fix

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maximum prices, Block v. Hirsh, 256 U.S. 135, 41 S.Ct. 458, 65 L.Ed. 865, 16 A.L.R. 165; Marcus Brown Holding Co. v. Feldman, 256 U.S. 170, 41 S.Ct. 465, 65 L.Ed. 877; International Harvester Co. v. Kentucky, 234 U.S. 216, 34 S.Ct. 853, 58 L.Ed. 1284; Highland v. Russell Car & Snow Plow Co., 279 U.S. 253, 49 S.Ct. 314, 73 L.Ed. 688, just as the fixing of minimum prices of goods in interstate commerce is constitutional although it takes away from the buyer the advantage in bargaining which market conditions would give him. United States v. Darby, 312 U.S. 100, 657, 61 S.Ct. 451, 85 L.Ed. 609, 132 A.L.R. 1430; Mulford v. Smith, 307 U.S. 38, 59 S.Ct. 648, 83 L.Ed. 1092; United States v. Rock Royal Co-operative, Inc., 307 U.S. 533, 59 S.Ct. 993, 83 L.Ed. 1446; Sunshine Anthracite Coal Co. v. Adkins, 310 U.S. 381, 60 S.Ct. 907, 84 L.Ed. 1263. The Commission has power to fix a price that will be both maximum and minimum and it has the incidental right, and I think the duty, to choose the economic consequences it will promote or retard in production and also more importantly in consumption, to which I now turn.

106 If we assume that the reduction in company revenues is warranted we then come to the question of translating the allowed return into rates for consumers or classes of consumers. Here the Commission fixed a single rate for all gas delivered irrespective of its use despite the fact that Hope has established what amounts to two rates—a high one for domestic use and a lower one for industrial contracts.[46] The Commission can fix two prices for interstate gas as readily as one—a price for resale to domestic users and another for resale to industrial users. This is the pattern Hope itself has established in the very contracts over which the Commission is expressly given jurisdiction. Certainly the Act is broad enough to permit two prices to be fixed instead of one, if the concept of the 'public interest' is not unduly narrowed.

107 The Commission's concept of the public interest in natural gas cases which is carried today into the Court's opinion was first announced in the opinion of the minority in the Pipeline case. It enumerated only two 'phases of the public interest: (1) the investor interest; (2) the consumer interest,' which it emphasized to the exclusion of all others. 315 U.S. 575, 606, 62 S.Ct. 736, 753, 86 L.Ed. 1037. This will do well enough in dealing with railroads or utilities supplying manufactured gas, electric, power, a communications service or transportation, where utilization of facilities does not impair their future usefulness. Limitation of supply, however, brings into a natural gas case another phase of the public interest that to my mind overrides both the owner and the consumer of that interest. Both producers and industrial consumers have served their immediate private interests at the expense of the long-range public interest. The public interest, of course, requires stopping unjust enrichment of the owner. But it also requires stopping unjust impoverishment of future generations. The public interest in the use by Hope's half million domestic consumers is quite a different one from the public interest in use by a baker's dozen of industries.

108 Prudent price fixing it seems to me must at the very threshold determine whether any part of an allowed return shall be permitted to be realized from sales of gas for resale for industrial use. Such use does tend to level out daily and seasonal peaks of domestic demand and to some extent permits a lower charge for domestic service. But is that a wise way of making gas cheaper when, in comparison with any substitute, gas is already a cheap fuel? The interstate sales contracts provide that at times when demand is so great that there is not enough gas to go around domestic users shall first be served. Should the operation of this preference await the day of actual shortage? Since the propriety of a preference seems conceded, should it not operate to prevent the coming of a shortage as well as to mitigate its effects? Should industrial use jeopardize tomorrow's service to householders any more than today's? If, however, it is

decided to cheapen domestic use by resort to industrial sales, should they be limited to the few uses for which gas has special values or extend also to those who use it only because it is cheaper than competitive fuels?[47] And how much cheaper should industrial gas sell than domestic gas, and how much advantage should it have over competitive fuels? If industrial gas is to contribute at all to lowering domestic rates, should it not be made to contribute the very maximum of which it is capable, that is, should not its price be the highest at which the desired volume of sales can be realized?

109 If I were to answer I should say that the household rate should be the lowest that can be fixed under commercial conditions that will conserve the supply for that use. The lowest probable rate for that purpose is not likely to speed exhaustion much, for it still will be high enough to induce economy, and use for that purpose has more nearly reached the saturation point. On the other hand the demand for industrial gas at present rates already appears to be increasing. To lower further the industrial rate is merely further to subsidize industrial consumption and speed depletion. The impact of the flat reduction of rates ordered here admittedly will be to increase the industrial advantages of gas over competing fuels and to increase its use. I think this is not, and there is no finding by the Commission that it is, in the public interest.

110 There is no justification in this record for the present discrimination against domestic users of gas in favor of industrial users. It is one of the evils against which the Natural Gas Act was aimed by Congress and one of the evils complained of here by Cleveland and Akron. If Hope's revenues should be cut by some $3,600,000 the whole reduction is owing to domestic users. If it be considered wise to raise part of Hope's revenues by industrial purpose sales, the utmost possible revenue should be raised from the least consumption of gas. If competitive relationships to other fuels will permit, the industrial price should be substantially advanced, not for the benefit of the Company, but the increased revenues from the advance should be applied to reduce domestic rates. For in my opinion the 'public interest' requires that the great volume of gas now being put to uneconomic industrial use should either be saved for its more important future domestic use or the present domestic user should have the full benefit of its exchange value in reducing his present rates.

111 Of course the Commission's power directly to regulate does not extend to the fixing of rates at which the local company shall sell to consumers. Nor is such power required to accomplish the purpose. As already pointed out, the very contract the Commission is altering classifies the gas according to the purposes for which it is to be resold and provides differentials between the two classifications. It would only be necessary for the Commission to order that all gas supplied under paragraph (a) of Hope's contract with the East Ohio Company shall be at a stated price fixed to give to domestic service the entire reduction herein and any further reductions that may prove possible by increasing industrial rates. It might further provide that gas delivered under paragraph (b) of the contract for industrial purposes to those industrial customers Hope has approved in writing shall be at such other figure as might be found consistent with the public interest as herein defined. It is too late in the day to contend that the authority of a regulatory commission does not extend to a consideration of public interests which it may not directly regulate and a conditioning of its orders for their protection. Interstate Commerce Commission v. Railway Labor Executives Ass'n, 315 U.S. 373, 62 S.Ct. 717, 86 L.Ed. 904; United States v. Lowden, 308 U.S. 225, 60 S.Ct. 248, 84 L.Ed. 208.

112 Whether the Commission will assert its apparently broad statutory authorization over prices and discriminations is, of course, its own affair, not ours. It is entitled to its own notion of the 'public interest' and its judgment of

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policy must prevail. However, where there is ground for thinking that views of this Court may have constrained the Commission to accept the rate-base method of decision and a particular single formula as 'all important' for a rate base, it is appropriate to make clear the reasons why I, at least, would not be so understood. The Commission is free to face up realistically to the nature and peculiarity of the resources in its control, to foster their duration in fixing price, and to consider future interests in addition to those of investors and present consumers. If we return this case it may accept or decline the proffered freedom. This problem presents the Commission an unprecedented opportunity if it will boldly make sound economic considerations, instead of legal and accounting theories, the foundation of federal policy. I would return the case to the Commission and thereby be clearly quit of what now may appear to be some responsibility for perpetrating a shortsighted pattern of natural gas regulation.

1

Hope produces about one-third of its annual gas requirements and purchases the rest under some 300 contracts.

2

These five companies are the East Ohio Gas Co., the Peoples Natural Gas Co., the River Gas Co., the Fayette County Gas Co., and the Manufacturers Light & Heat Co. The first three of these companies are, like Hope, subsidiaries of Standard Oil Co. (N.J.). East Ohio and River distribute gas in Ohio, the other three in Pennsylvania. Hope's approximate sales in m.c.f. for 1940 may be classified as follows:

Local West Virginia sales. 11,000,000

East Ohio..... 40,000,000

Peoples..... 10,000,000

River..... 400,000

Fayette..... 860,000

Manufacturers..... 2,000,000

Hope's natural gas is processed by Hope Construction & Refining Co., an affiliate, for the extraction of gasoline and butane. Domestic Coke Corp., another affiliate, sells coke-oven gas to Hope for boiler fuel.

3

These required minimum reductions of 7¢ per m.c.f. from the 36.5¢ and 35.5¢ rates previously charged East Ohio and Peoples, respectively, and 3¢ per m.c.f. from the 31.5¢ rate previously charged Fayette and Manufacturers.

4

The book reserve for interstate plant amounted at the end of 1938 to about $18,000,000 more than the amount determined by the Commission as the proper reserve requirement. The Commission also noted that 'twice in the past the company has transferred amounts aggregating $7,500,000 from the depreciation and depletion reserve to surplus. When these latter adjustments are taken into account, the excess becomes $25,500,000, which has been exacted from the ratepayers over and above the amount required to cover the consumption of property in the service rendered and thus to keep the investment unimpaired.' 44 P.U.R.,N.S., at page 22.

5

That contention was based on the fact that 'every single dollar in the depreciation and depletion reserves' was taken 'from gross operating revenues whose only source was the amounts charged customers in the past for natural gas. It is, therefore, a fact that the depreciation and depletion reserves have been contributed by the customers and do not represent any investment by Hope.' Id., 44 P.U.R.,N.S., at page 40. And

see Railroad Commission v. Cumberland Tel. & T. Co., 212 U.S. 414, 424, 425, 29 S.Ct. 357, 361, 362, 53 L.Ed. 577; 2 Bonbright, Valuation of Property (1937), p. 1139.

6

The Commission noted that the case was 'free from the usual complexities involved in the estimate of gas reserves because the geologists for the company and the Commission presented estimates of the remaining recoverable gas reserves which were about one per cent apart.' 44 P.U.R.,N.S., at pages 19, 20.

The Commission utilized the 'straight-line-basis' for determining the depreciation and depletion reserve requirements. It used estimates of the average service lives of the property by classes based in part on an inspection of the physical condition of the property. And studies were made of Hope's retirement experience and maintenance policies over the years. The average service lives of the various classes of property were converted into depreciation rates and then applied to the cost of the property to ascertain the portion of the cost which had expired in rendering the service.

The record in the present case shows that Hope is on the lookout for new sources of supply of natural gas and is contemplating an extension of its pipe line into Louisiana for that purpose. The Commission recognized in fixing the rates of depreciation that much material may be used again when various present sources of gas supply are exhausted, thus giving that property more than scrap value at the end of its present use.

7

See Uniform System of Accounts prescribed for Natural Gas Companies effective January 1, 1940, Account No. 332.1.

8

Sec. 6 of the Act comes the closest to supplying any definite criteria for rate making. It provides in subsection (a) that, 'The Commission may investigate the ascertain the actual legitimate cost of the property of every natural-gas company, the depreciation therein, and, when found necessary for rate-making purposes, other facts which bear on the determination of such cost or depreciation and the fair value of such property.' Subsection (b) provides that every natural-gas company on request shall file with the Commission a statement of the 'original cost' of its property and shall keep the Commission informed regarding the 'cost' of all additions, etc.

9

We recently stated that the meaning of the word 'value' is to be gathered 'from the purpose for which a valuation is being made. Thus the question in a valuation for rate making is how much a utility will be allowed to earn. The basic question in a valuation for reorganization purposes is how much the enterprise in all probability can earn.' Institutional Investors v. Chicago, M., St. P. & P.R. Co., 318 U.S. 523, 540, 63 S.Ct. 727, 738.

10

Chief Justice Hughes said in that case (292 U.S. at pages 168, 169, 54 S.Ct. at page 665, 78 L.Ed. 1182): 'If the predictions of service life were entirely accurate and retirements were made when and as these predictions were precisely fulfilled, the depreciation reserve would represent the consumption of capital, on a cost basis, according to the method which spreads that loss over the respective service periods. But if the amounts charged to operating expenses and credited to the account for depreciation reserve are excessive, to that extent subscribers for the telephone service are required to provide, in effect, capital contributions, not to make good losses incurred by the utility in the service rendered and thus to keep its investment unimpaired, but to secure additional plant and equipment upon which the utility expects a return.'

11

See Mr. Justice Brandeis (dissenting) in United Railways & Electric Co. v. West, 280 U.S. 234, 259—288, 50 S.Ct. 123, 128 138, 74 L.Ed. 390, for an extended analysis of

1248

the problem.

12

It should be noted that the Act provides no specific rule governing depletion and depreciation. Sec. 9(a) merely states that the Commission 'may from time to time ascertain and determine, and by order fix, the proper and adequate rates of depreciation and amortization of the several classes of property of each natural-gas company used or useful in the production, transportation, or sale of natural gas.'

13

See Simonton, The Nature of the Interest of the Grantee Under an Oil and Gas Lease (1918), 25 W.Va.L.Quar. 295.

14

West Penn Power Co. v. Board of Review, 112 W.Va. 442, 164 S.E. 862.

15

W.Va.Rev.Code of 1943, ch. 11. Art. 13, §§ 2a, 3a.

16

West Virginia suggests as a possible solution (1) that a 'going concern value' of the company's tangible assets be included in the rate base and (2) that the fair market value of gas delivered to customers be added to the outlay for operating expenses and taxes.

17

S.Doc. 92, Pt. 84-A, ch. XII, Final Report, Federal Trade Commission to the Senate pursuant to S.Res.No. 83, 70th Cong., 1st Sess.

18

S.Doc. 92, Pt. 84-A, chs. XII, XIII, op. cit., supra, note 17.

19

See Hearings on H.R. 11662, Subcommittee of House Committee on Interstate & Foreign Commerce, 74th Cong., 2d Sess.; Hearings on H.R. 4008, House Committee on Interstate & Foreign Commerce, 75th Cong., 1st Sess.

20

The power to investigate and ascertain the 'actual legitimate cost' of property (§ 6), the requirement as to books and records (§ 8), control over rates of depreciation (§ 9), the requirements for periodic and special reports (§ 10), the broad powers of investigation (§ 14) are among the chief powers supporting the rate making function.

21

Apart from the grandfather clause contained in § 7(c), there is the provision of § 7(f) that a natural gas company may enlarge or extend its facilities with the 'service area' determined by the Commission without any further authorization.

22

See P.L. 117, approved July 7, 1943, 57 Stat. 383 containing an 'Interstate Compact to Conserve Oil and Gas' between Oklahoma, Texas, New Mexico, Illinois, Colorado, and Kansas.

23

As we have pointed out, § 7(c) was amended by the Act of February 7, 1942, 56 Stat. 83, so as to require certificates of public convenience and necessity not only where the extensions were being made to markets in which natural gas was already being sold by another company but to other situations as well. Considerations of conservation entered into the proposal to give the Act that broader scope. H.Rep.No.

1290, 77th Cong. 1st Sess., pp. 2, 3. And see Annual Report, Federal Power Commission (1940) pp. 79, 80; Baum, The Federal Power Commission and State Utility Regulation (1942), p. 261.

The bill amending § 7(c) originally contained a subsection (h) reading as follows: 'Nothing contained in this section shall be construed to affect the authority of a State within which natural gas is produced to authorize or require the construction or extension of facilities for the transportation and sale of such gas within such State: Provided, however, That the Commission, after a hearing upon complaint or upon its own motion, may by order forbid any intrastate construction or extension by any natural-gas company which it shall find will prevent such company from rendering adequate service to its customers in interstate or foreign commerce in territory already being served.' See Hearings on H.R. 5249, House Committee on Interstate & Foreign Commerce, 77th Cong., 1st Sess., pp. 7, 11, 21, 29, 32, 33. In explanation of its deletion the House Committee Report stated, pp. 4, 5: 'The increasingly important problems raised by the desire of several States to regulate the use of the natural gas produced therein in the interest of consumers within such States, as against the Federal power to regulate interstate commerce in the interest of both interstate and intrastate consumers, are deemed by the committee to warrant further intensive study and probably a more retailed and comprehensive plan for the handling thereof than that which would have been provided by the stricken subsection.'

24

We have noted that in the annual operating expenses of some $16,000.000 the Commission included West Virginia and federal taxes. And in the net increase of $421,160 over 1940 operating expenses allowed by the Commission was some $80,000 for increased West Virginia property taxes. The adequacy of these amounts has not been challenged here.

25

The Commission included in the aggregate annual operating expenses which it allowed some $8,500,000 for gas purchased. It also allowed about $1,400,000 for natural gas production and about $600,000 for exploration and development.

It is suggested, however, that the Commission in ascertaining the cost of Hope's natural gas production plant proceeded contrary to § 1(b) which provides that the Act shall not apply to 'the production or gathering of natural gas'. But such valuation, like the provisions for operating expenses, is essential to the rate-making function as customarily performed in this country. Cf. Smith, The Control of Power Rates in the United States and England (1932), 159 The Annals 101. Indeed § 14(b) of the Act gives the Commission the power to 'determine the propriety and reasonableness of the inclusion in operating expenses, capital, or surplus of all delay rentals or other forms of rental or compensation for unoperated lands and leases.'

26

See note 25, supra.

27

The Commission has expressed doubts over its power to fix rates on 'direct sales to industries' from interstate pipelines as distinguished from 'sales for resale to the industrial customers of distributing companies.' Annual Report, Federal Power Commission (1940), p. 11.

28

Sec. 1(b) of the Act provides: 'The provisions of this Act shall apply to the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use, and to natural-gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas or to the local distribution of natural gas or to the facilities used for such distribution or to the production or gathering of natural gas.' And see § 2(6), defining a 'natural-gas company', and H.Rep.No. 709, supra, pp. 2, 3.

29

The wasting-asset characteristic of the industry was recognized prior to the Act as requiring the inclusion of a depletion allowance among operating expenses. See Columbus Gas & Fuel Co. v. Public Utilities Commission, 292 U.S. 398, 404, 405, 54 S.Ct. 763, 766, 767, 78 L.Ed. 1327, 91 A.L.R. 1403. But no such theory of rate-making for natural gas companies as is now suggested emerged from the cases arising during the earlier period of regulation.

30

The Commission has been alert to the problems of conservation in its administration of the Act. It has indeed suggested that it might be wise to restrict the use of natural gas 'by functions rather than by areas.' Annual Report (1940) p. 79.

The Commission stated in that connection that natural gas was particularly adapted to certain industrial uses. But it added that the general use of such gas 'under boilers for the production of steam' is 'under most circumstances of very questionable social economy.' Ibid.

31

The argument is that § 4(a) makes 'unlawful' the charging of any rate that is not just and reasonable. And § 14(a) gives the Commission power to investigate any matter 'which it may find necessary or proper in order to determine whether any person has violated' any provision of the Act. Moreover, § 5(b) gives the Commission power to investigate and determine the cost of production or transportation of natural gas in cases where it has 'no authority to establish a rate governing the transportation or sale of such natural gas.' And § 17(c) directs the Commission to 'make available to the several State commissions such information and reports as may be of assistance in State regulation of natural-gas companies.' For a discussion of these points by the Commission see 44 P.U.R.,N.S., at pages 34, 35.

1

Natural Gas Act, § 4(a), 52 Stat. 821, 822, 15 U.S.C. § 717c(a), 15 U.S.C.A. § 717c(a).

2

52 Stat. 821, 824, 15 U.S.C. § 717e, 15 U.S.C.A. § 717e:

'(a) The Commission may investigate and ascertain the actual legitimate cost of the property of every natural-gas company, the depreciation therein, and, when found necessary for rate-making purposes, other facts which bear on the determination of such cost or depreciation and the fair value of such property.

'(b) Every natural-gas company upon request shall file with the Commission an inventory of all or any part of its property and a statement of the original cost thereof, and shall keep the Commission informed regarding the cost of all additions, betterments, extensions, and new construction.'

3

'Reproduction cost' has been variously defined, but for rate making purposes the most useful sense seems to be, the minimum amount necessary to create at the time of the inquiry a modern plant capable of rendering equivalent service. See I Bonbright, Valuation of Property (1937) 152. Reproduction cost as the cost of building a replica of an obsolescent plant is not of real significance.

'Prudent investment' is not defined by the Court. It may mean the sum originally put in the enterprise, either with or without additional amounts from excess earnings reinvested in the business.

4

It is of no more than bookkeeping significance whether the Commission allows a rate of return commensurate with the risk of the original investment or the lower rate based on current risk and a capitalization reflecting the established earning power of a successful company and the probable cost of duplicating its services. Cf. American

T. & T. Co. v. United States, 299 U.S. 232, 57 S.Ct. 170, 81 L.Ed. 142. But the latter is the traditional method.

1

315 U.S. 575, 62 S.Ct. 736, 86 L.Ed. 1037.

2

Judge Dobie, dissenting below, pointed out that the majority opinion in the Pipeline case 'contains no express discussion of the Prudent Investment Theory' and that the concurring opinion contained a clear one, and said, 'It is difficult for me to believe that the majority of the Supreme Court, believing otherwise, would leave such a statement unchallenged.' (134 F.2d 287, 312.) The fact that two other Justices had as matter of record in our books long opposed the reproduction cost theory of rate bases and had commented favorably on the prudent investment theory may have influenced that conclusion. See opinion of Mr. Justice Frankfurter in Driscoll v. Edison Light & Power Co., 307 U.S. 104, 122, 59 S.Ct. 715, 724, 83 L.Ed. 1134, and my brief as Solicitor General in that case. It should be noted, however, that these statements were made, not in a natural gas case, but in an electric power case—a very important distinction, as I shall try to make plain.

3

Natural gas from the Appalachian field averages about 1050 to 1150 B.T.U. content, while by-product manufactured gas is about 530 to 540. Moody's Manual of Public Utilities (1943) 1350; Youngberg, Natural Gas (1930) 7.

4

Sen.Rep. No. 1162, 75th Cong., 1st Sess., 2.

5

Arnold and Kemnitzer, Petroleum in the United States and Possessions (1931) 78.

6

Id. at 62-63.

7

Id. at 61.

8

At Fredonia, New York, in 1821, natural gas was conveyed from a shallow well to some thirty people. The lighthouse at Barcelona Harbor, near what is now Westfield, New York, was at about that time and for many years afterward lighted by gas that issued from a crevice. Report on Utility Corporations by Federal Trade Commission, Sen.Doc. 92, Pt. 84-A, 70th Cong., 1st Sess., 8-9.

9

In that year Pennsylvania enacted 'An Act to provide for the incorporation and regulation of natural gas companies.' Penn.Laws 1885, No. 32, 15 P.S. § 1981 et seq.

10

See Steptoe and Hoffheimer's Memorandum for Governor Cornwell of West Virginia (1917) 25 West Virginia Law Quarterly 257; see also Report on Utility Corporations by Federal Trade Commission, Sen.Doc. No. 92, Pt. 84-A, 70th Cong., 1st Sess.

11

Arnold and Kemnitzer, Petroleum in the United States and Possessions (1931) 73.

12

Id. at 63.

13

Id. at 64.

14

See Report on Utility Corporations by Federal Trade Commission, Sen.Doc. No. 92, Pt. 84-A, 70th Cong., 1st Sess.

15

Commonwealth of Pennsylvania v. West Virginia, 262 U.S. 553, 43 S.Ct. 658, 67 L.Ed. 1117, 32 A.L.R. 300. For conditions there which provoked this legislation, see 25 West Virginia Law Quarterly 257.

16

People ex rel. Pavilion Natural Gas Co. v. Public Service Commission, 188 App.Div. 36, 176 N.Y.S. 163.

17

Village of Falconer v. Pennsylvania Gas Company, 17 State Department Reports, N.Y., 407.

18

See, for example, Public Service Commission v. Iroquois Natural Gas Co., 108 Misc. 696, 178 N.Y.S. 24; Park Abbott Realty Co. v. Iroquois Natural Gas Co., 102 Misc. 266, 168 N.Y.S. 673; Public Service Commission v. Iroquois Natural Gas Co., 189 App.Div. 545, 179 N.Y.S. 230.

19

People ex rel. Pennsylvania Gas Co. v. Public Service Commission, 196 App.Div. 514, 189 N.Y.S. 478.

20

East Ohio Gas Co. v. Akron, 81 Ohio St. 33, 90 N.E. 40, 26 L.R.A., N.S., 92, 18 Ann.Cas. 332; Village of New-comerstown v. Consolidated Gas Co., 100 Ohio St. 494, 127 N.E. 414; Gress v. Village of Ft. Laramie, 100 Ohio St. 35, 125 N.E. 112, 8 A.L.R. 242; City of Jamestown v. Pennsylvania Gas Co., D.C., 263 F. 437; Id., D.C., 264 F. 1009. See, also, United Fuel Gas Co. v. Railroad Commission, 278 U.S. 300, 308, 49 S.Ct. 150, 152, 73 L.Ed. 390.

21

The New York Public Service Commission said: 'While the transportation of natural gas through pipe lines from one state to another state is interstate commerce * * *, Congress has not taken over the regulation of that particular industry. Indeed, it has expressly excepted it from the operation of the Interstate Commerce Commissions Law (Interstate Commerce Commissions Law, section 1). It is quite clear, therefore, that this Commission can not require a Pennsylvania corporation producing gas in Pennsylvania to transport it and deliver it in the State of New York, and that the Interstate Commerce Commission is likewise powerless. If there exists such a power, and it seems that there does, it is a power vested in Congress and by it not yet exercised. There is no available source of supply for the Crystal City Company at present except through purchasing from the Porter Gas Company. It is possible that this Commission might fix a price at which the Potter Gas Company should sell if it sold at all, but as the Commission can not require it to supply gas in the State of New York, the exercise of such a power to fix the price, if such power exists, would merely say, sell at this price or keep out of the State.' Lane v. Crystal City Gas Co., 8 New York Public Service Comm.Reports, Second District, 210, 212.

22

Proclamation by the President of September 16, 1918; Rules and Regulations of H. A. Garfield, Fuel Administrator, September 24, 1918.

23

For example, the Iroquois Gas Corporation which formerly served Buffalo, New York, with natural gas ranging from 1050 to 1150 b.t.u. per cu. ft., now mixes a by-product gas of between 530 and 540 b.t.u. in proportions to provide a mixed gas of about 900 b.t.u. per cu. ft. For space heating or water heating its charges range from 65 cents for the first m.c.f. per month to 55 cents for all above 25 m.c.f. per month. Moody's Manual of Public Utilities (1943) 1350.

24

The United States Fuel Administration made the following cooking value comparisons, based on tests made in the Department of Home Economics of Ohio State University:

Natural gas at 1.12 per M. is equivalent to coal at $6.50 per ton.

Natural gas at 2.00 per M. is equivalent to gasoline at 27 per gal.

Natural gas at 2.20 per M. is equivalent to electricity at 3 per k.w.h.

Natural gas at 2.40 per M. is equivalent to coal oil at 15 per gal.

Use and Conservation of Natural Gas, issued by U.S. Fuel Administration (1918) 5.

25

See Brief on Behalf of Legislation Imposing an Excise Tax on Natural Gas, submitted to N.R.A. by the United Mine Workers of America and the National Coal Association.

26

Brief of National Gas Association and United Mine Workers, supra, note 26, pp. 35, 36, compiled from Bureau of Mines Reports.

27

From the source quoted in the preceding note the spread elsewhere is shown to be:

State Industrial Domestic

Illinois..... 29.2. 1.678

Louisiana..... 10.4. 59.7

Oklahoma..... 11.2. 41.5

Texas..... 13.1. 59.7

Alabama..... 17.8. 1.227

Georgia..... 22.9. 1.043

28

In Corning, New York, rates were initiated by the Crystal City Gas Company as follows: 70¢ for the first 5,000 cu. ft. per month; 80¢ from 5,000 to 12,000; $1 for all over 12,000. The Public Service Commission rejected these rates and fixed a flat rate of 58¢ per m.c.f. Lane v. Crystal City Gas Co., 8 New York Public Service Comm. Reports, Second District, 210.

The Pennsylvania Gas Company (National Fuel Gas Company group) also attempted a sliding scale rate for New York consumers, net per month as follows: First 5,000 feet, 35¢; second 5,000 feet, 45¢; third 5,000 feet, 50¢; all above 15,000, 55¢. This was eventually abandoned, however. The company's present scale in Pennsylvania appears to be reversed to the following net monthly rate; first 3 m.c.f., 75¢; next 4 m.c.f., 60¢; next 8 m.c.f., 55¢; over 15 m.c.f., 50¢. Moody's Manual of Public Utilities (1943) 1350. In New York it now serves a mixed gas.

For a study of effect of sliding scale rates in reducing consumption see 11 Proceedings of Natural Gas Association of America (1919) 287.

29

See Report on Utility Corporations by Federal Trade Commission, Sen. Doc. 92, Pt. 84-A, 70th Cong., 1st Sess.

30

Four holding company systems control over 55 per cent of all natural gas transmission lines in the United States. They are Columbia Gas and Electric Corporation, Cities Service Co., Electric Bond and Share Co., and Standard Oil Co. of New Jersey. Columbia alone controls nearly 25 per cent, and fifteen companies account for over 80 per cent of the total. Report on Utility Corporations by Federal Trade Commission, Sen. Doc. 92, Pt. 84-A, 70th Cong., 1st Sess., 28.

In 1915, so it was reported to the Governor of West Virginia, 87 per cent of the total gas production of that state was under control of eight companies. Steptoe and Hoffheimer, Legislative Regulation of Natural Gas Supply in West Virginia, 17 West Virginia Law Quarterly 257, 260. Of these, three were subsidiaries of the Columbia system and others were subsidiaries of larger systems. In view of inter-system sales and interlocking interests it may be doubted whether there is much real competition among these companies.

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This pattern with its effects on local regulatory efforts will be observed in our decisions. See United Fuel Gas Co. v. Railroad Commission, 278 U.S. 300, 49 S.Ct. 150, 73 L.Ed. 390; United Fuel Gas Co. v. Public Service Commission, 278 U.S. 322, 49 S.Ct. 157, 73 L.Ed. 402; Dayton Power & Light v. Public Utilities Commission, 292 U.S. 290, 54 S.Ct. 647, 78 L.Ed. 1267; Columbus Gas & Fuel Co. v. Public Utilities Commission, 292 U.S. 398, 54 S.Ct. 763, 78 L.Ed. 1327, 91 A.L.R. 1403, and the present case.

32

15 U.S.C. § 717(a), 15 U.S.C.A. § 717(a). (Italics supplied throughout this paragraph.)

33

§ 7(c), 52 Stat. 825, 15 U.S.C.A. § 717f(c).

34

15 U.S.C. § 717f, 15 U.S.C.A. § 717f.

35

Id., § 717c(e).

36

Id., § 717c(b).

37

Id., § 717d(a).

38

Sen. Rep. No. 1162, 75th Cong., 1st Sess. 2.

39

The list of East Ohio Gas Company's special industrial contracts thus expressly under Hope's control and their demands are as follows:

40

To make a fetish of mere accounting is to shield from examination the deeper causes, forces, movements, and conditions which should govern rates. Even as a recording of current transactions, bookkeeping is hardly an exact science. As a representation of the condition and trend of a business, it uses symbols of certainty to express values

that actually are in constant flux. It may be said that in commercial or investment banking or any business extending credit success depends on knowing what not to believe in accounting. Few concerns go into bankruptcy or reorganization whose books do not show them solvent and often even profitable. If one cannot rely on accountancy accurately to disclose past or current conditions of a business, the fallacy of using it as a sole guide to future price policy ought to be apparent. However, our quest for certitude is so ardent that we pay an irrational reverence to a technique which uses symbols of certainty, even though experience again and again warns us that they are delusive. Few writers have ventured to challenge this American idolatry, but see Hamilton, Cost as a standard for Price, 4 Law and Contemporary Problems 321, 323-25. He observes that 'As the apostle would put it, accountancy is all things to all men. * * * Its purpose determines the character of a system of accounts.' He analyzes the hypothetical character of accounting and says 'It was no eternal mold for pecuniary verities handed down from on high.

It was—like logic or algebra, or the device of analogy in the law an ingenious contrivance of the human mind to serve a limited and practical purpose.' 'Accountancy is far from being a pecuniary expression of all that is industrial reality. It is an instrument, highly selective in its application, in the service of the institution of money making.'As to capital account he observes 'In an enterprise in lusty competition with others of its kind, survival is the thing and the system of accounts has its focus in solvency. * * * Accordingly depreciation, obsolescence, and other factors which carry no immediate threat are matters of lesser concern and the capital account is likely to be regarded as a secondary phenomenon. * * * But in an enterprise, such as a public utility, where continued survival seems assured, solvency is likely to be taken for granted. * * * A persistent and ingenious attention is likely to be directed not so much to securing the upkeep of the physical property as to making it certain that capitalization fails in not one whit to give full recognition to every item that should go into the account.'

41

See 2 Bonbright, Valuation of Property (1937) 1112.

42

Bonbright says, '* * * the vice of traditional law lies, not in its adoption of excessively rigid concepts of value and rules of valuation, but rather in its tendency to permit shifts in meaning that are inept, or else that are ill-defined because the judges that make them will not openly admit that they are doing so.' Id., 1170.

43

'The attempt to regulate rates by reference to a periodic or occasional reappraisal of the properties has now been tested long enough to confirm the worst fears of its critics. Unless its place is taken by some more promising scheme of rate control, the days of private ownership under government regulation may be numbered.' 2 Bonbright, Valuation of Property (1937) 1190.

44

East Ohio itself owns natural gas rights in 550,600 acres, 518,526 of which are reserved and 32,074 operated, by 375 wells. Moody's Manual of Public Utilities (1943) 5.

45

Hope has asked a certificate of convenience and necessity to lay 1140 miles of 22-inch pipeline from Hugoton gas fields in southwest Kansas to West Virginia to carry 285 million cu. ft. of natural gas per day. The cost was estimated at $51,000,000. Moody's Manual of Public Utilities (1943) 1760.

46

I find little information as to the rates for industries in the record and none at all in such usual sources as Moody's Manual.

47

The Federal Power Commission has touched upon the problem of conservation in connection with an application for a certificate permitting construction of a 1500-mile pipeline from southern Texas to New York City and says: 'The Natural Gas Act as presently drafted does not enable the Commission to treat fully the serious implications of such a problem. The question should be raised as to whether the proposed use of natural gas would not result in displacing a less valuable fuel and create hardships in the industry already supplying the market, while at the same time rapidly depleting the country's natural-gas reserves. Although, for a period of perhaps 20 years, the natural gas could be so priced as to appear to offer an apparent saving in fuel costs, this would mean simply that social costs which must eventually be paid had been ignored.

'Careful study of the entire problem may lead to the conclusion that use of natural gas should be restricted by functions rather than by areas. Thus, it is especially adapted to space and water heating in urban homes and other buildings and to the various industrial heat processes which require concentration of heat, flexibility of control, and uniformity of results. Industrial uses to which it appears particularly adapted include the treating and annealing of metals, the operation of kilns in the ceramic, cement, and lime industries, the manufacture of glass in its various forms, and use as a raw material in the chemical industry. General use of natural gas under boilers for the production of steam is, however, under most circumstances of very questionable social economy.' Twentieth Annual Report of the Federal Power Commission (1940) 79.