FILED WITH
Executive Secretary
January 25, 2013
IOWA UTILITIES BOARD

Appendix F

Natural Gas Avoided Costs

Appendix F supports 199 IAC 35.10(2) through 35.10(4) by reporting capacity surpluses and shortfalls, supply options and costs, and gas avoided capacity and energy costs.

199 IAC 35.10(2)

Please see Figure F1 below.

199 IAC 35.10(3)"a"

Please refer to Figure F1 for projected contract deliverability. Firm gas supply needs are projected for 2014 beyond. The firm gas supplies purchased by IPL and transported under these contracts are listed in Table F1. Future supply options are very numerous and contingent upon many factors, including supply make-up and pipeline options at the termination date of any given supply contract. The planned supply portfolio will be made up of a combination of no-notice service and firm storage service with IPL primary pipeline suppliers. In addition, IPL purchases firm non-pipeline supply for use with firm transportation. IPL purchases interruptible spot gas only as a means of reducing gas costs, not as a replacement for firm supply. The primary use of interruptible spot gas is for meeting interruptible requirements and filling storage in the off-peak season.

199 IAC 35.10(3)"b"

Please see 199 IAC 35.10(3)"a" above.

199 IAC 35.10(3)"c"

Please see 199 IAC 35.10(3)"a" above.

199 IAC 35.10(3)"d"

Projected capacity costs of gas supply options for the next 12 months are found below in Table F2 (Confidential). The projected capacity costs for the planning horizon of the Energy Efficiency Plan can be found in 35.10(4)a below.

199 IAC 35.10(3)''e"

Projected energy (commodity) costs of gas supply options for the next 12 months are found below in Table F3 (storage and balancing costs) and Table F4 (commodity plus storage and balancing costs). The projected energy costs for planning horizon of IPL's 2014-2018 Energy Efficiency Plan can be found in 199 IAC 35.10(4)"b" below.

199 IAC 35.10(3)"f"

Projected costs for natural gas in Table G2 (demand costs) and Table G3 (storage and balancing) are based upon actual historical cost data that are adjusted for any prospective changes. Future energy costs are projected by using NYMEX futures market data for the near term and using inflation assumptions from the

United States Department of Energy, Energy Information Administration for the longer term. Please see Figure F3.

199 IAC 35.10(4)

Avoided capacity costs were derived through using the costs and capacities of relevant natural gas pipelines. Some of these contracts expire in 2012, but for the purposes of these calculations, IPL has assumed prices based on the current outlook from negotiations. IPL utilizes the following costing periods for the calculation of avoided natural gas costs:

On-Peak: November through March, all days, all hours; and

Off-Peak: April through October, all days, all hours.

The inflation rates used for projecting commodity costs are explained in part 199 IAC 35.10(3)"f" above. The discount rate used in present value calculations is IPL's after-tax discount rate of 7.49 percent.

199 IAC 35.10(4)"a"

Avoided Capacity Cost: Please see Figure F2 for a derivation of these costs.

Avoided Capacity Cost:

On-Peak: [(D + OC) x (1 + RM)] x (1 + EF) = $100.11 per Dth.

Off-Peak: $0.00 per Dth.

199 IAC 35.10(4)"b"

Avoided Energy Costs: See Figure F3 for a derivation of these costs.

On-Peak: (E + VOM) x (1 + EF) = (4.72)(1.075) = $5.07

Off-Peak: (E + VOM) x (1 + EF) = (4.45)(1.075) = $4.79

Year	Existing & Projected Contract Deliverability (1)	Peak Day Demand Forecast (2)	Allowed Reserve Margin (3)	Peak Day Demand + Margin (2 + 3)	Surplus or (Shortfall) (1-2-3)
09-10	329,761	316,691	15,835	332,526	(2,765)
10-11	332,461	316,850	15,843	332,693	(232)
11-12	316,761	301,688	15,084	316,772	(11)
12-13	315,000	300,180	15,009	315,189	(189)
13-14	313,000	298,679	14,934	313,613	(613)

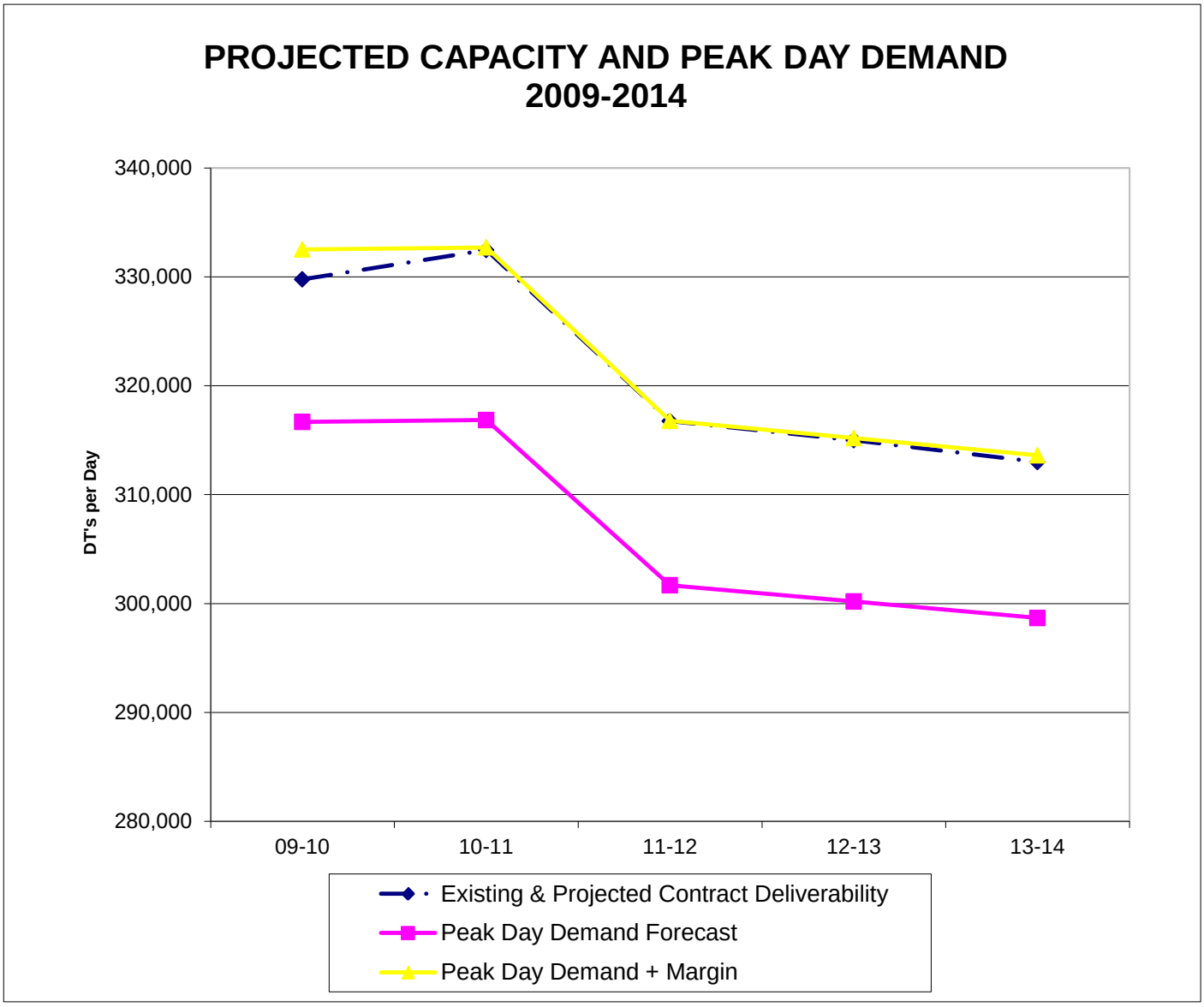

Figure F1

CONTRACTS BY PIPELINE

Supplier	Contract Service	Contract Volumes	Contract Expiration	
ANR	FT	43,180	10/31/2014	
	Third Party	7,000	03/31/2012	
	NNS*	5,000	03/31/2014	
	FSS*	19,180	03/31/2014	
		50,180		
NGPL	DSS	35,969	04/30/2013	
	Third Party	4,500	03/31/2012	Not yet contracted
	FT	46,633	10/31/2013	
		87,102		
NNG	TF12	115,115	10/31/2012	relatively small amounts expire later
	TF5	49,364	10/31/2012	relatively small amounts expire later
	TFX	10,000	10/31/2015	
	NBPL	5,000	05/31/2012	
	SMS*	13,300	10/31/2012	
	FDD*	67,554	05/31/2017	
		179,479		

* Must be used in conjuction with firm transportation

Table F1

DEMAND COSTS

Pipeline Rates

Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Volumes

Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Monthly Cost

Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Table F2

AVOIDED STORAGE & BALANCING COSTS

	NNG SMS Demand	NNG SMS Commodity	ANR NNS Demand	ANR NNS Commodity	NNG FDD Reservation Demand	NNG FDD Capacity Demand	NNG IDD Inventory Demand	ANR FSS Reservation Demand	ANR FSS Capacity Demand	NGPL DDS Demand	
Pipeline Rates											
Jan	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Feb	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Mar	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Apr	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
May	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Jun	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Jul	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Aug	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Sep	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Oct	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Nov	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Dec	$ 2.180	$ 0.0208	$ 6.159	$ 0.015	$ 1.714	$ 0.357	$ 0.076	$ 2.450	$ 0.400	$ 5.801	
Volumes											
Jan	13,300	165,000	5,000	75,000	69,826	778,966	20,000	19,407	132,573	49,781	
Feb	13,300	165,000	5,000	75,000	69,826	778,966	20,000	19,407	132,573	49,781	
Mar	13,300	165,000	5,000	75,000	69,826	778,966	20,000	19,407	132,573	49,781	
Apr	13,300	165,000	5,000	75,000	69,826	-	20,000	19,407	132,573	49,781	
May	13,300	82,500	5,000	37,500	69,826	-	20,000	19,407	132,573	49,781	
Jun	13,300	82,500	5,000	37,500	69,826	-	-	19,407	132,573	49,781	
Jul	13,300	82,500	5,000	37,500	69,826	-	-	19,407	132,573	49,781	
Aug	13,300	82,500	5,000	37,500	69,826	-	-	19,407	132,573	49,781	
Sep	13,300	82,500	5,000	37,500	69,826	-	-	19,407	132,573	49,781	
Oct	13,300	165,000	5,000	75,000	69,826	-	20,000	19,407	132,573	49,781	
Nov	13,300	165,000	5,000	75,000	69,826	778,966	20,000	19,407	132,573	49,781	
Dec	13,300	165,000	5,000	75,000	69,826	778,966	20,000	19,407	132,573	49,781	
Monthly Cost											Total Storage & Balancing
Jan	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ 277,857	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 852,754
Feb	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ 277,857	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 852,754
Mar	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ 277,857	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 852,754
Apr	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ -	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 574,897
May	$ 28,994	$ 1,716	$ 30,795	$ 563	$ 119,682	$ -	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 572,618
Jun	$ 28,994	$ 1,716	$ 30,795	$ 563	$ 119,682	$ -	$ -	$ 47,547	$ 53,029	$ 288,771	$ 571,096
Jul	$ 28,994	$ 1,716	$ 30,795	$ 563	$ 119,682	$ -	$ -	$ 47,547	$ 53,029	$ 288,771	$ 571,096
Aug	$ 28,994	$ 1,716	$ 30,795	$ 563	$ 119,682	$ -	$ -	$ 47,547	$ 53,029	$ 288,771	$ 571,096
Sep	$ 28,994	$ 1,716	$ 30,795	$ 563	$ 119,682	$ -	$ -	$ 47,547	$ 53,029	$ 288,771	$ 571,096
Oct	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ -	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 574,897
Nov	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ 277,857	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 852,754
Dec	$ 28,994	$ 3,432	$ 30,795	$ 1,125	$ 119,682	$ 277,857	$ 1,522	$ 47,547	$ 53,029	$ 288,771	$ 852,754
	$ 347,928	$ 32,604	$ 369,540	$ 10,688	$ 1,436,181	$ 1,389,285	$ 12,176	$ 570,566	$ 636,350	$ 3,465,248	$ 8,270,566

Table F3

COMMODITY PLUS STORAGE AND BALANCING COSTS

Table G4-1

NNG Carlton	NNG Ventura & Demarc Ave	ANR SE	ANR SW	NGPL Mid Continent	NGPL TexOk

Table G4-2

Est. 2012 Commodity Cost (10/14/11 NYMEX)					
Nov	$ 4.628	$ 4.528	$ 4.238	$ 4.268	$ 4.248
Dec	$ 4.895	$ 4.795	$ 4.505	$ 4.535	$ 4.515
Jan	$ 4.350	$ 4.250	$ 3.960	$ 3.990	$ 3.970
Feb	$ 4.361	$ 4.261	$ 3.971	$ 4.001	$ 3.981
Mar	$ 4.323	$ 4.223	$ 3.933	$ 3.963	$ 3.943
Apr		$ 4.003	$ 3.853	$ 3.953	$ 3.853
May		$ 4.037	$ 3.887	$ 3.987	$ 3.887
Jun		$ 4.076	$ 3.926	$ 4.026	$ 3.926
Jul		$ 4.119	$ 3.969	$ 4.069	$ 3.969
Aug		$ 4.144	$ 3.994	$ 4.094	$ 3.994
Sep		$ 4.146	$ 3.996	$ 4.096	$ 3.996
Oct		$ 4.183	$ 4.033	$ 4.133	$ 4.033

Table G4-3

Volumes						Total Volume
Nov	429,000	831,000	270,000	300,000	165,000	1,995,000
Dec	443,300	1,385,700	310,000	620,000	325,500	3,084,500
Jan	443,300	1,540,700	406,100	775,000	372,000	3,537,100
Feb	400,400	1,307,600	336,000	616,000	322,000	2,982,000
Mar	443,300	858,700	263,500	434,000	155,000	2,154,500
Apr		870,000	390,000	315,000	-	1,575,000
May		496,000	294,500	325,500	170,500	1,286,500
Jun		1,140,000	270,000	270,000	165,000	1,845,000
Jul		1,178,000	279,000	279,000	170,500	1,906,500
Aug		1,178,000	279,000	325,500	217,000	1,999,500
Sep		1,230,000	270,000	315,000	240,000	2,055,000
Oct		1,643,000	403,000	496,000	229,400	2,771,400
	2,159,300	13,658,700	- 3,771,100	5,071,000	2,531,900	27,192,000

Table G4-5

On Peak Ave	$	4.62
Off Peak Ave	$	4.36
Average	$	4.50

Table G4-4

Monthly Cost							Commodity	Storage Costs From Fig. B2.5	Total Cost	Average Cost
Nov	$ 1,985,412	$ 3,762,768	$ -	$ 1,144,260	$ 1,280,400	$ 700,920	$ 8,873,760	$ 852,754	$ 9,726,514	$ 4.88
Dec	$ 2,169,954	$ 6,644,432	$ -	$ 1,396,550	$ 2,811,700	$ 1,469,633	$ 14,492,268	$ 852,754	$ 15,345,021	$ 4.97
Jan	$ 1,928,355	$ 6,547,975	$ -	$ 1,608,156	$ 3,092,250	$ 1,476,840	$ 14,653,576	$ 852,754	$ 15,506,330	$ 4.38
Feb	$ 1,746,144	$ 5,571,684	$ -	$ 1,334,256	$ 2,464,616	$ 1,281,882	$ 12,398,582	$ 852,754	$ 13,251,336	$ 4.44
Mar	$ 1,916,386	$ 3,626,290	$ -	$ 1,036,346	$ 1,719,942	$ 611,165	$ 8,910,129	$ 852,754	$ 9,762,882	$ 4.53
Apr	$ -	$ 3,482,610	$ -	$ 1,502,670	$ 1,245,195	$ -	$ 6,230,475	$ 574,897	$ 6,805,372	$ 4.32
May	$ -	$ 2,002,352	$ -	$ 1,144,722	$ 1,297,769	$ 662,734	$ 5,107,576	$ 572,618	$ 5,680,194	$ 4.42
Jun	$ -	$ 4,646,640	$ -	$ 1,060,020	$ 1,087,020	$ 647,790	$ 7,441,470	$ 571,096	$ 8,012,566	$ 4.34
Jul	$ -	$ 4,852,182	$ -	$ 1,107,351	$ 1,135,251	$ 676,715	$ 7,771,499	$ 571,096	$ 8,342,595	$ 4.38
Aug	$ -	$ 4,881,632	$ -	$ 1,114,326	$ 1,332,597	$ 866,698	$ 8,195,253	$ 571,096	$ 8,766,349	$ 4.38
Sep	$ -	$ 5,099,580	$ -	$ 1,078,920	$ 1,290,240	$ 959,040	$ 8,427,780	$ 571,096	$ 8,998,876	$ 4.38
Oct	$ -	$ 6,872,669	$ -	$ 1,625,299	$ 2,049,968	$ 925,170	$ 11,473,106	$ 574,897	$ 12,048,003	$ 4.35
	$ 9,746,251	$ 57,990,813	$ -	$ 15,152,875	$ 20,806,948	$ 10,278,586	$ 113,975,472	$ 8,270,566	$ 122,246,038	$ 4.50

Table F4

AVOIDED DEMAND COSTS

Allocation	on-peak	100%
	off-peak	0%
Inflation rate for projecting demand costs		2.50%
Discount rate for present value calculations		7.49%

CD (current demand cost): (From Figure B2.3)

	2011 Demand Costs	2011 DT's	Average DT Rate
Total/Average	$ 23,657,789	287,262	$ 82.36

FD (current demand cost):

	Avoided Capacity Costs (Nominal$)	Avoided Capacity Costs (2011$)
2012	$ 84.42	$78.53
2013	$ 86.53	$74.88
2014	$ 88.69	$71.40
2015	$ 90.91	$68.09
2016	$ 93.18	$64.92
2017	$ 95.51	$66.55

D (demand) = Max {CD, FD} = max {89.30, 85.10} = $ 82.36 **= CD**
as measured with $ in same year (2011$).

RM (reserve margin) = 5%

OC (other cost) = $0

EF (externality factor) = 7.50%

Avoided Cost = (D+OC)x(1+RM)x(1+EF) =

Avoided Demand costs, in Nominal $, without and with RM, OC and EF		
YEAR	without	with
2013	$ 86.53	$ 97.67
2014	$ 88.69	$ 100.11
2015	$ 90.91	$ 102.61
2016	$ 93.18	$ 105.18
2017	$ 95.51	$ 107.80

Figure F2

AVOIDED ENERGY COSTS

E, marginal energy costs:

Future (FE)		**Current (ME)**	
	2012 NYMEX (1)		Previous Year NYMEX Settlement
Jan-12	$ 4.10	Jan-10	$ 5.81
Feb-12	$ 4.11	Feb-10	$ 5.27
Mar-12	$ 4.07	Mar-10	$ 4.82
Apr-12	$ 4.05	Apr-10	$ 3.84
May-12	$ 4.09	May-10	$ 4.27
Jun-12	$ 4.13	Jun-10	$ 4.16
Jul-12	$ 4.17	Jul-10	$ 4.72
Aug-12	$ 4.19	Aug-10	$ 4.77
Sep-12	$ 4.20	Sep-10	$ 3.65
Oct-12	$ 4.23	Oct-10	$ 3.84
Nov-12	$ 4.38	Nov-10	$ 3.29
Dec-12	$ 4.71	Dec-10	$ 4.27
Average	$ 4.20	Average	$ 4.39

E = max { 4.2, 4.39} = max {4.2, 4.39} = 4.39

So

E = ME

Avoided Energy (Commodity) costs (**E**), in Nominal $ (2)				
YEAR	WINTER	SUMMER	ANNUAL	Gas inflation forecast (3)
2011	4.62	4.36	$ 4.50	
2012	4.64	4.38	4.52	0.45%
2013	4.71	4.44	4.58	1.33%
2014	4.72	4.45	4.59	0.22%
2015	4.81	4.54	4.68	1.97%
2016	4.89	4.62	4.76	1.72%
2017	4.91	4.64	4.78	0.42%
2018	4.96	4.69	4.83	1.05%
2019	5.03	4.74	4.89	1.25%
2020	5.21	4.92	5.07	3.70%
2021	5.41	5.10	5.26	3.76%
2022	5.56	5.25	5.41	2.86%
2023	5.76	5.44	5.60	3.53%
2024	5.99	5.65	5.82	3.94%

(2) Energy costs (E) for the base year of 2011 are from Table H4-5 of Table H4.

(3) This nominal gas inflation forecast is from NYMEX market quotes for 2011-2012 and the Energy Information Administration's Annual Energy Outlook 2011, Model Results, Reference Case Forecast, Table 1, Prices at Henry Hub

VOM (variable O&M costs) = $0

EF (externality factor) = 7.50%

Energy Costs with Variable O&M and Externality Factor

Avoided Energy (Commodity) costs, in Nominal $			
YEAR	WINTER	SUMMER	ANNUAL
2011	$ 4.97	$ 4.69	$ 4.83
2012	$ 4.99	$ 4.71	$ 4.85
2013	$ 5.06	$ 4.78	$ 4.92
2014	$ 5.07	$ 4.79	$ 4.93
2015	$ 5.17	$ 4.88	$ 5.03

Figure F3