Exhibit No. BGM-4
Dockets UE-160228/UG-160229
Witness: Bradley G. Mullins

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UITILITIES AND TRANSPORTATION COMMISSION	)	DOCKETS UE-160228 and UG-160229 (*Consolidated*)
Complainant,	)	
v.	)	
AVISTA CORPORATION d/b/a AVISTA UTILITIES	)	
Respondent.	)	

EXHIBIT NO. BGM-4

NATURAL GAS ATTRITION ALLOWANCE MODEL

August 17, 2016

WASHINGTON NATURAL GAS ATTRITION ALLOWANCE STUDY

Calculation of Attrition Allowance Revenue Requirement
Test Period: Twelve Months Ending September 30, 2015
(000's of Dollars)

Line No.	Description	(a) Attrition Allowance Balances	(b) Revenue Growth Factor	(c) Attrition Allowance Study Results
1	2017 Rate Base	$ 270,873	1.018000	$ 266,084
2	Proposed Rate of Return			7.25%
3	Net Operating Income Requirement			$ 19,291
4	2017 Net Operating Income (at 2016 rates)	$ 22,660	1.01800	$ 22,259
5	2017 Rate of Return (at 2016 rates)			8.37%
6	2017 Net Operating Income Deficiency			$ (2,968)
7	Gross-up Conversion Factor			0.62000
8	2017 Attrition Allowance Revenue Deficiency			**$ (4,787)**
9	2017 Total General Business Revenues (at 2016 rates)			$ 88,474
10	Attrition Allowance 2017 Revenue Requirement			$ 83,687
11	Percent Base Revenue Requirement Change (vs. 2016)			**-5.41%**
12	2017 Total Present Billed Revenue			$ 158,581
13	Percentage Billed Revenue Increase			**-3.02%**

Cost of Capital
Washington - Natural Gas System
Twelve Months Ending September 30, 2015

Capital Structure

Component	Capital Structure	Cost	Weighted Cost
Total Debt	51.50%	5.51%	2.84%
Common	48.50%	9.10%	4.41%
Total	100.00%		7.25%

Revenue Conversion Factor
Washington -Natural Gas System
Twelve Months Ending September 30, 2015

Line No.	Description	*Factor*
1	**Revenues**	*1.000000*
	Expense:	
2	Uncollectibles	0.005855
3	Commission Fees	0.002000
4	Washington Excise Tax	0.038294
5	Total Expense	*0.046150*
6	Net Operating Income Before FIT	*0.953850*
7	Federal Income Tax @ 35%	*0.333848*
8	**REVENUE CONVERSION FACTOR**	*0.620003*

2017 NATURAL GAS ATTRITION ALLOWANCE REVENUE REQUIREMENT CALCULATION

Line No.	$000s DESCRIPTION	Establish Attrition Base: 12ME 09.2015 AMA Commission Basis Report Totals[1] [A]	Establish Attrition Base: Regulatory Amorts & Misc Adjs [B]	Establish Attrition Base: Pro Forma Revenue Normalization Adjustment [C]	Establish Attrition Base: 12ME 12.2015 AMA Escalation Base [E]	Escalation Rate [F]	Escalate Non-Energy Cost: Escalation Amount [E] *[F]=[G] [G]	Escalate Non-Energy Cost: Trended 2017 Non-Energy Cost [E]+[G]=[H] [H]	Escalate Non-Energy Cost: (plus) Revenue Growth [I]	Results: 2017 Results [H]+[I] = [K] [K]
1	REVENUES									
2	Total General Business	$ 156,631	$ -	$ (72,574)	$ 84,057	1.90%		$ 84,057	$ 1,597	$ 85,654
3	Total Transportation	4,008	-	408	4,416	-0.10%		4,416	(4)	4,412
4	Other Revenues	5,696	-	(5,413)	283	0.00%		283	-	283
5	Total Gas Revenues	166,335	-	(77,579)	88,756		-	88,756	1,592	90,348
6	EXPENSES									
7	Production Expenses									
8	City Gate Purchases	86,559	-	(86,559)	-			-		-
9	Purchased Gas Expense	819	-	-	819	1.83%	15	834		834
10	Net Nat Gas Storage Trans	-	-	-	-		-	-		-
11	Total Production	87,378	-	(86,559)	819		15	834	-	834
12	Underground Storage									
13	Operating Expenses[2]	833	-	-	833	3.02%	25	858		858
14	Depreciation/Amortization	429	-	-	429	3.76%	16	445		445
15	Taxes	278	-	-	278	0.00%	-	278		278
16	Total Underground Storage	1,540	-	-	1,540		41	1,581	-	1,581
17	Distribution									
18	Operating Expenses[2]	11,531	-	-	11,531	9.09%	1,048	12,579		12,579
19	Depreciation/Amortization	8,925	-	-	8,925	7.55%	674	9,599		9,599
20	Taxes	8,593	-	(2,764)	5,829	6.96%	406	6,235	61	6,296
21	Total Distribution	29,049	-	(2,764)	26,285		2,128	28,413	61	28,474
22	Customer Accounting	6,340	-	(423)	5,917	5.25%	311	6,228	9	6,237
23	Customer Service & Information	876	-	-	876	2.86%	25	901		901
24	Sales Expenses	-	-	-	-		-	-		-
25	Administrative & General									
26	Operating Expenses[2]	13,563	(275)	(144)	13,144	2.20%	289	13,433	3	13,436
27	Depreciation/Amortization	5,206	-	-	5,206	10.22%	532	5,738		5,738
28	Regulatory Amortizations	(1,505)	2,584	-	1,079		-	1,079		1,079
29	Taxes	-	-	-	-		-	-		-
30	Total Admin. & General	17,264	2,309	(144)	19,429		821	20,250	3	20,253
31	Total Gas Expense	142,447	2,309	(89,890)	54,866		3,341	58,207	73	58,280
32	OPERATING INCOME BEFORE FIT	23,888	(2,309)	12,311	33,890		(3,341)	30,549	1,519	32,068

2017 NATURAL GAS ATTRITION ALLOWANCE REVENUE REQUIREMENT CALCULATION

Line No.	$000s DESCRIPTION	Establish Attrition Base: 12ME 09.2015 AMA Commission Basis Report Totals[1] [A]	Establish Attrition Base: Regulatory Amorts & Misc Adjs [B]	Establish Attrition Base: Pro Forma Revenue Normalization Adjustment [C]	Establish Attrition Base: 12ME 12.2015 AMA Escalation Base [E]	Escalation Rate [F]	Escalate Non-Energy Cost: Escalation Amount [E] *[F]=[G] [G]	Escalate Non-Energy Cost: Trended 2017 Non-Energy Cost [E]+[G]=[H] [H]	Escalate Non-Energy Cost: (plus) Revenue Growth [I]	Results: 2017 Results [H]+[I] = [K] [K]
33	FEDERAL INCOME TAX									
34	Current Accrual	$ (5,606)	$ (808)	$ 4,309	$ (2,105)		$ (1,169)	$ (3,275)	$ 532	$ (2,743)
35	Debt Interest	(49)	22	-	(27)		(189)	(216)		(216)
36	Deferred FIT	12,388	-	-	12,388			12,388		12,388
37	Amort ITC	(20)	-	-	(20)			(20)		(20)
38	NET OPERATING INCOME	17,175	(1,523)	8,002	23,655		(1,983)	21,672	988	22,660
39	RATE BASE									
40	PLANT IN SERVICE									
41	Underground Storage	25,622	-	-	25,622	0.60%	154	25,776		25,776
42	Distribution Plant	354,360	-		354,360	6.98%	24,734	379,094		379,094
43	General Plant	69,725	-	-	69,725	11.73%	8,179	77,904		77,904
44	Total Plant in Service	449,707	-	-	449,707		33,067	482,774		482,774
45	ACCUMULATED DEPR/AMORT									
46	Underground Storage	(9,824)	-	-	(9,824)	0.60%	(59)	(9,883)		(9,883)
47	Distribution Plant	(119,790)	-		(119,790)	6.98%	(8,361)	(128,151)		(128,151)
48	General Plant	(19,460)	-	-	(19,460)	11.73%	(2,283)	(21,743)		(21,743)
49	Total Accumulated Depr/Amort	(149,074)	-	-	(149,074)		(10,703)	(159,777)		(159,777)
50	NET PLANT	300,633	-	-	300,633		22,364	322,997		322,997
51	DEFERRED TAXES	(65,625)	-		(65,625)	18.20%	(11,944)	(77,569)		(77,569)
52	Net Plant After DFIT	235,008	-	-	235,008		10,420	245,428		245,428
53	GAS INVENTORY	15,143	-	-	15,143	0.00%	-	15,143		15,143
54	GAIN ON SALE OF BUILDING	-	-	-	-	0.00%	-	-		-
55	OTHER	(509)	-	-	(509)	0.00%	-	(509)		(509)
56	WORKING CAPITAL	14,867	(2,242)	-	12,625	0.00%	-	12,625		12,625
57	Less: Plant Not Used and Useful									(1,814)
58	**TOTAL RATE BASE**	264,509	(2,242)	-	262,267		10,420	272,687		270,873
59	RATE OF RETURN	6.49%								8.37%

60	ATTRITION ALLOWANCE REVENUE REQUIREMENT	
61	Proposed Rate of Return	7.25%
62	Net Operating Income Requirement	$ 19,638
63	Net Operating Income per Above	22,660
64	Net Operating Income Deficiency	(3,021)
65	Conversion Factor	0.620003
66	Revenue Requirement	(4,873)
67	Revenue Growth Factor	1.018000
68	Attrition Allowance Revenue Requirement	**(4,787)**

2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Purchased Gas Expense**

Selected trend period highlighted green and displayed as green dots in figure

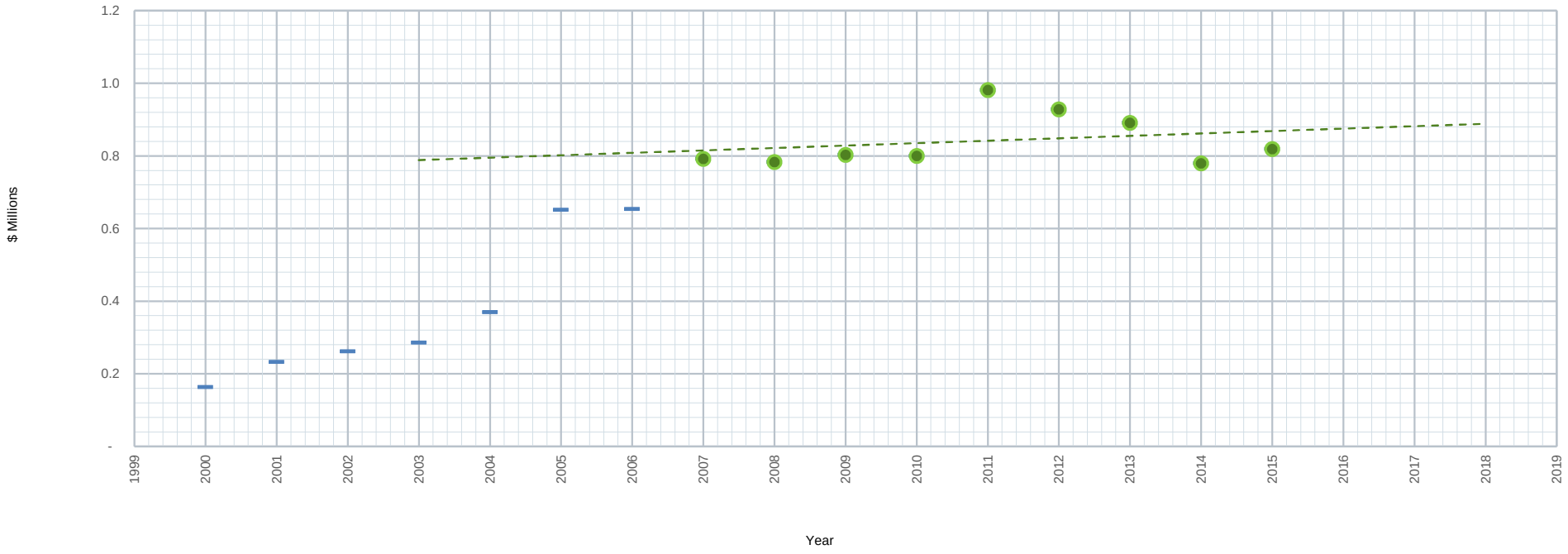
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Purchased Gas Expense	(1,915)	988	1,177	1,186	369	651	653	792	(9,103)	803	800	14	130	891	779	819
Remove Gas Cost	2,078	(756)	(916)	(901)	-	-	-	-	9,886	-	-	967	798			
Total Purchased Gas Expense	**163**	**232**	**261**	**285**	**369**	**651**	**653**	**792**	**783**	**803**	**800**	**981**	**928**	**891**	**779**	**819**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	7
R-Squared of Best Fit	0.06219
Annual Growth Rate (% of 2015)	0.81%
2.25-year Growth Rate	**1.83%**

Narrative

Amounts reflected in the purchased gas expense category of cost have remained relatively flat since 2007. While the data does not indicate a strong upward trend in recent years, my model uses the Company's escalation period of 2007 to 2015 for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Underground Storage Operating Expense**

Selected trend period highlighted green and displayed as green dots in figure

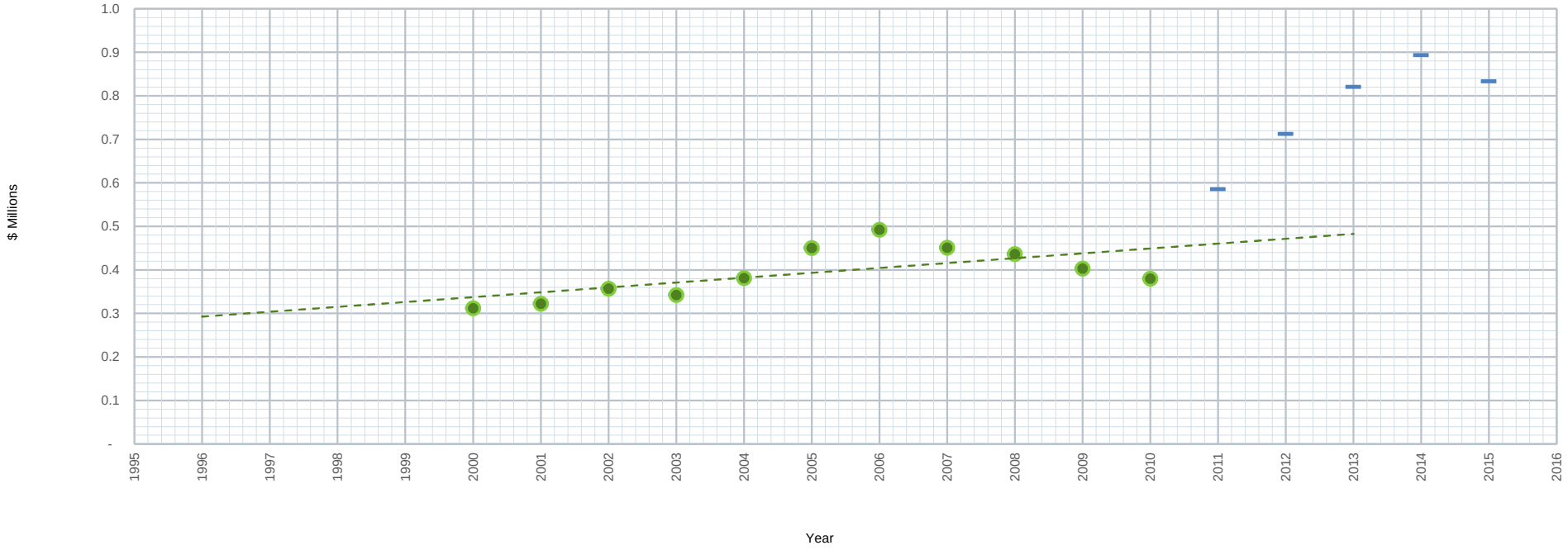
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Underground Storage Operating Expense	312	322	357	342	381	450	492	451	436	403	380	585	712	820	893	833
Total Underground Storage Operating Expense	**312**	**322**	**357**	**342**	**381**	**450**	**492**	**451**	**436**	**403**	**380**	**585**	**712**	**820**	**893**	**833**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	11
R-Squared of Best Fit	0.40246
Annual Growth Rate (% of 2015)	1.34%
2.25-year Growth Rate	**3.02%**

Narrative

The underground storage operating expense category of cost was relatively flat over the period 2000 through 2009. Then, beginning in 2010, this category of cost began to increase, only to level-off again between 2013 and 2015. The large increase in 2010 may be related to a reversionary interest held by Avista in the Jackson Prairie gas storage facility. The increases around the 2010 time-frame may also be related to some non-recurring investments in the Jackson Prairie storage facility to increase the capacity of the storage facility in 2010. Because, the increases that occurred between 2010 and 2013 appears to be related to non-recurring events, I viewed it to be more appropriate to exclude the impact of that period from the trend calculation. Accordingly, my model uses the historical trend that occurred over the period 2000 through 2009, which result in an assumption that this category of cost will remain relatively flat in future periods. Certainly, the most recent three years indicates that the Company has been controlling this expenses and that it should be able to further control this expense in the future period.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Underground Storage Depreciation and Amortization**

Selected trend period highlighted green and displayed as green dots in figure

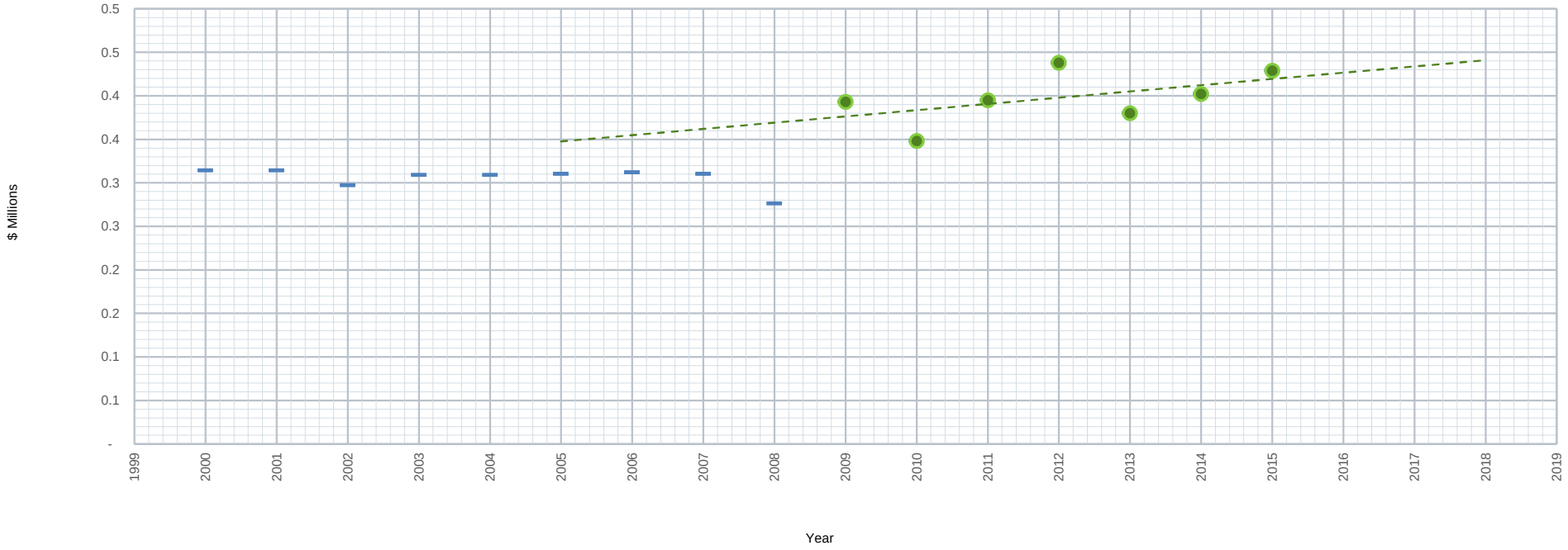
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Underground Storage Depreciation and Amor	314	314	297	309	309	310	312	310	276	393	348	395	438	380	402	429
Total Underground Storage Depreciation and Amortization	**314**	**314**	**297**	**309**	**309**	**310**	**312**	**310**	**276**	**393**	**348**	**395**	**438**	**380**	**402**	**429**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	7
R-Squared of Best Fit	0.26549
Annual Growth Rate (% of 2015)	1.67%
2.25-year Growth Rate	**3.76%**

Narrative

Over the period 2000 through 2008, this category of cost remained relatively flat, declining slightly. Beginning in 2009, however, the cost data begins to show a slightly different pattern, indicating a slight upward trend. While the pattern of this category of cost is not very well defined in the recent period, my model uses the linear trend over the period 2009 through 2015 for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Underground Storage Taxes Other Than Income Taxes**

Selected trend period highlighted green and displayed as green dots in figure

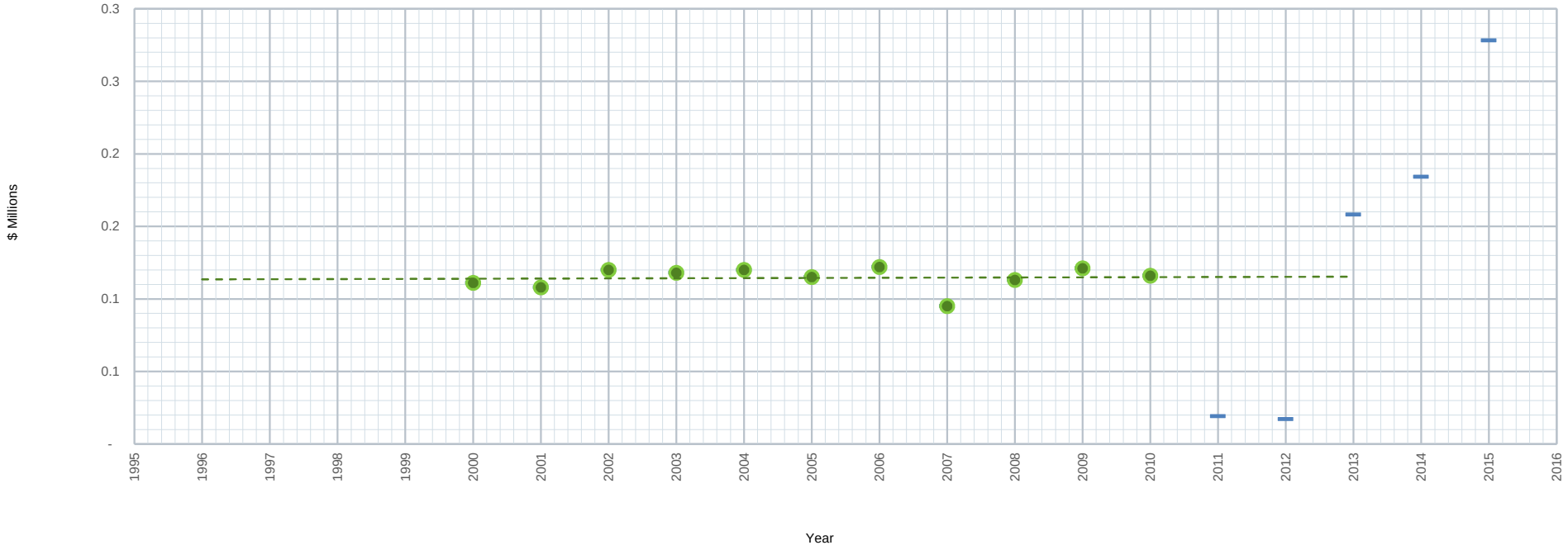
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Underground Storage Taxes	111	108	120	118	120	115	122	95	113	121	116	19	17	158	184	278
Total Underground Storage Taxes Other Than Income Taxes	**111**	**108**	**120**	**118**	**120**	**115**	**122**	**95**	**113**	**121**	**116**	**19**	**17**	**158**	**184**	**278**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	0
R-Squared of Best Fit	0.00214
Annual Growth Rate (% of 2015)	0.04%
2.25-year Growth Rate	**0.00%**

Narrative

This category of cost was irregular in the recent historical period. While it remained flat from 2000 through 2010, the expense dropped to nearly zero in 2011 and 2012, only to increase to even greater levels through 2015. As no discernable trend can be derived from the recent cost data, my model assumes no trend for this category of cost, which is consistent with the trend experienced from 2000 to 2010.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Distribution Operating Expenses**

Selected trend period highlighted green and displayed as green dots in figure

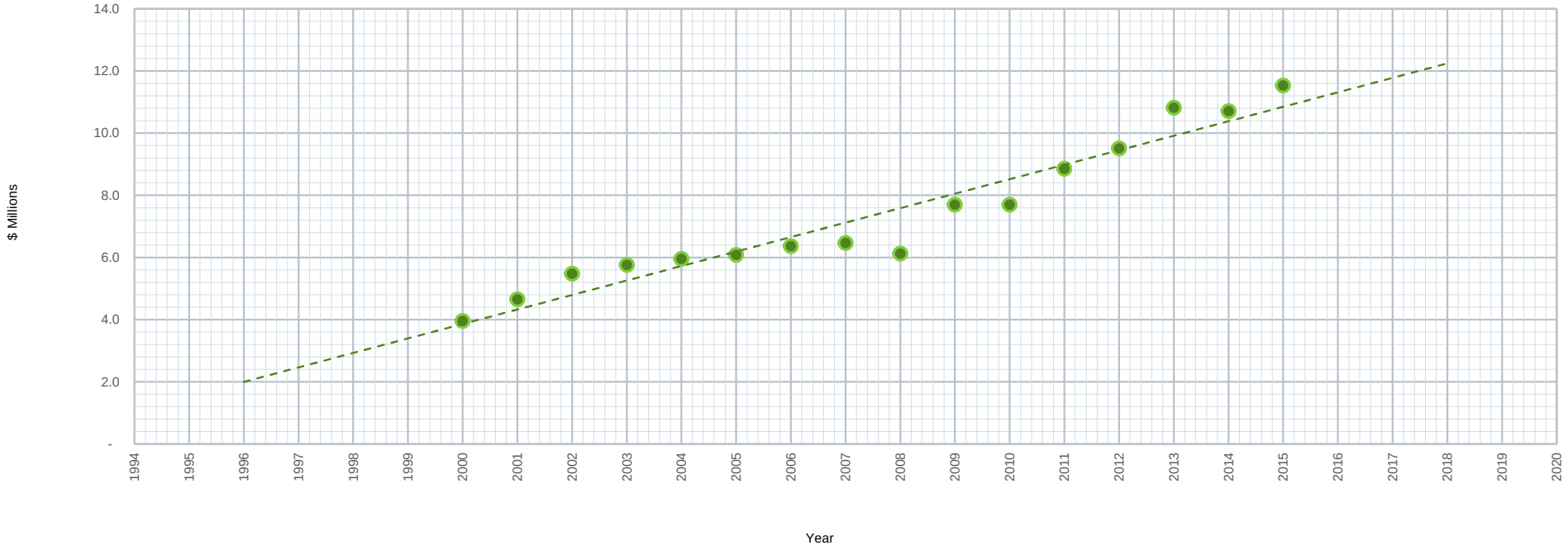
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Distribution Operating Expenses	3,956	4,655	5,482	5,762	5,958	6,084	6,359	6,467	6,123	7,700	7,696	8,854	9,511	10,820	10,704	11,531
Total Distribution Operating Expenses	**3,956**	**4,655**	**5,482**	**5,762**	**5,958**	**6,084**	**6,359**	**6,467**	**6,123**	**7,700**	**7,696**	**8,854**	**9,511**	**10,820**	**10,704**	**11,531**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	466
R-Squared of Best Fit	0.92731
Annual Growth Rate (% of 2015)	4.04%
2.25-year Growth Rate	**9.09%**

Narrative

The category of cost related to distribution operating expenses has grown at a fairly steady rate over the historical period. The Company's proposed escalation period of 2007 through 2015 is not preferable for this category of cost, however, because the category of cost experienced a decline between 2006 and 2008. If the 2007 through 2015 period is to be used, the trend calculation will be starting at a low point in the longer term trend, and thus, potentially producing an escalation rate that is too high, relative to the long term trend. Accordingly, my model uses the entire historical period to calculate the escalation rate for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Distribution Depreciation Expense**

Selected trend period highlighted green and displayed as green dots in figure

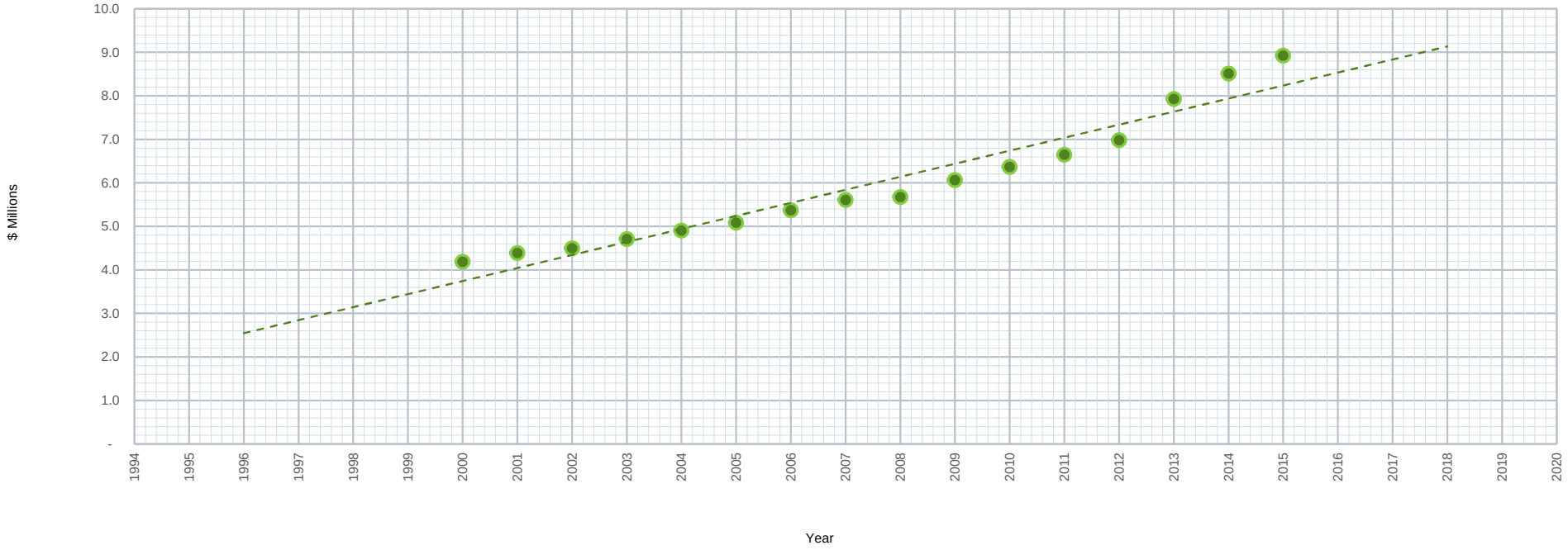
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Distribution Depreciation Expense	4,184	4,390	4,496	4,707	4,902	5,088	5,369	5,605	5,673	6,064	6,367	6,649	6,978	7,925	8,513	8,925
Total Distribution Depreciation Expense	**4,184**	**4,390**	**4,496**	**4,707**	**4,902**	**5,088**	**5,369**	**5,605**	**5,673**	**6,064**	**6,367**	**6,649**	**6,978**	**7,925**	**8,513**	**8,925**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	299
R-Squared of Best Fit	0.93504
Annual Growth Rate (% of 2015)	3.36%
2.25-year Growth Rate	**7.55%**

Narrative

Distribution depreciation expense experienced historical growth patterns similar to that of distribution operations expense and have grown at a fairly steady rate over the historical period. For the same reason that the entire historical period was used for distribution operations expense, and for consistency purposes, my model uses the entire historical period to calculate the escalation rate for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Distribution Taxes Other Than Income Taxes**

Selected trend period highlighted green and displayed as green dots in figure

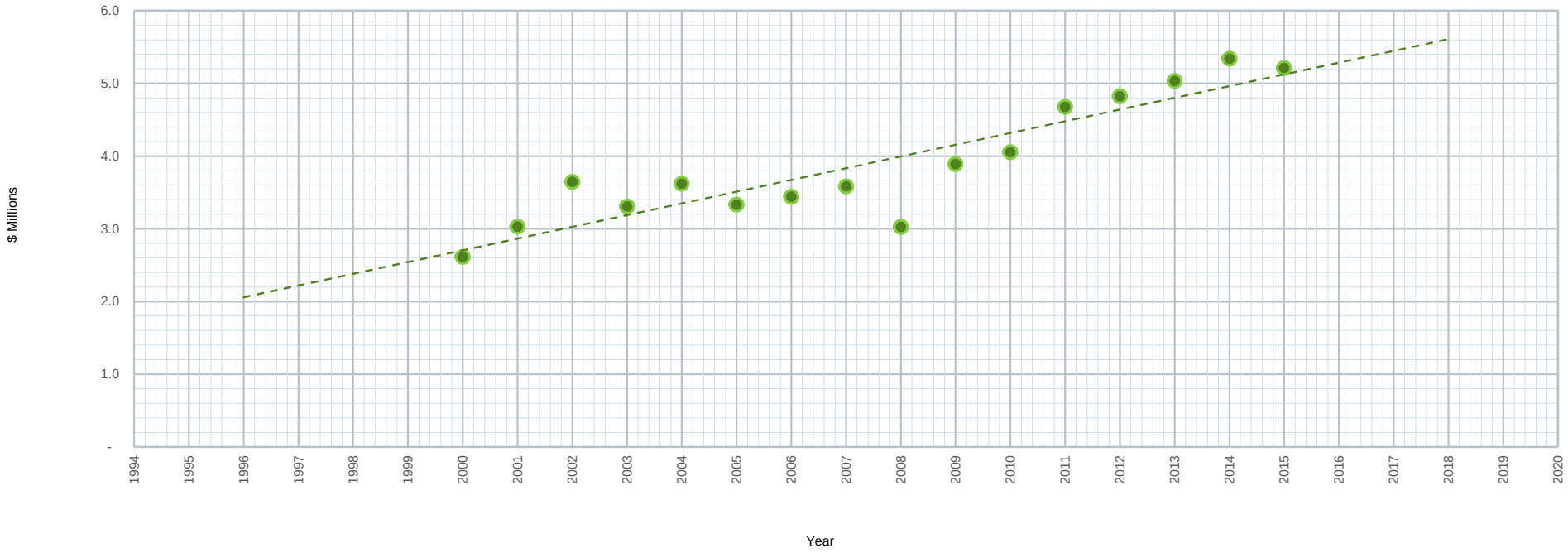
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Distribution Taxes Other Than Income Taxes	4,919	7,315	8,070	7,205	8,213	8,573	9,457	9,844	8,941	8,746	7,223	8,051	7,825	8,116	8,719	8,593
Less Gas Cost Taxes	(2,304)	(4,287)	(4,425)	(3,899)	(4,592)	(5,240)	(6,014)	(6,261)	(5,917)	(4,858)	(3,171)	(3,374)	(3,003)	(3,083)	(3,380)	(3,380)
Total Distribution Taxes Other Than Income Taxes	**2,615**	**3,028**	**3,645**	**3,306**	**3,621**	**3,333**	**3,443**	**3,583**	**3,024**	**3,888**	**4,052**	**4,677**	**4,822**	**5,033**	**5,339**	**5,213**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	161
R-Squared of Best Fit	0.81477
Annual Growth Rate (% of 2015)	3.09%
2.25-year Growth Rate	**6.96%**

Narrative

Distribution taxes other than income taxes experienced historical growth patterns similar to that of distribution operations and depreciations expenses. However, the pattern of growth has been less steady compared to those other distribution-related categories of costs, varying more from the historical trend lines. For the same reason that the entire historical period was used for distribution operations expense, and for consistency purposes, my model uses the entire historical period to calculate the escalation rate for this category of cost. One point of interest related to this category of cost is that if a 2007 to 2015 escalation period is used, the trend line will be unnecessarily influenced by a decrease in this category of cost that occurred in 2008, as noted with distribution operations expense, starting the trend calculation in 2007 means that the trend line will be starting at a low point and will not necessarily be indicative of the longer term trend expected for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Customer Accounting and Sales**

Selected trend period highlighted green and displayed as green dots in figure

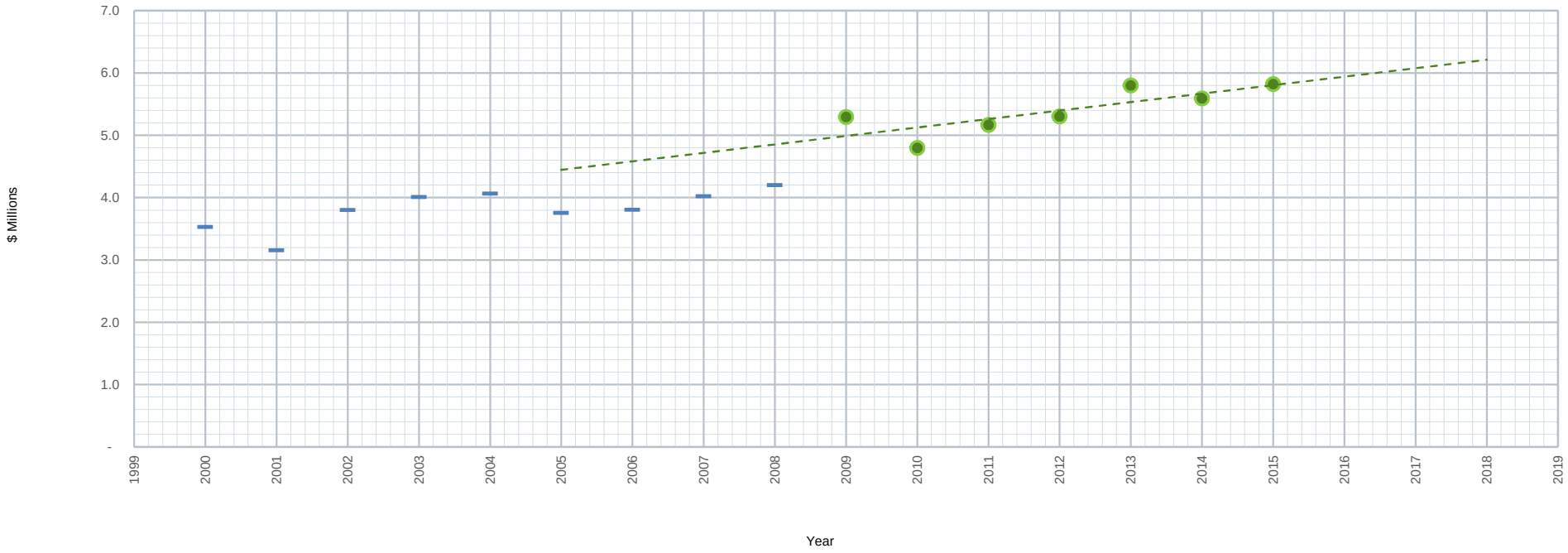
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Customer Accounting and Sales	3,878	3,812	4,483	4,613	4,764	4,569	4,721	5,003	5,134	6,083	5,339	5,743	5,799	6,273	6,108	6,340
Less: DSM, Decoupling and Gas Cost	(352)	(662)	(687)	(608)	(702)	(818)	(920)	(982)	(935)	(789)	(540)	(574)	(496)	(471)	(517)	(517)
Total Customer Accounting and Sales	**3,526**	**3,150**	**3,796**	**4,005**	**4,062**	**3,751**	**3,801**	**4,021**	**4,199**	**5,294**	**4,799**	**5,169**	**5,303**	**5,802**	**5,591**	**5,823**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	136
R-Squared of Best Fit	0.63631
Annual Growth Rate (% of 2015)	2.33%
2.25-year Growth Rate	**5.25%**

Narrative

While this category of cost has grown over the historical period, the rate of growth appears to have leveled-off over the period 2009 through 2015. Accordingly, my model uses an escalation period of 2009 through 2015 for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Customer Service & Information**

Selected trend period highlighted green and displayed as green dots in figure

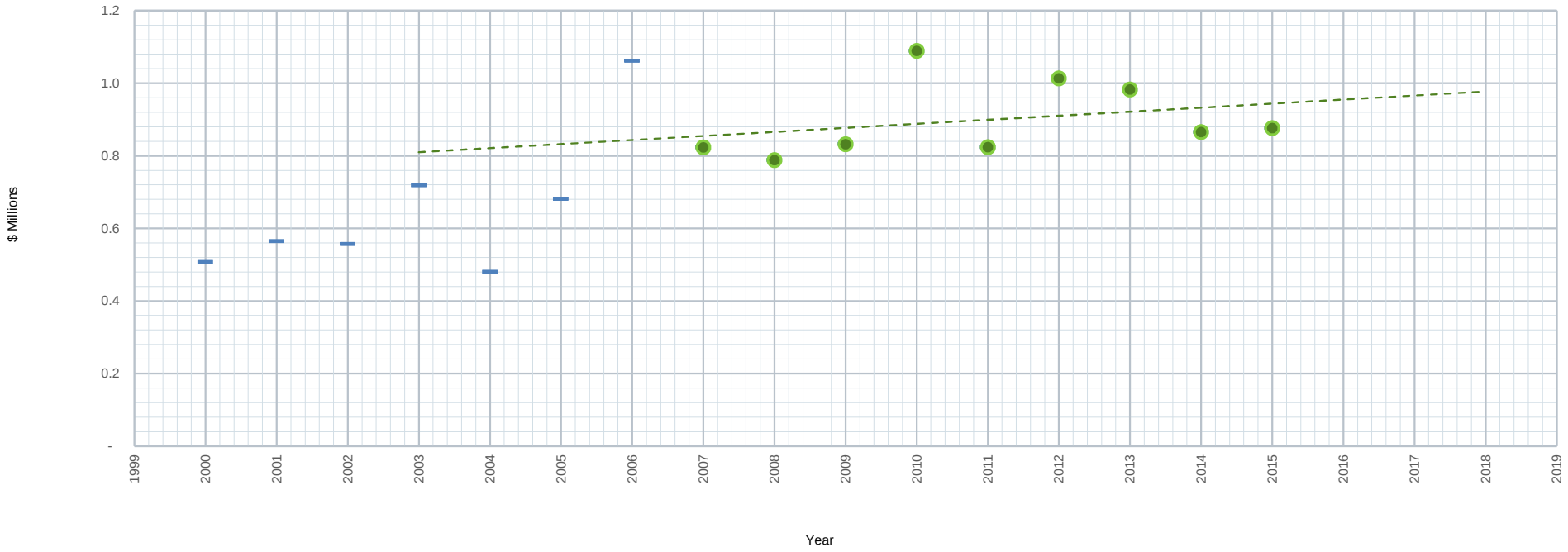
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Customer Service & Information	507	1,513	2,252	2,747	480	3,523	1,061	4,658	5,169	7,609	9,505	9,777	6,955	983	865	876
Less: DSM Expense	-	(949)	(1,696)	(2,029)	-	(2,842)	-	(3,835)	(4,381)	(6,777)	(8,416)	(8,953)	(5,942)			
Total Customer Service & Information	**507**	**564**	**556**	**718**	**480**	**681**	**1,061**	**823**	**788**	**832**	**1,089**	**824**	**1,013**	**983**	**865**	**876**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	11
R-Squared of Best Fit	0.08669
Annual Growth Rate (% of 2015)	1.27%
2.25-year Growth Rate	**2.86%**

Narrative

This category of cost has varied widely over the historical period, and a clear trend is not necessarily present in the historical data. In addition, from the period 2006 through 2015, this category of cost has not increased, and, in fact, has declined very slightly. Because the data does not indicate a clear trend, my model uses the Company's proposed escalation period 2007 through 2015, although this category of cost is probably better modeled using no escalation.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Administrative and General Operations Expense**

Selected trend period highlighted green and displayed as green dots in figure

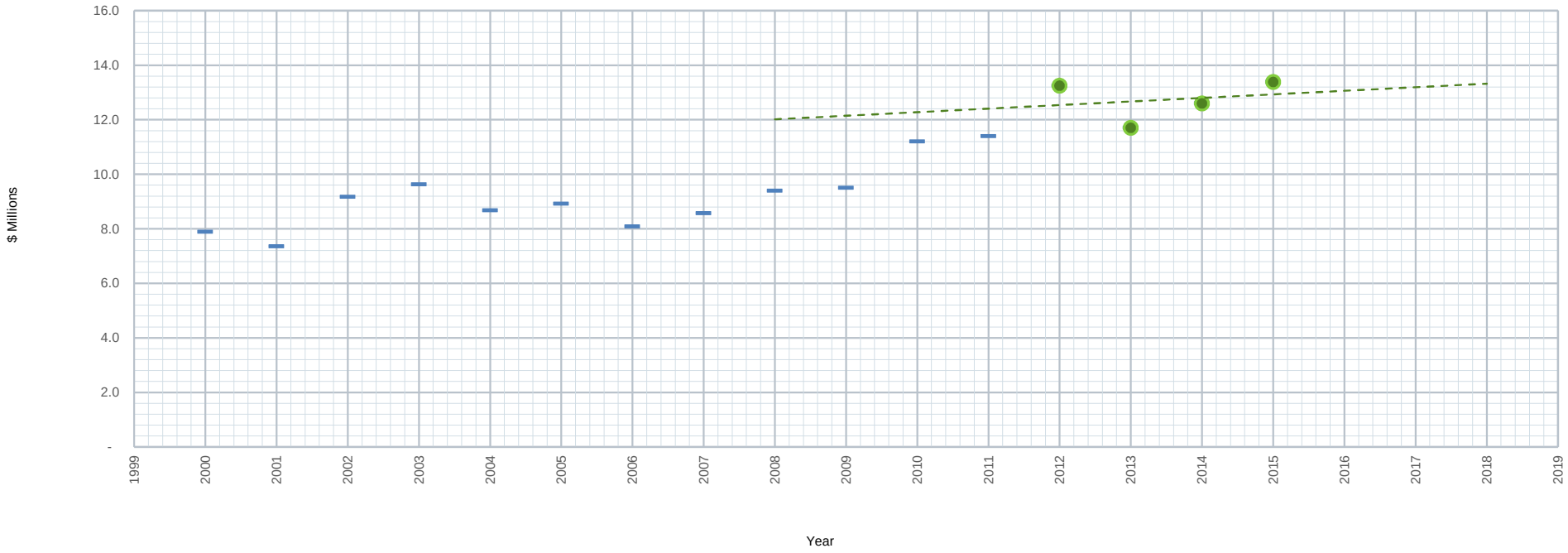
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
A&G Operations Expense	8,004	7,578	9,399	9,827	8,911	9,196	8,393	8,901	9,706	9,770	11,383	11,585	13,419	11,862	12,777	13,563
Less DSM and Gas Costs	(120)	(226)	(235)	(208)	(240)	(280)	(314)	(335)	(319)	(269)	(185)	(196)	(169)	(161)	(177)	(177)
Total Administrative and General Operations Expense	**7,884**	**7,352**	**9,164**	**9,619**	**8,671**	**8,916**	**8,079**	**8,566**	**9,387**	**9,501**	**11,198**	**11,389**	**13,250**	**11,701**	**12,600**	**13,386**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	131
R-Squared of Best Fit	0.04808
Annual Growth Rate (% of 2015)	0.98%
2.25-year Growth Rate	**2.20%**

Narrative

While the category of cost related to administrative and general operations expense has experienced growth in the long term, over the past four years ,2012 through 2015, it has been flat, increasing only slightly. This is an indication that the Company has been controlling this expense and is capable of doing so in the future. It is also an indication that the long-term historical trend may not be the best indication of future growth in this category of cost. Accordingly, my model uses the period 2012 through 2015 to determine the escalation factor applicable to this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Administrative and General Depreciation Expense**

Selected trend period highlighted green and displayed as green dots in figure

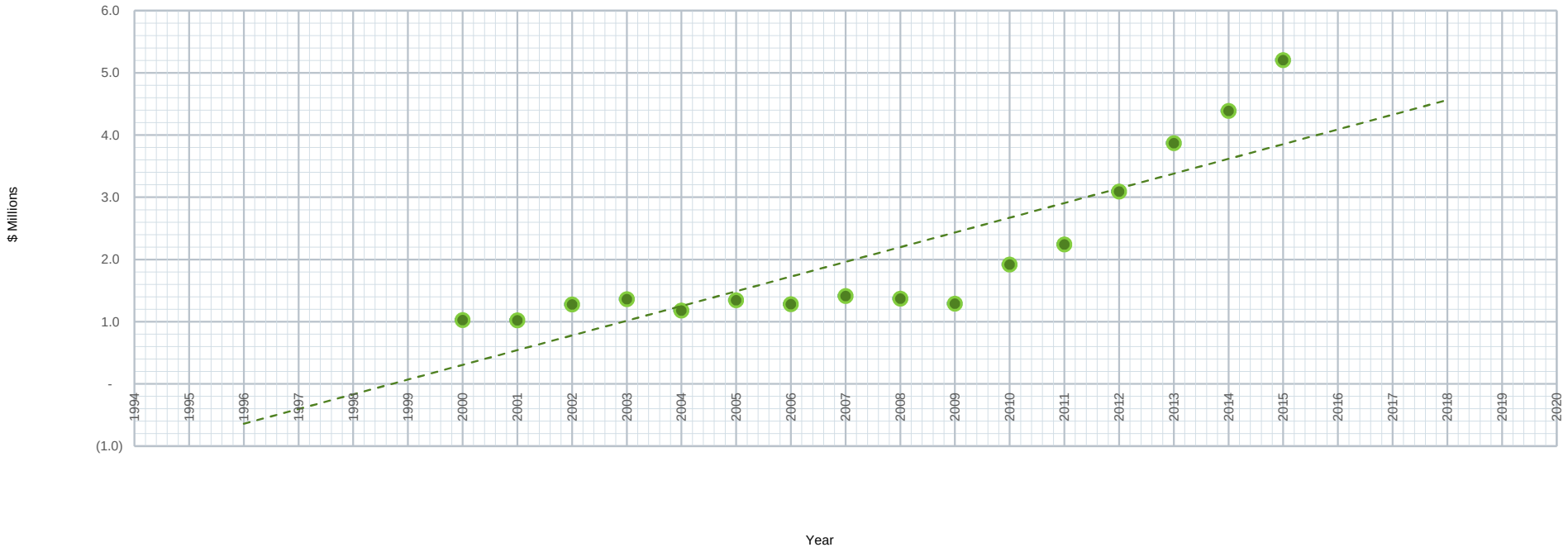
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
A&G Depreciation	1,027	1,020	1,275	1,363	1,180	1,343	1,282	1,498	1,803	1,999	2,412	2,734	3,276	3,868	4,389	5,206
Less: Decoupling Amort.								(85)	(432)	(710)	(494)	(494)	(183)			
Total Administrative and General Depreciation Expense	**1,027**	**1,020**	**1,275**	**1,363**	**1,180**	**1,343**	**1,282**	**1,413**	**1,371**	**1,289**	**1,918**	**2,240**	**3,093**	**3,868**	**4,389**	**5,206**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	237
R-Squared of Best Fit	0.72235
Annual Growth Rate (% of 2015)	4.54%
2.25-year Growth Rate	**10.22%**

Narrative

As noted for electric services, the degree of escalation in this category of cost is somewhat concerning, particularly because the Company maintains more control over the deployment of capital on general plant than for other categories of plant. In addition, because this sort of plant is typically a common cost, it is not clear how changing allocation factors are influencing the amount of cost allocated to Washington natural gas services over the historical period. This is an important consideration, as this category of cost appears to grow at a much greater rate for natural gas services than for electric services. This indicates that there may be some other unknown factors influencing the trend for natural gas services. For purposes of my model, I have used the entire historical period to calculate the escalation factor for this category of cost. While I remain concerned that growth in this category of cost is not well supported, I viewed the escalation over the long term historical period to produce a more reasonable result than the Company's proposed escalation period.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Undgerground Storage Net Plant**

Selected trend period highlighted green and displayed as green dots in figure

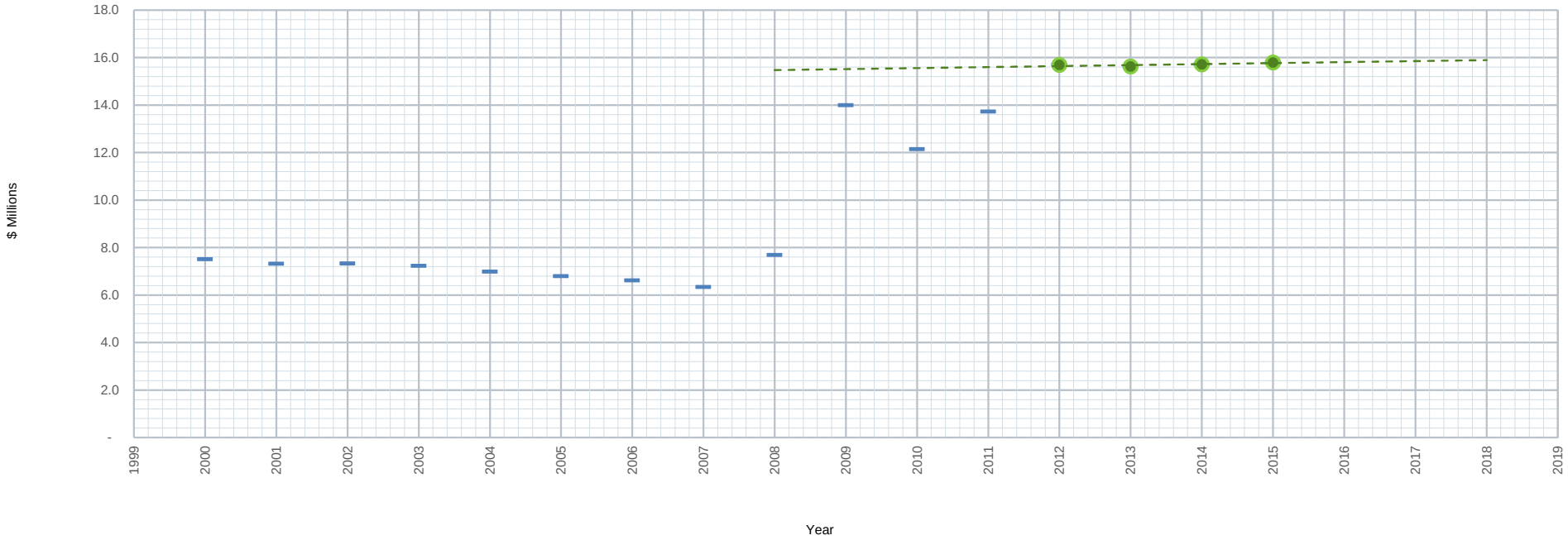
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gross Plant	13,695	13,533	13,439	13,712	13,632	13,708	13,854	13,758	15,260	21,798	20,047	22,008	24,365	24,711	25,235	25,622
Depreciation Reserve	(6,192)	(6,220)	(6,115)	(6,495)	(6,659)	(6,924)	(7,249)	(7,427)	(7,581)	(7,807)	(7,912)	(8,286)	(8,677)	(9,088)	(9,521)	(9,824)
Total Undgerground Storage Net Plant	**7,503**	**7,313**	**7,324**	**7,217**	**6,973**	**6,784**	**6,605**	**6,331**	**7,679**	**13,991**	**12,135**	**13,722**	**15,688**	**15,623**	**15,714**	**15,798**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	42
R-Squared of Best Fit	0.56300
Annual Growth Rate (% of 2015)	0.27%
2.25-year Growth Rate	**0.60%**

Narrative

The category of plant related to underground storage net plant remained relatively flat over the period 2000 through 2008. Then, in 2009, this category of plant experienced a sharp increase. Subsequent to 2009, this category of plant, returned to the historical flat pattern. In fact, over there period 2012 through 2015, the net balances applicable to this category of plant changed very little. Accordingly, my model uses the period 2012 through 2015 as the escalation period for this category of plant.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Distribution Net Plant**

Selected trend period highlighted green and displayed as green dots in figure

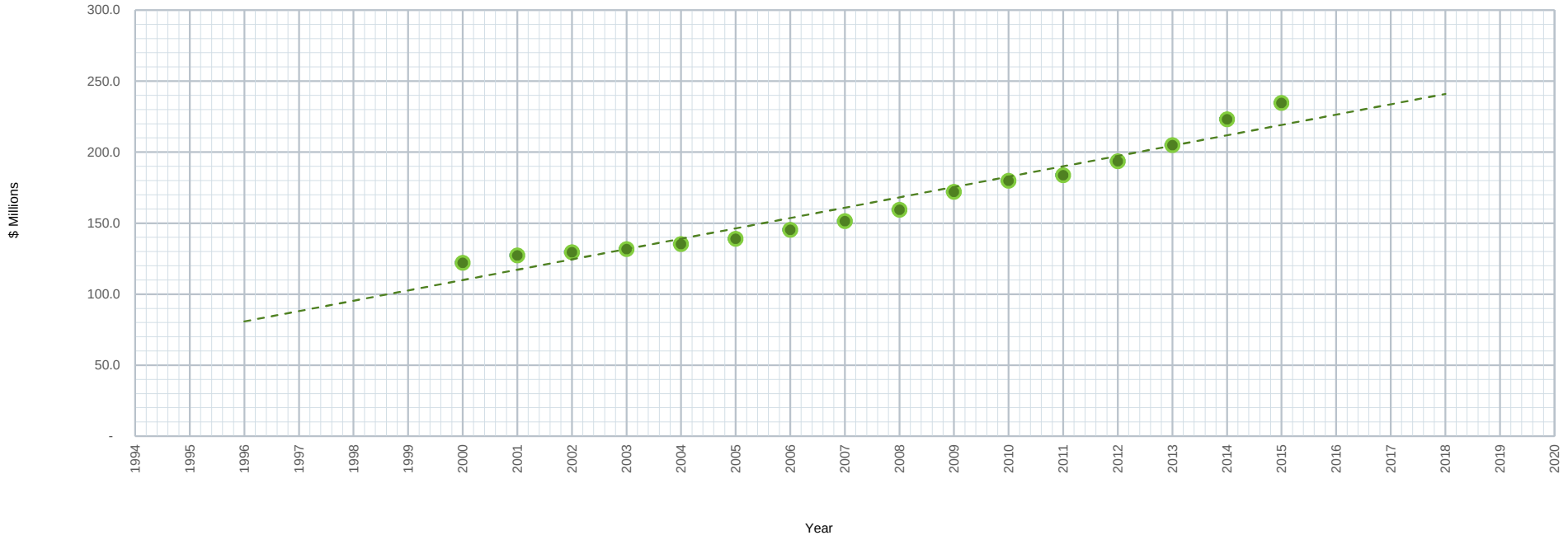
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gross Plant	169,436	178,943	185,314	191,970	200,079	208,396	219,287	229,417	240,778	255,976	269,469	281,279	296,152	313,469	337,894	354,360
Depreciation Reserve	(47,423)	(51,645)	(55,845)	(60,239)	(64,817)	(69,428)	(74,019)	(77,997)	(81,405)	(84,021)	(89,620)	(97,489)	(102,678)	(108,662)	(114,795)	(119,790)
Total Distribution Net Plant	**122,013**	**127,298**	**129,469**	**131,731**	**135,262**	**138,968**	**145,268**	**151,420**	**159,373**	**171,955**	**179,849**	**183,790**	**193,474**	**204,807**	**223,099**	**234,570**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	7,280
R-Squared of Best Fit	0.94660
Annual Growth Rate (% of 2015)	3.10%
2.25-year Growth Rate	**6.98%**

Narrative

Similar to distribution related expenses, this net plant associated with distribution increase at a steady rate over the historical period. Accordingly, my model used the entire historical period for this category of cost.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **General Net Plant**

Selected trend period highlighted green and displayed as green dots in figure

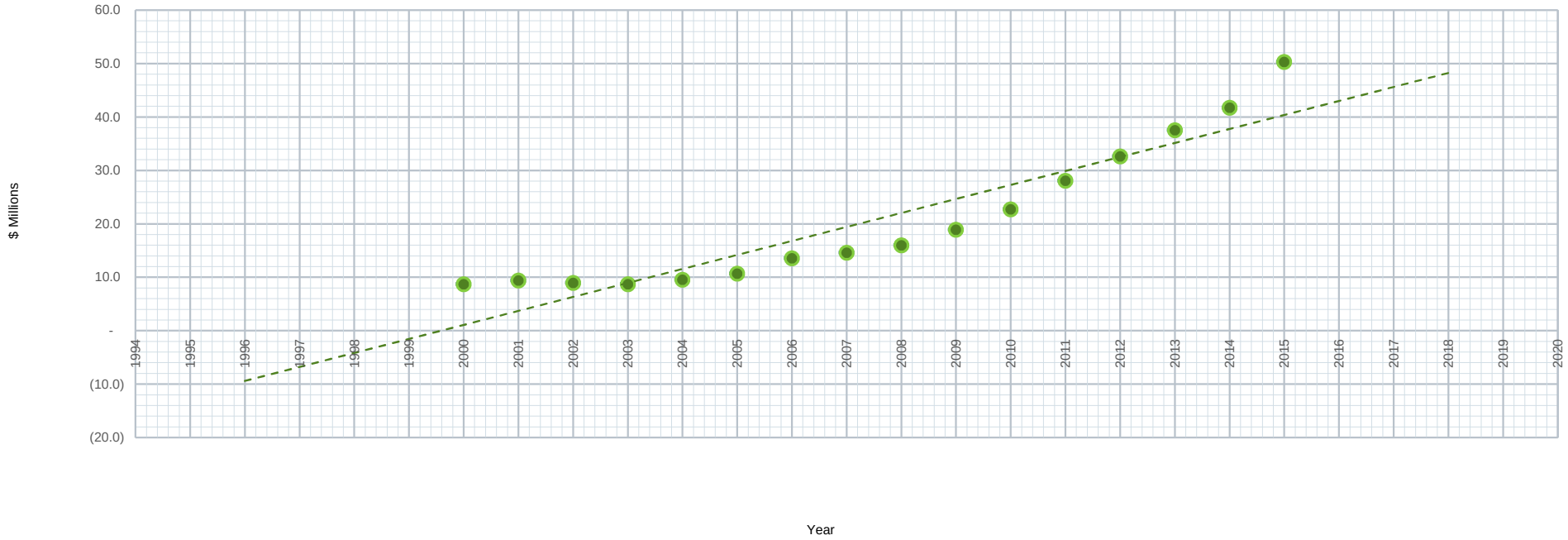
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gross Plant	14,347	15,060	15,368	16,112	16,499	17,878	20,791	21,708	24,256	27,747	33,401	38,971	44,809	52,223	59,169	69,725
Depreciation Reserve	(5,661)	(5,695)	(6,442)	(7,446)	(6,984)	(7,208)	(7,230)	(7,136)	(8,309)	(8,882)	(10,722)	(10,926)	(12,186)	(14,724)	(17,429)	(19,460)
Total General Net Plant	**8,686**	**9,365**	**8,926**	**8,666**	**9,515**	**10,670**	**13,561**	**14,572**	**15,947**	**18,865**	**22,679**	**28,045**	**32,623**	**37,499**	**41,740**	**50,265**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	2,620
R-Squared of Best Fit	0.86579
Annual Growth Rate (% of 2015)	5.21%
2.25-year Growth Rate	**11.73%**

Narrative

As noted for administrative and general depreciation expense, the growth in the gneral net plant category is concerning because it is a category of investment over which the Company typically has more control. In addition, because this is a common cost, it is also unknown how changing allocation factors have influenced the trend over time. For purposes of my model, I have used the entire historical period to calculate the escalation factor for this category of cost. While I remain concerned that growth in this category of cost is not well supported, I viewed the escalation over the long term historical period to produce a more reasonable result than the Company's proposed escalation period.



2017 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

Cost / Rate Base Category: **Accumulated Deferred Income Taxes**

Selected trend period highlighted green and displayed as green dots in figure

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Accumulated Deferred Income Taxes	13,317	14,476	15,979	22,570	26,800	23,805	24,645	26,823	28,945	31,005	36,762	42,004	46,498	50,170	54,652	66,769
Total Accumulated Deferred Income Taxes	**13,317**	**14,476**	**15,979**	**22,570**	**26,800**	**23,805**	**24,645**	**26,823**	**28,945**	**31,005**	**36,762**	**42,004**	**46,498**	**50,170**	**54,652**	**66,769**

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	5,401
R-Squared of Best Fit	0.96662
Annual Growth Rate (% of 2015)	8.09%
2.25-year Growth Rate	**18.20%**

Narrative

Because of the availability of bonus and accelerated depreciation for tax purposes, my expectation was that deferred income tax balances would grow at rate in excess of the rate of growth applicable to net plant. Upon review of the data, it appears that the rate of growth in this category of cost over the long term has generally aligned with the rate of growth applicable to other plant categories. However, in recent years, the growth in this category of cost appears to have increased. Accordingly, my model uses the period 2009 through 2015 to establish the escalation rate for this category of cot.