

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND)	
TRANSPORTATION COMMISSION)	
)	
Complainant,)	
)	
v.)	DOCKETS UE-170485 and
)	UG-170486 (<i>Consolidated</i>)
)	
AVISTA CORPORATION d/b/a)	
AVISTA UTILITIES)	
)	
Respondent.)	
_____)	

EXHIBIT BGM-6
NATURAL GAS ATTRITION STUDY

WASHINGTON NATURAL GAS ATTRITION ALLOWANCE STUDY

Year 1: Attrition Allowance Revenue Requirement (May 1, 2018)

Test Period: Twelve Months Ending December 31, 2016

(000's of Dollars)

Line No.	Description	(a) Attrition Allowance Balances	(b) Revenue Growth Factor	(c) Attrition Allowance Study Results
1	2018 Rate Base	\$ 299,387	1.00840	\$ 296,893
2	Proposed Rate of Return			7.08%
3	Net Operating Income Requirement			\$ 21,020
4	2018 Net Operating Income (at 2017 rates)	<u>\$ 22,403</u>	1.00840	<u>\$ 22,216</u>
5	2018 Rate of Return (at 2017 rates)			7.48%
6	2018 Net Operating Income Deficiency			\$ (1,196)
7	Gross-up Conversion Factor			0.62065
8	2018 Attrition Allowance Revenue Deficiency			\$ (1,927)
9	2018 Total General Business Revenues (at 2017 rates)			\$ 88,833
10	Attrition Allowance 2018 Revenue Requirement			\$ 86,906
11	Percent Base Revenue Requirement Change (vs. 2017)			-2.17%
12	2018 Total Present Billed Revenue			\$ 152,089
13	Percentage Billed Revenue Increase			-1.27%

WASHINGTON NATURAL GAS ATTRITION ALLOWANCE STUDY

Year 2: Attrition Allowance Revenue Requirement (May 1, 2019)

Test Period: Twelve Months Ending December 31, 2016

(000's of Dollars)

Line No.	Description	(a) Attrition Allowance Balances	(b) Revenue Growth Factor	(c) Attrition Allowance Study Results
1	2019 Rate Base	\$ 299,817	1.01201	\$ 296,260
2	Proposed Rate of Return			7.08%
3	Net Operating Income Requirement			\$ 20,975
4	2019 Net Operating Income (at 2017 rates)	<u>\$ 22,218</u>	1.01201	<u>\$ 21,955</u>
5	2019 Rate of Return (at 2017 rates)			7.41%
6	2019 Net Operating Income Deficiency			\$ (980)
7	Gross-up Conversion Factor			0.62065
8	2019 Attrition Allowance Revenue Deficiency (at 2017 Rates)			\$ (1,579)
9	Less: 2018 Incremental Revenues	<u>\$ 1,927</u>	1.00361	\$ 1,934
10	Incremental 2019 Revenues			\$ 355
11	2019 Total General Business Revenues (at 2018 rates)			\$ 86,899
12	Attrition Allowance 2019 Revenue Requirement			\$ 87,254
13	Percent Base Revenue Requirement Change (vs. 2017)			0.41%
14	2019 Total Present Billed Revenue			\$ 150,155
15	Percentage Billed Revenue Increase			-1.05%

WASHINGTON NATURAL GAS ATTRITION ALLOWANCE STUDY

Year 3: Attrition Allowance Revenue Requirement (May 1, 2020)

Test Period: Twelve Months Ending December 31, 2016

(000's of Dollars)

Line No.	Description	(a) Attrition Allowance Balances	(b) Revenue Growth Factor	(c) Attrition Allowance Study Results
1	2020 Rate Base	\$ 299,817	1.01561	\$ 295,208
2	Proposed Rate of Return			7.08%
3	Net Operating Income Requirement			\$ 20,901
4	2020 Net Operating Income (at 2017 rates)	<u>\$ 22,033</u>	1.01561	<u>\$ 21,695</u>
5	2020 Rate of Return (at 2017 rates)			7.35%
6	2020 Net Operating Income Deficiency			\$ (794)
7	Gross-up Conversion Factor			0.62065
8	2020 Attrition Allowance Revenue Deficiency (at 2017 rates)			\$ (1,279)
9	Less: 2018 Incremental Revenues	<u>\$ 1,927</u>	1.00721	\$ 1,941
10	Less: 2019 Incremental Revenues	<u>\$ (355)</u>	1.00361	\$ (356)
11	Incremental 2020 Revenues			\$ 306
12	2020 Total General Business Revenues (at 2019 rates)			\$ 87,248
13	Attrition Allowance 2020 Revenue Requirement			\$ 87,554
14	Percent Base Revenue Requirement Change (vs. 2017)			0.35%
15	2020 Total Present Billed Revenue			\$ 150,504
16	Percentage Billed Revenue Increase			-0.85%

Cost of Capital
Washington - Natural Gas System
Twelve Months Ending December 31, 2016

Capital Structure			
<u>Component</u>	<u>Capital Structure</u>	<u>Cost</u>	<u>Weighted Cost</u>
Total Debt	51.60%	5.19%	2.68%
Common	48.40%	9.10%	4.40%
Total	<u>100.00%</u>		<u>7.08%</u>

Revenue Conversion Factor
Washington -Natural Gas System
Twelve Months Ending December 31, 2016

<u>Line No.</u>	<u>Description</u>	<u>Factor</u>
1	Revenues	1.000000
	Expense:	
2	Uncollectibles	0.004827
3	Commission Fees	0.002000
4	Washington Excise Tax	0.038334
5	Total Expense	<u>0.045161</u>
6	Net Operating Income Before FIT	0.954839
7	Federal Income Tax @ 35%	<u>0.334194</u>
8	REVENUE CONVERSION FACTOR	<u>0.620645</u>

2018 NATURAL GAS ATTRITION ALLOWANCE REVENUE REQUIREMENT CALCULATION

\$000s		Establish Attrition Base				Escalation Rate	Escalate Non-Energy Cost			Results
Line No.	DESCRIPTION	Restated Results AMA (See BGM-4)	Regulatory Amorts & Misc Adjs	Pro Forma Revenue Normalization Adjustment	12ME 2015 AMA Escalation Base	Yrs: 2.33	Escalation Amount [E] *[F]=[G]	Trended 2017 Non-Energy Cost [E]+[G]=[H]	(plus) Revenue Growth [I]	2018 Results [H]+[I] = [K]
		[A]	[B]	[C]	[E]	[F]	[G]	[H]	[I]	[K]
1	REVENUES									
2	Total General Business	\$ 150,970	\$ -	\$ (66,671)	\$ 84,299	0.84%		\$ 84,299	\$ 708	\$ 85,007
3	Total Transportation	4,477	-	56	4,533	0.84%		4,533	38	4,571
4	Other Revenues	1,020	-	(776)	244	0.00%		244	-	244
5	Total Gas Revenues	156,467	-	(67,391)	89,076			89,076	746	89,822
6	EXPENSES									
7	Production Expenses									
8	City Gate Purchases	63,460	-	(63,460)	-			-	-	-
9	Purchased Gas Expense	994	-	-	994	3.29%	33	1,027		1,027
10	Net Nat Gas Storage Trans	-	-	-	-		-	-		-
11	Total Production	64,454	-	(63,460)	994		33	1,027	-	1,027
12	Underground Storage									
13	Operating Expenses	974	-	-	974	0.00%	-	974		974
14	Depreciation/Amortization	492	-	-	492	0.00%	-	492		492
15	Taxes	210	-	-	210	6.20%	13	223		223
16	Total Underground Storage	1,676	-	-	1,676		13	1,689	-	1,689
17	Distribution									
18	Operating Expenses	12,050	-	-	12,050	0.00%	-	12,050		12,050
19	Depreciation/Amortization	9,853	-	-	9,853	0.00%	-	9,853		9,853
20	Taxes	8,383	-	(2,554)	5,829	6.97%	406	6,235	29	6,264
21	Total Distribution	30,286	-	(2,554)	27,732		406	28,138	29	28,167
22	Customer Accounting	6,812	-	(322)	6,490	6.76%	439	6,929	4	6,933
23	Customer Service & Information	963	-	-	963	0.07%	1	964		964
24	Sales Expenses	-	-	-	-		-	-		-
25	Administrative & General									
26	Operating Expenses	13,350	-	(133)	13,217	0.00%	-	13,217	1	13,218
27	Depreciation/Amortization	6,260	-	-	6,260	10.67%	668	6,928		6,928
28	Regulatory Amortizations	1,079	\$ (1,079)	-	-		-	-		-
29	Taxes	-	-	-	-		-	-		-
30	Total Admin. & General	20,689	(1,079)	(133)	19,477		668	20,145	1	20,146
31	Total Gas Expense	124,880	(1,079)	(66,469)	57,332		1,559	58,891	34	58,925
32	OPERATING INCOME BEFORE FIT	31,587	1,079	(922)	31,744		(1,559)	30,185	712	30,897

2019 NATURAL GAS ATTRITION ALLOWANCE REVENUE REQUIREMENT CALCULATION

\$000s		Establish Attrition Base				Escalation Rate	Escalate Non-Energy Cost			Results	
Line No.	DESCRIPTION	Restated Results AMA (See BGM-4)	Regulatory Amorts & Misc Adjs	Pro Forma Revenue Normalization Adjustment	12ME 2015 AMA Escalation Base	Yrs: 3.33	Escalation Amount [E] *[F]=[G]	Trended 2017 Non-Energy Cost [E]+[G]=[H]	(plus) Revenue Growth [I]	2019 Results [H]+[I] = [K]	
		[A]	[B]	[C]	[E]	[F]	[G]	[H]	[I]	[K]	
1	REVENUES										
2	Total General Business	\$ 150,970	\$ -	\$ (66,671)	\$ 84,299	1.20%		\$ 84,299	\$ 1,012	\$ 85,311	
3	Total Transportation	4,477	-	56	4,533	1.20%		4,533	54	4,587	
4	Other Revenues	1,020	-	(776)	244	0.00%		244	-	244	
5	Total Gas Revenues	156,467	-	(67,391)	89,076			-	89,076	1,066	90,142
6	EXPENSES										
7	Production Expenses										
8	City Gate Purchases	63,460	-	(63,460)	-			-	-	-	
9	Purchased Gas Expense	994	-	-	994	4.70%	47	1,041		1,041	
10	Net Nat Gas Storage Trans	-	-	-	-		-	-		-	
11	Total Production	64,454	-	(63,460)	994		47	1,041	-	1,041	
12	Underground Storage										
13	Operating Expenses	974	-	-	974	0.00%	-	974		974	
14	Depreciation/Amortization	492	-	-	492	0.00%	-	492		492	
15	Taxes	210	-	-	210	8.86%	19	229		229	
16	Total Underground Storage	1,676	-	-	1,676		19	1,695	-	1,695	
17	Distribution										
18	Operating Expenses	12,050	-	-	12,050	0.00%	-	12,050		12,050	
19	Depreciation/Amortization	9,853	-	-	9,853	0.00%	-	9,853		9,853	
20	Taxes	8,383	-	(2,554)	5,829	9.96%	580	6,409	41	6,450	
21	Total Distribution	30,286	-	(2,554)	27,732		580	28,312	41	28,353	
22	Customer Accounting	6,812	-	(322)	6,490	9.66%	627	7,117	5	7,122	
23	Customer Service & Information	963	-	-	963	0.10%	1	964		964	
24	Sales Expenses	-	-	-	-		-	-		-	
25	Administrative & General										
26	Operating Expenses	13,350	-	(133)	13,217	0.00%	-	13,217	2	13,219	
27	Depreciation/Amortization	6,260	-	-	6,260	15.25%	955	7,215		7,215	
28	Regulatory Amortizations	1,079	\$ (1,079)	-	-		-	-		-	
29	Taxes	-	-	-	-		-	-		-	
30	Total Admin. & General	20,689	(1,079)	(133)	19,477		955	20,432	2	20,434	
31	Total Gas Expense	124,880	(1,079)	(66,469)	57,332		2,228	59,560	48	59,608	
32	OPERATING INCOME BEFORE FIT	31,587	1,079	(922)	31,744		(2,228)	29,516	1,018	30,534	

2020 NATURAL GAS ATTRITION ALLOWANCE REVENUE REQUIREMENT CALCULATION

\$000s		Establish Attrition Base				Escalation Rate	Escalate Non-Energy Cost			Results
Line No.	DESCRIPTION	Restated Results AMA (See BGM-4)	Regulatory Amorts & Misc Adjs	Pro Forma Revenue Normalization Adjustment	12ME 2015 AMA Escalation Base	Yrs: 4.33	Escalation Amount [E] *[F]=[G]	Trended 2017 Non-Energy Cost [E]+[G]=[H]	(plus) Revenue Growth [I]	2020 Results [H]+[I] = [K]
		[A]	[B]	[C]	[E]	[F]	[G]	[H]	[I]	[K]
1	REVENUES									
2	Total General Business	\$ 150,970	\$ -	\$ (66,671)	\$ 84,299	1.56%		\$ 84,299	\$ 1,316	\$ 85,615
3	Total Transportation	4,477	-	56	4,533	1.56%		4,533	71	4,604
4	Other Revenues	1,020	-	(776)	244	0.00%		244	-	244
5	Total Gas Revenues	156,467	-	(67,391)	89,076			89,076	1,387	90,463
6	EXPENSES									
7	Production Expenses									
8	City Gate Purchases	63,460	-	(63,460)	-			-	-	-
9	Purchased Gas Expense	994	-	-	994	6.11%	61	1,055		1,055
10	Net Nat Gas Storage Trans	-	-	-	-		-	-		-
11	Total Production	64,454	-	(63,460)	994		61	1,055	-	1,055
12	Underground Storage									
13	Operating Expenses	974	-	-	974	0.00%	-	974		974
14	Depreciation/Amortization	492	-	-	492	0.00%	-	492		492
15	Taxes	210	-	-	210	11.52%	24	234		234
16	Total Underground Storage	1,676	-	-	1,676		24	1,700	-	1,700
17	Distribution									
18	Operating Expenses	12,050	-	-	12,050	0.00%	-	12,050		12,050
19	Depreciation/Amortization	9,853	-	-	9,853	0.00%	-	9,853		9,853
20	Taxes	8,383	-	(2,554)	5,829	12.95%	755	6,584	53	6,637
21	Total Distribution	30,286	-	(2,554)	27,732		755	28,487	53	28,540
22	Customer Accounting	6,812	-	(322)	6,490	12.56%	815	7,305	7	7,312
23	Customer Service & Information	963	-	-	963	0.13%	1	964		964
24	Sales Expenses	-	-	-	-		-	-		-
25	Administrative & General									
26	Operating Expenses	13,350	-	(133)	13,217	0.00%	-	13,217	3	13,220
27	Depreciation/Amortization	6,260	-	-	6,260	19.83%	1,241	7,501		7,501
28	Regulatory Amortizations	1,079	\$ (1,079)	-	-		-	-		-
29	Taxes	-	-	-	-		-	-		-
30	Total Admin. & General	20,689	(1,079)	(133)	19,477		1,241	20,718	3	20,721
31	Total Gas Expense	124,880	(1,079)	(66,469)	57,332		2,897	60,229	63	60,292
32	OPERATING INCOME BEFORE FIT	31,587	1,079	(922)	31,744		(2,897)	28,847	1,324	30,171

**2018 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

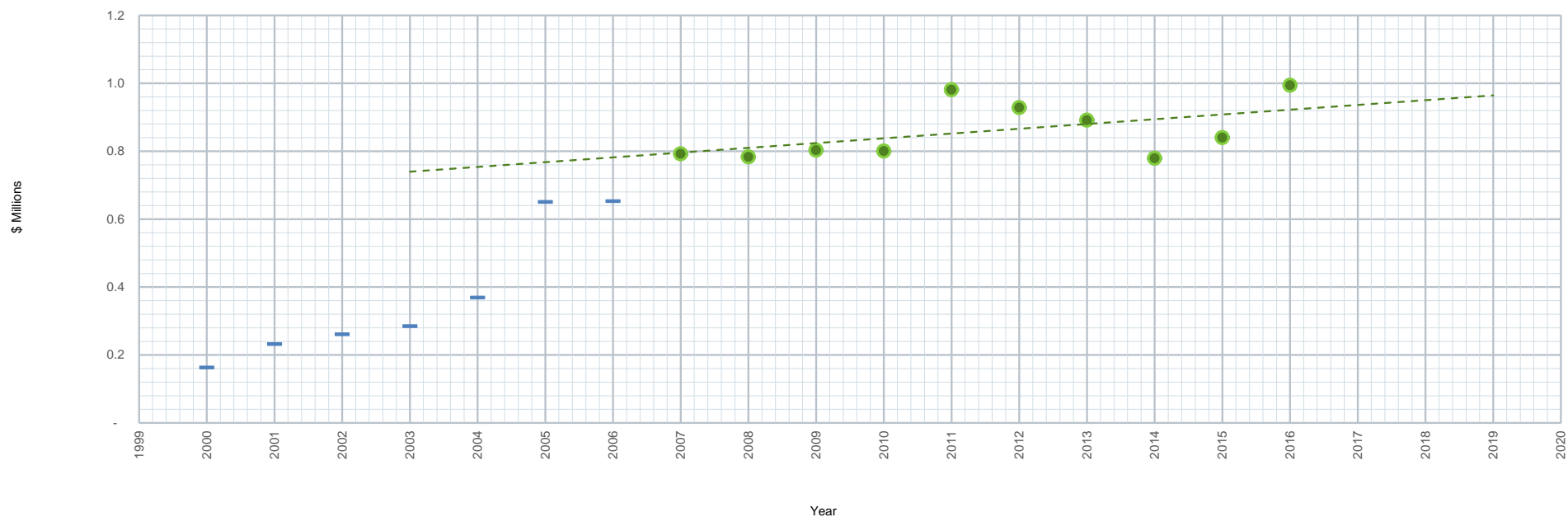
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Purchased Gas Expense	(1,915)	988	1,177	1,186	369	651	653	792	(9,103)	803	800	14	130	891	779	840	994
Remove Gas Cost	2,078	(756)	(916)	(901)	-	-	-	-	9,886	-	-	967	798				
Total Purchased Gas Expense	163	232	261	285	369	651	653	792	783	803	800	981	928	891	779	840	994

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	14
R-Squared of Best Fit	0.26014
Annual Growth Rate (% of 2015)	1.41%
1-year Growth Rate	1.41%

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 2016 for this category of cost.



**2018 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

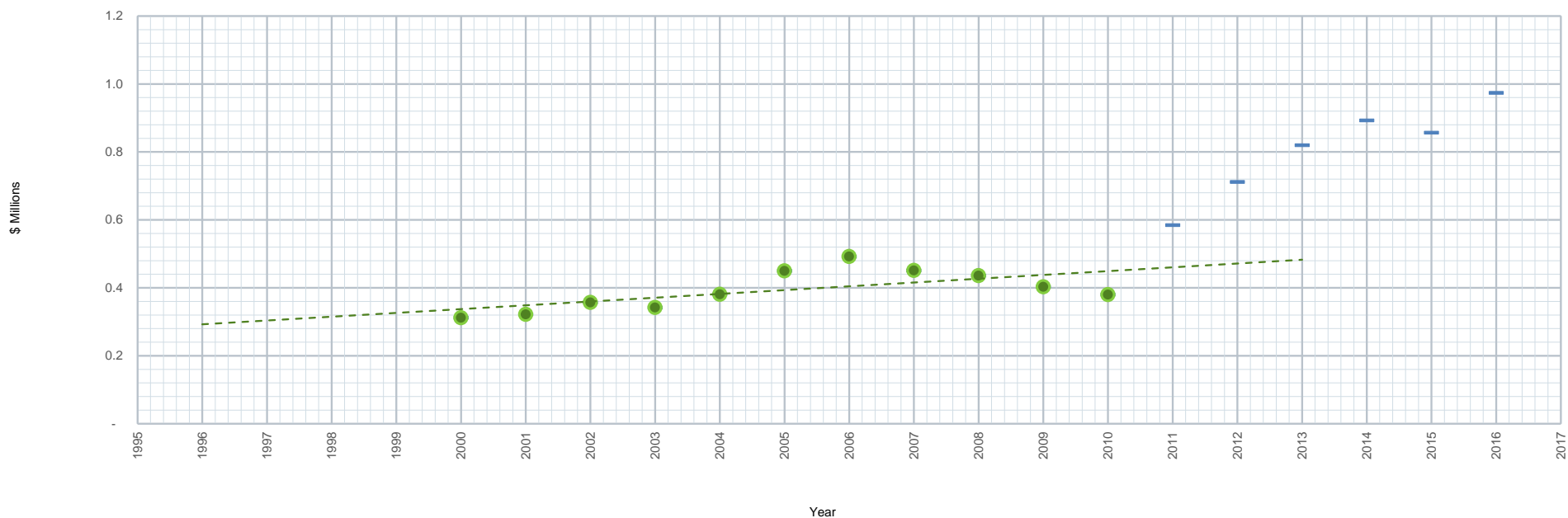
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Underground Storage Operating Expense	312	322	357	342	381	450	492	451	436	403	380	585	712	820	893	857	974
Total Underground Storage Operating Expense	312	322	357	342	381	450	492	451	436	403	380	585	712	820	893	857	974

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	11
R-Squared of Best Fit	0.40246
Annual Growth Rate (% of 2015)	1.15%
1-year Growth Rate	1.15%

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. These cost subsequently increased in 2016. 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, based on the historical experience over 2000 through 2010



**2018 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

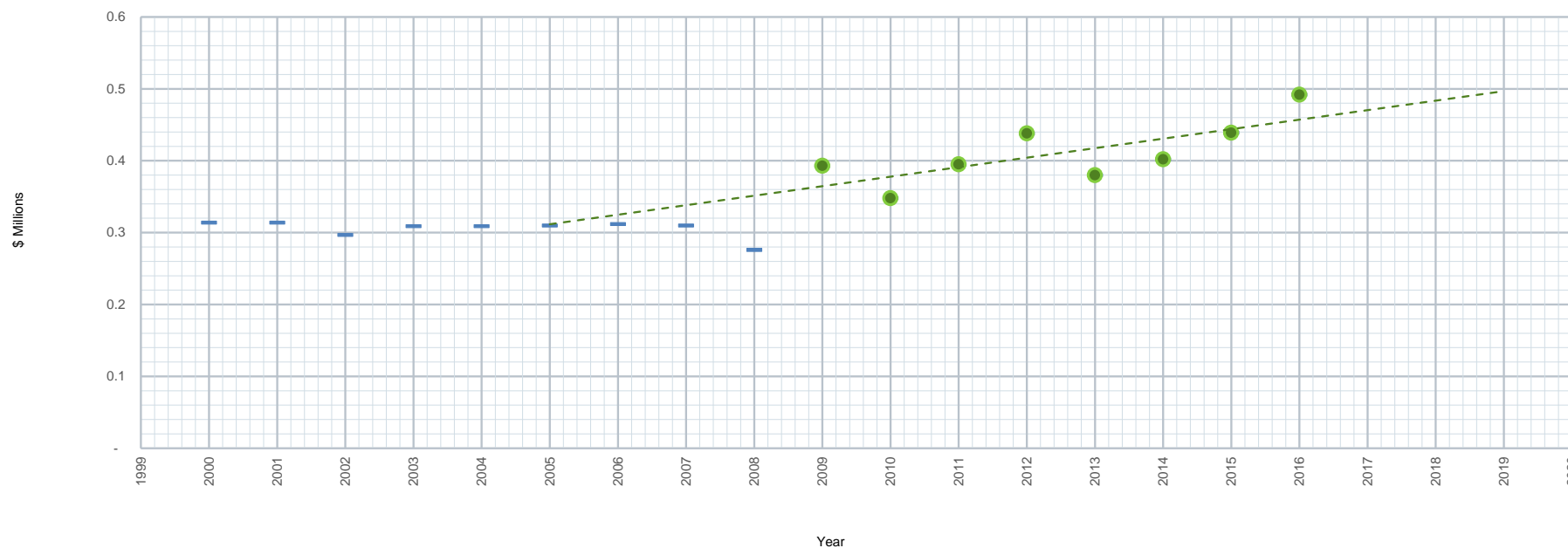
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Underground Storage Depreciation and Amortization	314	314	297	309	309	310	312	310	276	393	348	395	438	380	402	439	492
Total Underground Storage Depreciation and Amortization	314	314	297	309	309	310	312	310	276	393	348	395	438	380	402	439	492

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	13
R-Squared of Best Fit	0.53767
Annual Growth Rate (% of 2015)	2.69%
1-year Growth Rate	2.69%

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 2016 for this category of cost.



2018 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

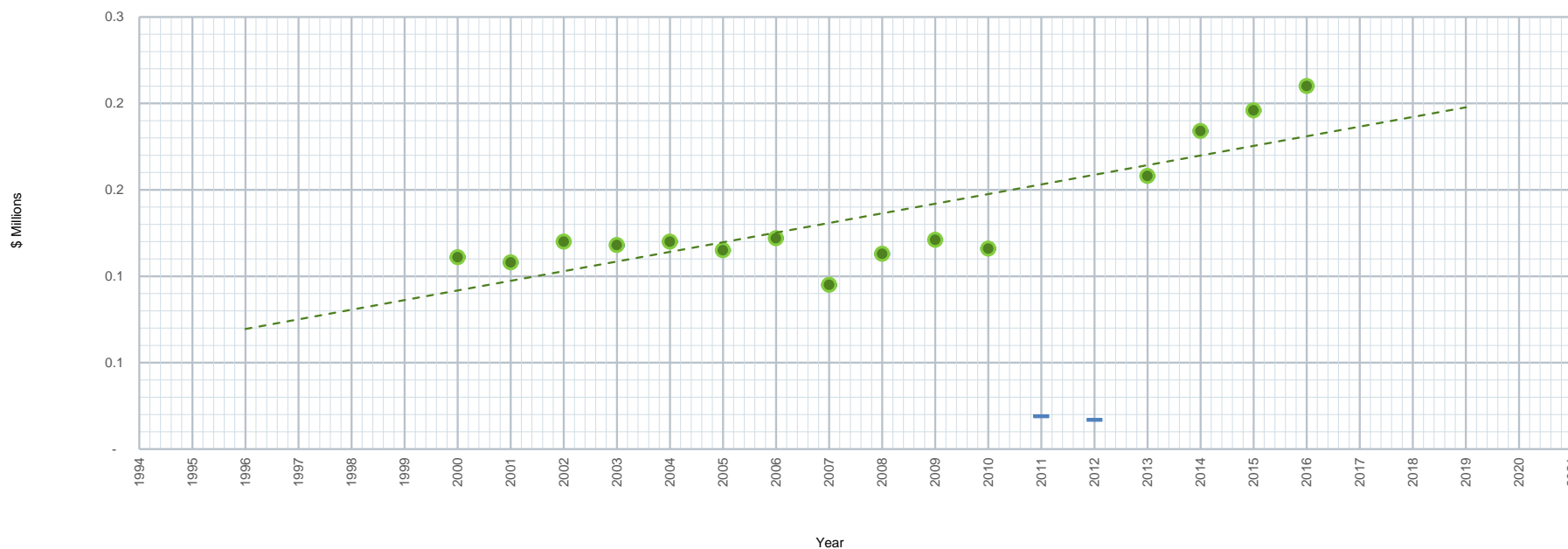
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Underground Storage Taxes	111	108	120	118	120	115	122	95	113	121	116	19	17	158	184	196	210
Total Underground Storage Taxes Other Than Income Taxes	111	108	120	118	120	115	122	95	113	121	116	19	17	158	184	196	210

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	6
R-Squared of Best Fit	0.67447
Annual Growth Rate (% of 2015)	2.66%
1-year Growth Rate	2.66%

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 2016. In the past I determined that there was no discernable trend and assumed no escalation for this category of cost. Based on the additional data from 2016, I have calculated the trend line over the entire period, excluding data from 2011 and 2012.



**2018 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

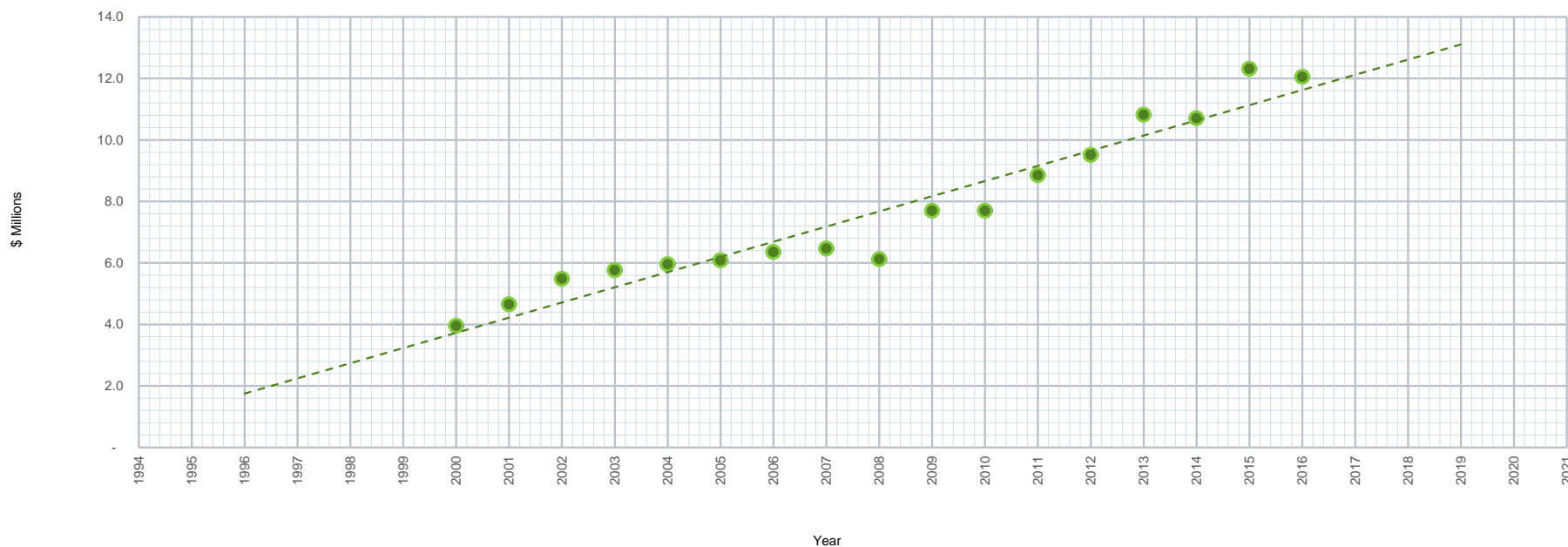
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Distribution Operating Expenses	3,956	4,655	5,482	5,762	5,958	6,084	6,359	6,467	6,123	7,700	7,696	8,854	9,511	10,820	10,704	12,315	12,050
Total Distribution Operating Expenses	3,956	4,655	5,482	5,762	5,958	6,084	6,359	6,467	6,123	7,700	7,696	8,854	9,511	10,820	10,704	12,315	12,050

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	494
R-Squared of Best Fit	0.92936
Annual Growth Rate (% of 2015)	4.10%
1-year Growth Rate	4.10%

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 2016 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 2016 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.



2018 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

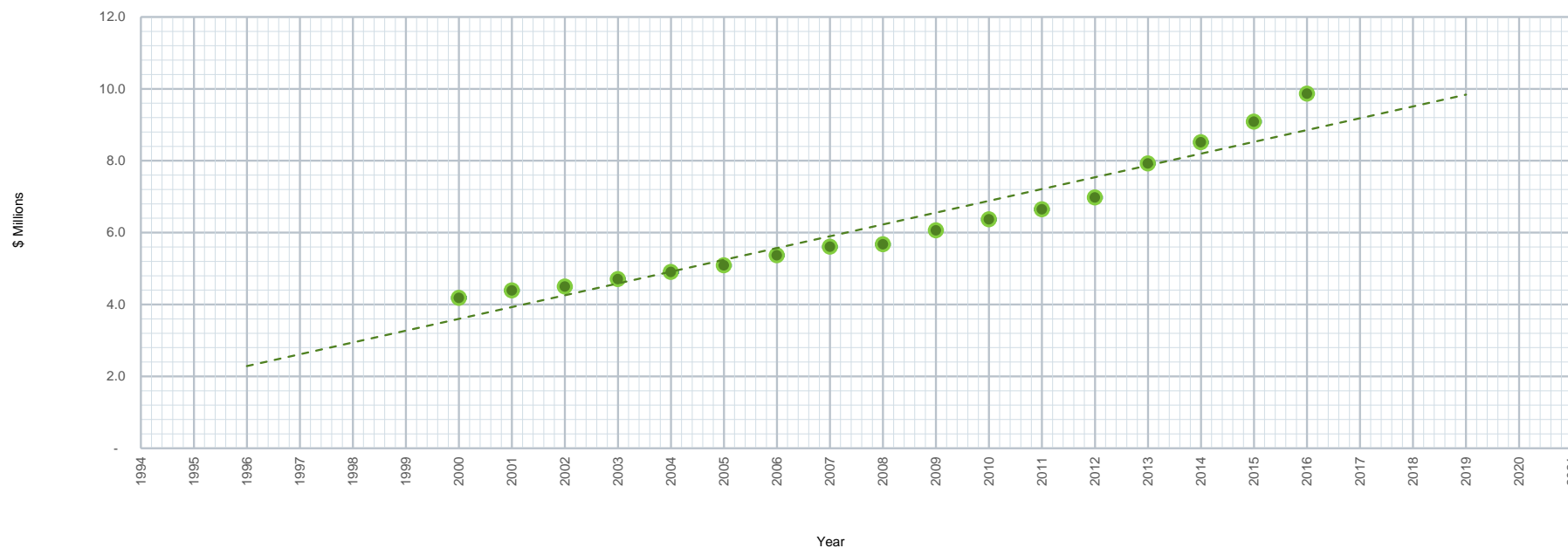
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Distribution Depreciation Expense	4,184	4,390	4,496	4,707	4,902	5,088	5,369	5,605	5,673	6,064	6,367	6,649	6,978	7,925	8,513	9,088	9,866
Total Distribution Depreciation Expense	4,184	4,390	4,496	4,707	4,902	5,088	5,369	5,605	5,673	6,064	6,367	6,649	6,978	7,925	8,513	9,088	9,866

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	328
R-Squared of Best Fit	0.92302
Annual Growth Rate (% of 2015)	3.33%
1-year Growth Rate	3.33%

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.



**2018 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

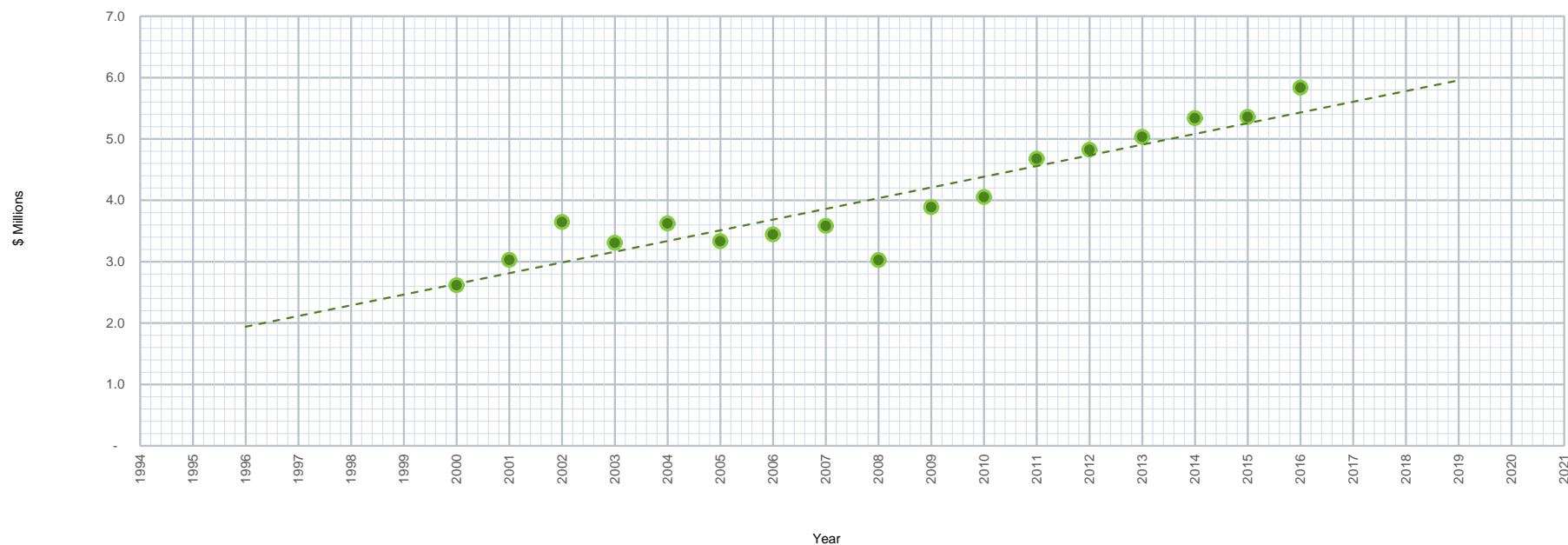
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Distribution Taxes Other Than Income Taxes	4,919	7,315	8,070	7,205	8,213	8,573	9,457	9,844	8,941	8,746	7,223	8,051	7,825	8,116	8,719	8,554	8,383
Less Gas Cost Taxes	(2,304)	(4,287)	(4,425)	(3,899)	(4,592)	(5,240)	(6,014)	(6,261)	(5,917)	(4,858)	(3,171)	(3,374)	(3,003)	(3,083)	(3,380)	(3,197)	(2,548)
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	5,357	5,835

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	175
R-Squared of Best Fit	0.84617
Annual Growth Rate (% of 2015)	2.99%
1-year Growth Rate	2.99%

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 2016 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.



**2018 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

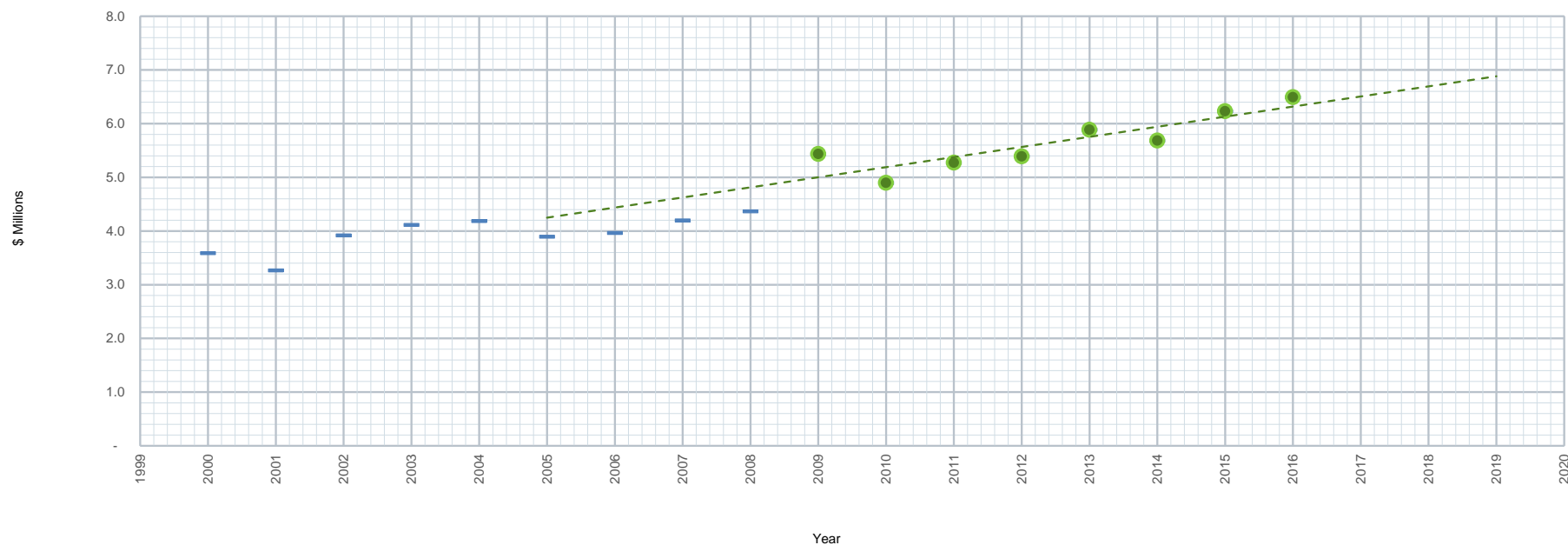
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Customer Accounting and Sales	3,878	3,812	4,483	4,613	4,764	4,569	4,721	5,003	5,134	6,083	5,339	5,743	5,799	6,273	6,108	6,632	6,811
Less: DSM, Decoupling and Gas Cost	(290)	(545)	(566)	(501)	(578)	(674)	(757)	(807)	(769)	(650)	(444)	(472)	(409)	(388)	(426)	(403)	(321)
Total Customer Accounting and Sales	3,588	3,267	3,917	4,112	4,186	3,895	3,964	4,196	4,365	5,433	4,895	5,271	5,390	5,885	5,682	6,229	6,490

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	188
R-Squared of Best Fit	0.77173
Annual Growth Rate (% of 2015)	2.90%
1-year Growth Rate	2.90%

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 2016. Accordingly, my model uses an escalation period of 2009 through 2016 for this category of cost.



**2018 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

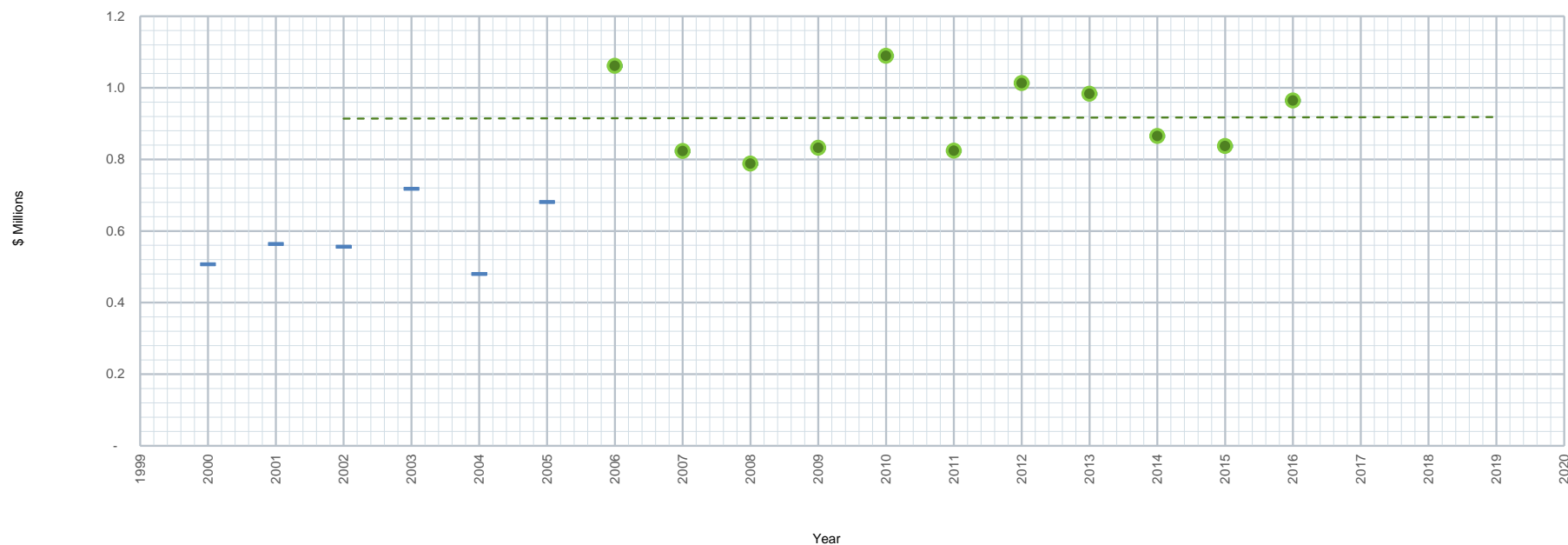
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Customer Service & Information	507	1,513	2,252	2,747	480	3,523	1,061	4,658	5,169	7,609	9,505	9,777	6,955	983	865	837	964
Less: DSM Expense	-	(949)	(1,696)	(2,029)	-	(2,842)	-	(3,835)	(4,381)	(6,777)	(8,416)	(8,953)	(5,942)				
Total Customer Service & Information	507	564	556	718	480	681	1,061	823	788	832	1,089	824	1,013	983	865	837	964

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	0
R-Squared of Best Fit	0.00006
Annual Growth Rate (% of 2015)	0.03%
1-year Growth Rate	0.03%

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, has relatively flat. Accordingly, my model uses the escalation period 2007 through 2016.



2018 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

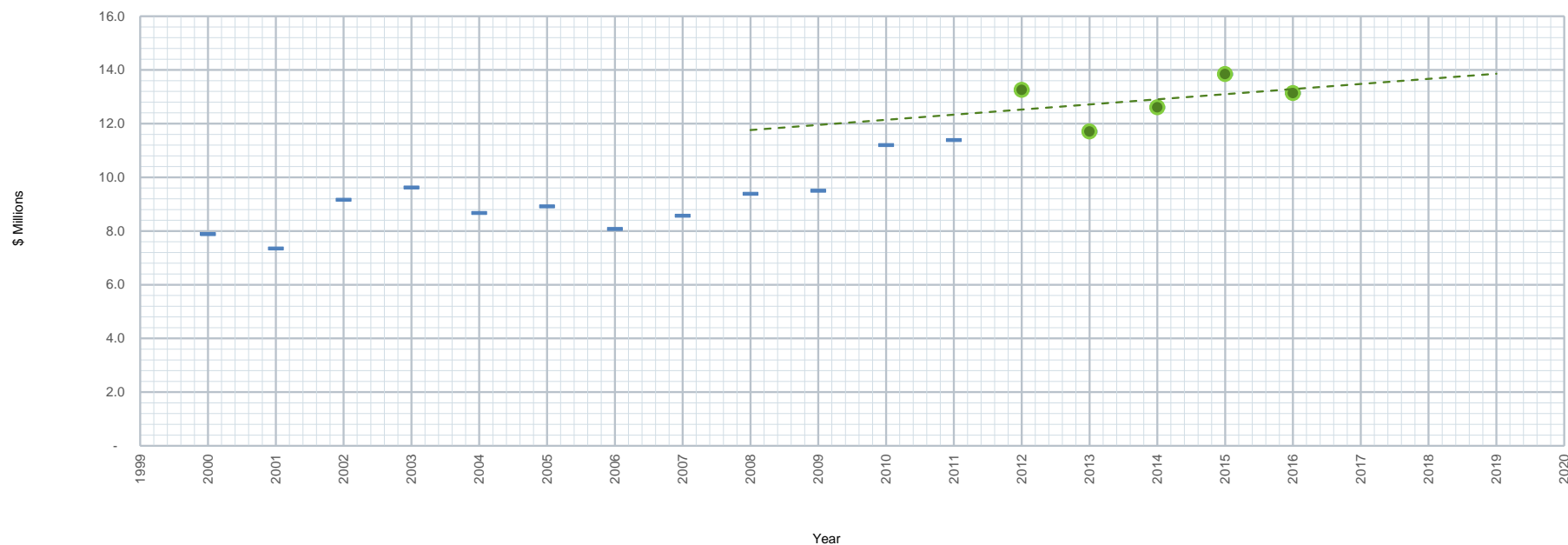
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
A&G Operations Expense	8,004	7,578	9,399	9,827	8,911	9,196	8,393	8,901	9,706	9,770	11,383	11,585	13,419	11,862	12,777	14,007	13,267
Less DSM and Gas Costs	(120)	(226)	(235)	(207)	(240)	(279)	(314)	(335)	(319)	(268)	(184)	(196)	(169)	(161)	(176)	(167)	(133)
Total Administrative and General Operations Expense	7,884	7,352	9,164	9,620	8,671	8,917	8,079	8,566	9,387	9,502	11,199	11,389	13,250	11,701	12,601	13,840	13,134

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	191
R-Squared of Best Fit	0.14053
Annual Growth Rate (% of 2015)	1.45%
1-year Growth Rate	1.45%

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. In fact, in 2016 this category of costs declined. 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 2016 to determine the escalation factor applicable to this category of cost, although no escalation to this category of cost may be appropriate given the reductions experienced in 2016.



2018 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

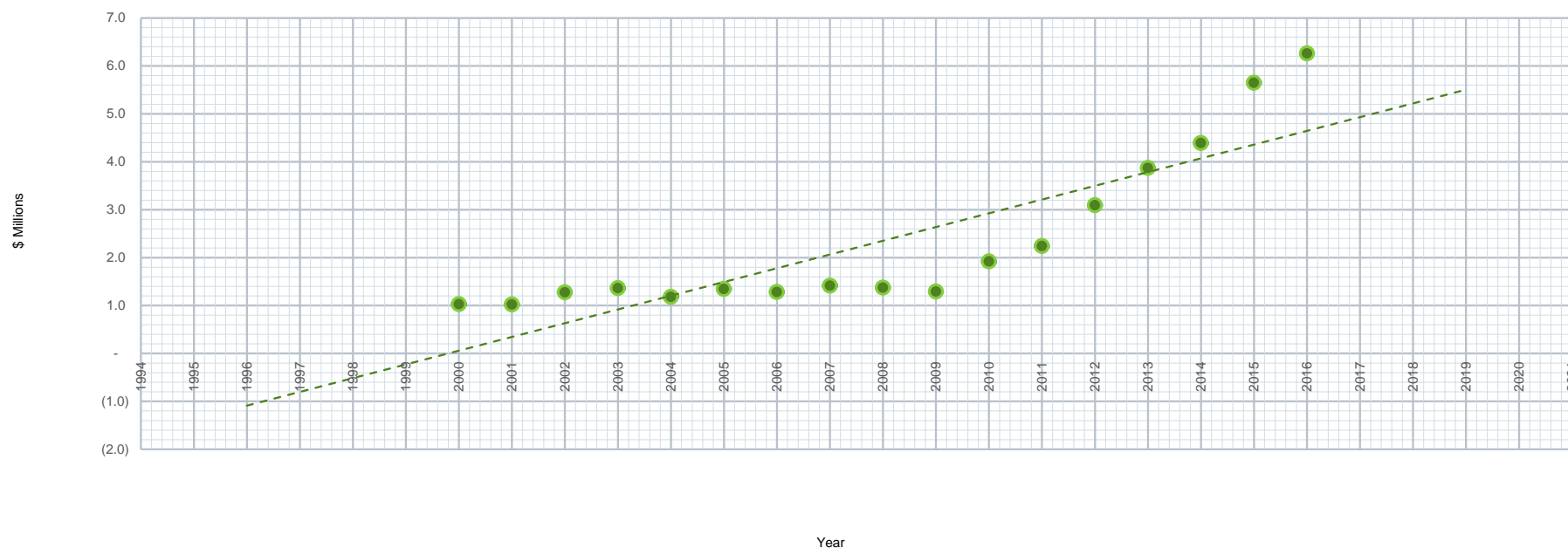
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
A&G Depreciation	1,027	1,020	1,275	1,363	1,180	1,343	1,282	1,498	1,803	1,999	2,412	2,734	3,276	3,868	4,389	5,649	6,260
Less: Decoupling Amort.								(85)	(432)	(710)	(494)	(494)	(183)			-	
Total Administrative and General 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	5,649	6,260

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	287
R-Squared of Best Fit	0.73667
Annual Growth Rate (% of 2015)	4.58%
1-year Growth Rate	4.58%

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, since 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.



2018 Natural Gas Attrition Allowance Revenue Requirement Model
Escalation Rate Evaluation

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

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

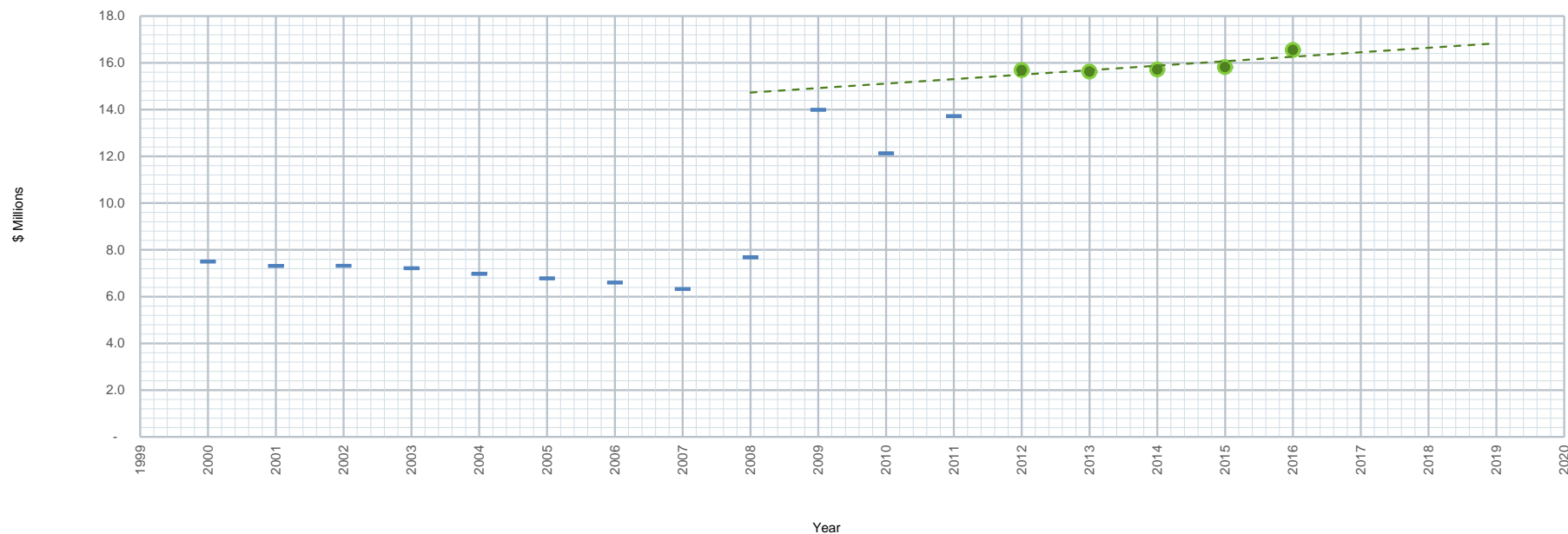
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Plant	13,695	13,533	13,439	13,712	13,632	13,708	13,854	13,758	15,260	21,798	20,047	22,008	24,365	24,711	25,235	25,720	26,868
Depreciation Reserve	(6,192)	(6,220)	(6,115)	(6,495)	(6,659)	(6,924)	(7,249)	(7,427)	(7,581)	(7,807)	(7,912)	(8,286)	(8,677)	(9,088)	(9,521)	(9,906)	(10,318)
Total Underground 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	15,814	16,550

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	192
R-Squared of Best Fit	0.62827
Annual Growth Rate (% of 2015)	1.16%
1-year Growth Rate	1.16%

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 2012, this category of plant has experienced a flat pattern. In fact, over there period 2012 through 2016, the net balances applicable to this category of plant changed very little. Accordingly, my model uses the period 2012 through 2016 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

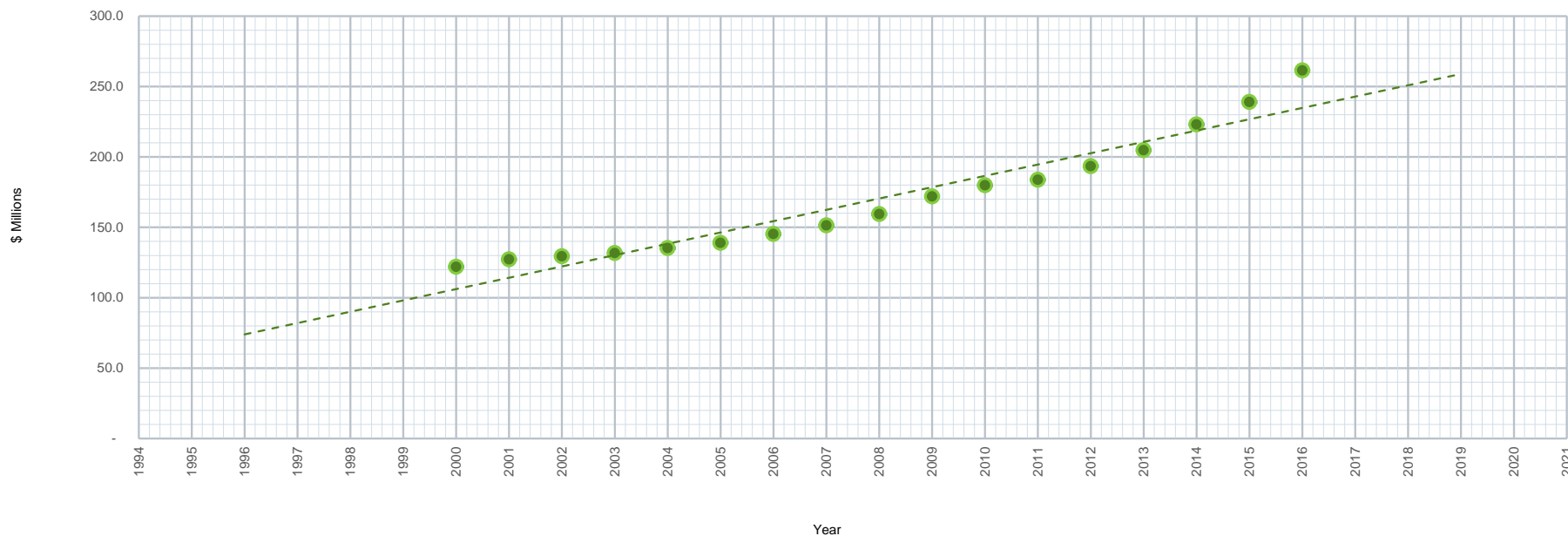
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Plant	169,436	178,943	185,314	191,970	200,079	208,396	219,287	229,417	240,778	255,976	269,469	281,279	296,152	313,469	337,894	360,612	390,508
Depreciation Reserve	(47,423)	(51,645)	(55,845)	(60,239)	(64,817)	(69,428)	(74,019)	(77,997)	(81,405)	(84,021)	(89,620)	(97,489)	(102,678)	(108,662)	(114,795)	(121,623)	(129,098)
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	238,989	261,410

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	8,042
R-Squared of Best Fit	0.92727
Annual Growth Rate (% of 2015)	3.08%
1-year Growth Rate	3.08%

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.



**2018 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

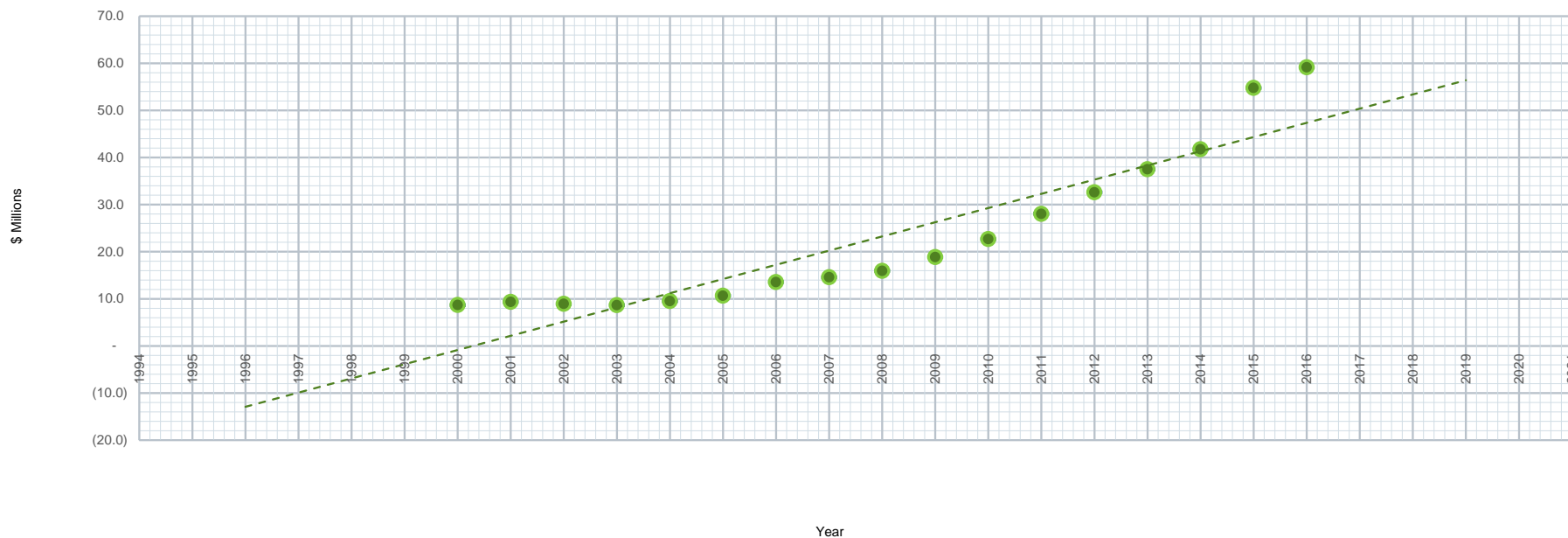
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Plant	14,347	15,060	15,368	16,112	16,499	17,878	20,791	21,708	24,256	27,747	33,401	38,971	44,809	52,223	59,169	75,514	82,624
Depreciation Reserve	(5,661)	(5,695)	(6,442)	(7,446)	(6,984)	(7,208)	(7,230)	(7,136)	(8,309)	(8,882)	(10,722)	(10,926)	(12,186)	(14,724)	(17,429)	(20,741)	(23,473)
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	54,773	59,151

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	3,014
R-Squared of Best Fit	0.85202
Annual Growth Rate (% of 2015)	5.10%
1-year Growth Rate	5.10%

Narrative

As noted for administrative and general depreciation expense, the growth in the general 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.



**2018 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	2016
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	64,929	74,181
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	64,929	74,181

Statistics (Over Highlighted Period)

Slope of Best-Fit Line	5,770
R-Squared of Best Fit	0.97003
Annual Growth Rate (% of 2015)	7.78%
1-year Growth Rate	7.78%

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 2016 to establish the escalation rate for this category of cost.

