



Oregon

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Public Utility Commission

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September 22, 2008

OREGON PUBLIC UTILITY COMMISSION
ATTENTION: FILING CENTER
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**RE: Docket No. UE 197 – In the Matter of Portland General Electric Company's
Request for a General Rate Increase.**

Enclosed for electronic filing in the above-captioned docket is the Errata filing of Public Utility Commission Staff's Surrebuttal Testimony associated with Exhibits Staff/1300, Staff/1301, and Staff/1302.


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c: UE 197 Service List (parties)

**PUBLIC UTILITY COMMISSION
OF OREGON**

UE 197

**STAFF SURREBUTTAL TESTIMONY OF
(ERRATA)**

Steve Storm

**In the Matter of
PORTLAND GENERAL ELECTRIC COMPANY
Request for a General Rate Revision**

September 22, 2008

1 Staff developed Staff Example C (see Staff/1302, page 1) to assess the
2 impact of PGE's SNA decoupling proposal over the next 22 years,³⁰ assuming
3 PGE residential customer growth rates and the growth rate in usage per
4 residential customer replicated PGE's experience of the last 22 years (1986 –
5 2007). Staff Example C shares many of the methodological techniques with
6 Staff Examples A and B³¹ and also with PGE/1208, page 2.³²

7 After an initial nine-year period of mostly customer credits (2009 – 2017;
8 based on PGE's 1986 – 1994 experience), the SNA provides for customer
9 charges from that point forward. After this initial period, from 2018 through
10 2031, the SNA results in customer charges (not credits). By 2024 the Sales
11 Normalization Adjustment mechanism provides adjustments maximized at the
12 two percent of revenue constraint, thereby increasing the deferred SNA
13 balance. The cumulative deferred SNA balance increases following 2024 until,
14 at the period's end in 2031, it exceeds \$286 million, which is approximately 25
15 percent of overall projected residential revenue. This balance would require
16 over 12 years to reduce to \$0 through the SNA mechanism—assuming no new
17 additions to the balance over this 12 year period.³³ While this is a hypothetical

³⁰ The timeframe (22 years) used is due to that being the timeframe for which PGE provided data.

³¹ Staff/607 and Staff/608, respectively.

³² Key assumptions include no rate increases (or decreases) over the period other than that attributable to the SNA; the same "starting place" for the number of residential customers and for usage per customer as was used in PGE/1208, page 2; and, as mentioned above, the same year-by-year growth rates in the number of residential customers and their usage per customer. In other words, for these last two items, the rates for 1986 were used for 2010, 1987 for 2011, *et cetera*.

³³ This calculation assumes no growth (or decline) in revenues—consistent with the assumption of no rate cases and no rate increases (or declines). The calculation is: \$286,827,679; divided

1 example, it's questionable whether a balance this large in the "real world" could
2 be reduced to zero through the proposed SNA mechanism's workings—even in
3 perhaps several human generations. Yes, decoupling adjustments "go both
4 ways" as PGE witness Mr. Cavanagh points out,³⁴ except using PGE's own
5 recent history, it goes against ratepayers 15 of 22 years.³⁵

6 **Q. FOLLOWING A DIMINISHING MARGINAL RATE OF RETURN ON ENERGY**
7 **EFFICIENCY INVESTMENTS LINE OF REASONING, ARE PGE'S**
8 **EXPERIENCES IN THE 1980S AND EARLY 1990S RELEVANT TO A**
9 **DECISION ON THE COMPANY'S CURRENT SNA PROPOSAL?**

10 A. Perhaps not. It's been almost 30 years since the Harvard Business School
11 report pointed to conservation as the most cost-effective means of meeting
12 energy demands,³⁶ and much has changed.³⁷ Staff revised the analysis
13 described above to reflect the most recent 10 years of PGE experience (the
14 experience acquired from 1998 through 2007, inclusive) (see Staff Example D
15 in Staff/1302, page 2); i.e., addressing the question of what results under the
16 proposed SNA mechanism might be should the next decade essentially mirror

by the positive 2% SNA increase limitation on the \$1,140,340,646 of 2031 revenue, or \$22,806,813; equals 12.6 years.

³⁴ PGE/2100, page 16 at 14.

³⁵ The SNA with +2% Constraint is positive (a customer charge) in 15 of the 22 years after 2009 in Staff Example C.

³⁶ See ENERGY FUTURE REPORT OF THE ENERGY PROJECT AT THE HARVARD BUSINESS SCHOOL; edited by Robert Stobaugh and Daniel Yergin; New York: Random House 1979.

³⁷ Staff is not here making any claim as to the cost-effectiveness of any specific energy conservation programs.

1 the last decade in terms of the dynamics of the demographic environment in
2 which PGE operates. This period included four years in which total PGE
3 residential usage declined and seven years in which usage per customer
4 declined. In other words, a “mixed bag” in terms of both changes in total
5 residential usage and changes in average usage per customer. The results,
6 however, were much the same as those in Staff Example C, which used the
7 extended, 22 year period. The proposed SNA decoupling mechanism, as
8 simulated in Staff Example D, provided customer charges (not credits) in each
9 year (10 years out of 10). By the tenth year (2019), the cumulative deferred
10 SNA totals \$159 million, representing roughly 18% of the overall projected
11 residential revenue. This balance would require nine years to reduce to \$0
12 through the SNA mechanism—assuming no new additions to the balance over
13 this nine year period.

14 **Q. YOU HAVE PROVIDED TWO HYPOTHETICAL EXAMPLES OF THE WAY**
15 **PGE’S PROPOSED SNA MECHANISM MIGHT WORK, ADMITTEDLY**
16 **USING PGE’S OWN EXPERIENCE. IS THIS A “REAL WORLD”**
17 **CONCERN?**

18 A. Yes. Below is a selection taken from the “Maine Public Utilities Commission
19 Report on Utility Incentives Mechanisms for the Promotion of Energy Efficiency
20 and System Reliability,” where CMP refers to Central Maine Power.

21 “Maine has experience with revenue decoupling. In 1991, the
22 Commission adopted, on a three-year trial basis, a revenue decoupling

1 **Q. THERE HAS BEEN TESTIMONY PROVIDED ON “EQUITY” BETWEEN**
2 **RATEPAYER AND SHAREHOLDER IN THIS PROCEEDING. DO YOU HAVE**
3 **ANY ADDITIONAL THOUGHTS ON EQUITY IN THIS REGARD?**

4 A. Yes. Consider the following hypothetical situation. Suppose every residential
5 PGE customer (ratepayer) who would be subject to PGE’s proposed SNA
6 decoupling mechanism reduces usage by five percent⁴⁶ for 2010 over and
7 above any amounts included in PGE’s 2009 test year load forecast. Consider
8 this reduction is on a weather-normalized basis. Let’s also assume there is no
9 growth in customers; indeed, every 2009 customer is a 2010 customer. Each
10 customer’s reduction can be for any reason at all: they are reacting to an
11 electricity volumetric price signal, their personal circumstances have changed,
12 they want to “do the right thing,” they have incorporated energy efficiency
13 measures, *et cetera*.

14 Now, what happens to customers’ bills? First, their bills go down vis-à-vis
15 what the bills otherwise would have been. Let’s say their bills go down for each
16 of 12 months and that, for the “typical” (or average) customer, each monthly bill
17 declines by 4.5 percent.⁴⁷ They’ve done “something:” they have changed their

⁴⁶ Five percent in every month and in both peak and off-peak hours; i.e., five percent “across the board.”

⁴⁷ The bill reduction does not equal five percent due to approximately 10% of the “typical” residential customer’s bill being the fixed charge. The 4.5 percent decline in each month’s bill is a simplification. In reality, some months would decline by more and some months by less due to the presence of fixed charges and inverted block energy rates in Rate Schedule 7 and to different levels of usage by month. The total of 12 months’ bills would decline by 4.5 percent for the “typical” (or average) residential customer however.

1 behaviors, they have invested in energy efficiency measures, “something.”⁴⁸
2 They presumably not only feel like they have saved money, they can see that
3 this is so by viewing their monthly PGE bills.

4 All else being equal, PGE shareholders would bear the burden of these
5 savings as manifested in reduced PGE earnings versus what would otherwise
6 be the case. While the Company could potentially mitigate this outcome by
7 reducing costs, shareholders have traditionally borne this type of burden and it
8 is one for which they have been and are currently compensated.

9 How would this change under PGE’s proposed SNA mechanism? PGE’s
10 Sales Normalization Adjustment would begin billing for approximately fifty
11 percent of the 4.5% reduction in customers’ bills. In fact, under the provided
12 assumptions, customers would pay back approximately one-half of every dollar
13 of savings each initially realized, no matter what each customer did or did not
14 do to create the energy savings and bill reductions.⁴⁹ Abstracting from any
15 issues due to the time shifting of cash flows, PGE shareholders are “made
16 whole.”⁵⁰ PGE residential customers are “made less.”⁵¹ This outcome captures

⁴⁸ This “something” is assumed by Staff to have a positive economic “cost” for each residential customer, whether it be financial outlays, opportunity costs, search costs, information costs, reduction in psychic income, other disutility, *et cetera*.

⁴⁹ This analysis abstracts from any own price elasticity considerations.

⁵⁰ The remaining one-half of every dollar of customer savings (PGE revenue loss) is offset by reductions in revenue requirements associated with PGE’s variable costs (e.g., net variable power costs), which, in this hypothetical situation and congruent with PGE’s implied reasoning, decline due to the reduced usage.

⁵¹ “Made less” in that they now consume 5% less electricity with a 2.5% net reduction in their bill.

1 the redistribution of equity between ratepayer and shareholder inherent in
2 PGE's proposed SNA mechanism.

3 Additionally, Staff struggles to see how this arrangement is supportive of
4 energy conservation, as viewed from the perspective of the individual
5 ratepayer.⁵² It is not clear to Staff that a Nash equilibrium⁵³ under PGE's
6 proposed SNA decoupling mechanism is other than for residential customers to
7 not perform any actions which result in energy conservation.

8 **Q. DO YOU HAVE ANY OTHER CONCERNS WITH PGE'S SNA DECOUPLING**
9 **PROPOSAL?**

10 A. Oregon has already undertaken perhaps the key action by forming the Energy
11 Trust of Oregon. Below I include "bullet points" from a presentation given
12 March 3, 2005, at the Harvard Electricity Policy Group's Thirty-Seventh Plenary
13 Session by Maurice Brubaker of Brubaker & Associates, Inc. This presentation
14 was in Session Two, concerning "Distribution Pricing: Do Revenue Caps Set
15 Appropriate Incentives? Are they Fair to Consumers and Investors?"⁵⁴ On

⁵² In a somewhat similar vein, see Staff/1200, page 1 at 15ff. for the discussion of cost-of-service versus direct access customers regarding a potential positive-feedback "death spiral."

⁵³ A nontechnical definition of Nash equilibrium is provided by Wikipedia at http://en.wikipedia.org/wiki/Nash_equilibrium. In particular: "Amy and Bill are in Nash equilibrium if Amy is making the best decision she can, taking into account Bill's decision, and Bill is making the best decision he can, taking into account Amy's decision. Likewise, many players are in Nash equilibrium if each one is making the best decision that they can, taking into account the decisions of the others. However, Nash equilibrium does not necessarily mean the best cumulative payoff for all the players involved; in many cases all the players might improve their payoffs if they could somehow agree on strategies different from the Nash equilibrium (e.g. competing businessmen forming a cartel in order to increase their profits)."

⁵⁴ Mr. Brubaker's presentation can be found at:
<http://www.hks.harvard.edu/hepg/Papers/Brubaker.Session2.HEPG.0305.pdf>.

1 pages 11 through 15 of the presentation, Mr. Brubaker offers several salient
2 points, including the following on page 15:

- 3 • Instead of decoupling revenue from sales
 - 4 ○ Decouple product sales from the promotion of conservation
- 5 • Allows everyone to do what they do best

6 This Oregon has done. Improvements can be made, but they do not include
7 implementation of PGE's proposed SNA mechanism. I continue to recommend
8 the Commission reject PGE's SNA decoupling proposal.

9 **Q. PGE PROPOSED A LOST REVENUE RECOVERY (LRR) MECHANISM IN**
10 **DIRECT TESTIMONY WHICH YOU RECOMMENDED BE REPLACED BY A**
11 **MORE ENCOMPASSING, BUT SIMILAR MECHANISM. WHAT DID PGE**
12 **PROVIDE IN REBUTTAL TESTIMONY REGARDING THESE**
13 **MECHANISMS?**

14 A. Staff is unaware of any parties other than PGE supporting the proposed LRR
15 mechanism. In essence, for rate schedules other than 7 and 32/532, PGE
16 proposed the LRR mechanism in direct testimony. Staff's direct testimony
17 proposed, among other things, an Energy Efficiency Revenue Recovery
18 (EERR) mechanism as an alternative to both PGE's proposed SNA and
19 proposed LRR mechanisms. The EERR mechanism proposed by Staff would
20 encompass the rate schedules PGE excluded from the LRR. Mr. Cavanagh's
21 testimony in rebuttal recommends "the Commission select the second of the

1 two approaches proposed by the Company (a “load-based” decoupling
2 mechanism, as opposed to a “Lost Revenue Recovery” mechanism).⁵⁵

3 **Q. WHAT DO YOU THINK OF THE “LOAD-BASED” DECOUPLING**
4 **PROPOSAL?**

5 A. I believe this alternative, proposed for rate schedules other than 7 and 32/532,
6 has many of the disadvantages of PGE’s SNA proposal. In particular, it covers
7 reduced load for causality other than energy efficiency measures.⁵⁶
8 Furthermore, it is not clear that the “load-based” decoupling mechanism would
9 not cover variances from forecast due to weather. I recommend the
10 Commission reject PGE’s “load-based” decoupling mechanism.

11 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

12 A. Yes.

⁵⁵ PGE/2100, page 13 at 1.

⁵⁶ See PGE/100, page 22 at 1.

UE 197

Errata Filing

Staff/1300; Staff/1301; and Staff/1302

List of Changes

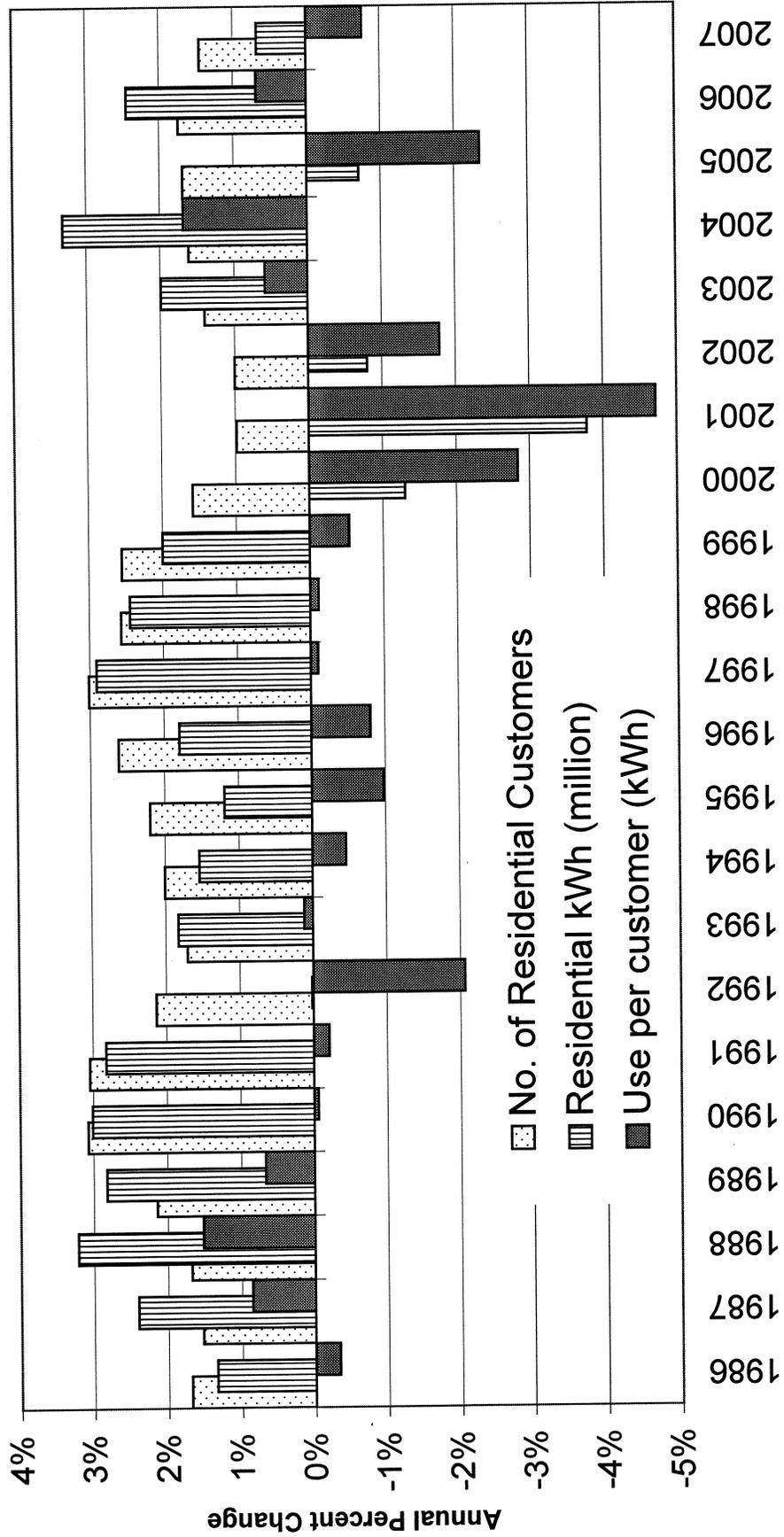
Exhibit	Page	Line	Original	Modified
1300	14	14	\$256 million	\$286 million
1300	14	Footnote 33	\$256,010,283	\$286,827,679
1300	15	Footnote 33	\$1,008,339,813	\$1,140,340,646
1300	15	Footnote 33	\$20,166,796	\$22,806,813
1300	15	Footnote 33	12.7 years	12.6 years
1300	16	10	almost \$145 million	\$159 million
1300	21	10 through		
	22	15		Corrects testimony
1300	23	1 through		
	25			Repagination
1301	1	Chart		Corrects
1301	2	Table		No change
1302	1	Table		Corrects
1302	2	Table		Corrects

PGE UE 197

Growth in Residential Customers and Residential Energy Use

Energy Use data is Weather-normalized

Based on PGE Response to Staff Data Request 443(a)



Errata:
Staff/1301
Storm/1

PGE Response to Staff Data Request No. 443(a)

Population and Residential Energy Use

Energy Use data is Weather-normalized

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
7-County Population ¹	1,429,750	1,435,700	1,451,900	1,482,600	1,511,300	1,558,500	1,610,910	1,650,780	1,691,510	1,726,050	1,762,760	1,804,190	1,841,000	1,872,840	1,901,470	1,929,850	1,950,050	1,970,700	1,988,950	2,020,650	2,048,245	2,081,145	2,112,595
% Change	0.4%	1.1%	2.1%	2.1%	1.9%	3.1%	3.4%	2.5%	2.5%	2.0%	2.1%	2.4%	2.0%	1.7%	1.5%	1.5%	1.0%	1.1%	1.3%	1.2%	1.4%	1.6%	1.5%
Residential kWh (million) ²	5,611	5,686	5,823	6,010	6,179	6,365	6,545	6,546	6,665	6,768	6,848	6,971	7,173	7,349	7,495	7,398	7,118	7,061	7,201	7,440	7,388	7,568	7,619
% Change	1.3%	2.4%	3.2%	3.2%	2.8%	3.0%	2.8%	0.0%	1.8%	1.5%	1.2%	1.8%	2.9%	2.4%	2.0%	-1.3%	-3.8%	-0.8%	2.0%	3.3%	-0.7%	2.4%	0.7%
No. of Residential Customers	457,119	464,802	471,891	479,787	490,039	505,088	520,449	531,536	540,591	551,420	563,514	578,254	595,683	610,952	626,539	636,449	642,708	649,145	658,232	668,830	680,093	691,931	701,952
% Change	1.7%	1.5%	1.7%	1.7%	2.1%	3.1%	3.0%	2.1%	1.7%	2.0%	2.2%	2.6%	3.0%	2.6%	2.6%	1.6%	1.0%	1.0%	1.4%	1.6%	1.7%	1.7%	1.4%
Use per customer (kWh) ³	12,275	12,234	12,339	12,526	12,609	12,602	12,575	12,315	12,329	12,273	12,153	12,055	12,042	12,028	11,963	11,623	11,075	10,877	10,940	11,124	10,863	10,937	10,854
% Change	-0.3%	0.9%	1.5%	1.5%	0.7%	-0.1%	-0.2%	-2.1%	0.1%	-0.5%	-1.0%	-0.8%	-0.1%	-0.1%	-0.5%	-2.8%	-4.7%	-1.8%	0.6%	1.7%	-2.4%	0.7%	-0.8%

Footnotes. See also FGE Response to OPUC Data Request 443(b).

1. Mid-year estimate of the seven Oregon counties served by PGE. Source is Portland State University's Population Research Center.

2. Weather-normalized electricity delivered to PGE Residential customers in Rate Schedules 7 (Residential; 99.9%) and 15 (Outdoor Area Lighting; 0.1%)

3. Use per Customer (kWh) is Residential kWh divided by No. of Residential Customers

UE 197 PGE
Schedule 123 Residential Sales Normalization Adjustment
Staff Example C

Customer-Based Fixed Costs Revenue				Energy-Based Fixed Cost Revenue				
Year	Customer Growth Rate ¹	Customer-Based Revenue	Monthly Customer Revenue	Annual Customer Revenue	Annual Customer kWh	Total MWh	Volumetric Fixed Costs per kWh	Annual Energy-Based Revenue
2009		\$391,955,426	\$32,663,791	\$391,955,496	716,468	7,712,700	\$0.05082	\$391,959,426
2010	1.7%	\$398,553,432	\$33,212,786	\$398,553,432	728,510	7,815,928	\$0.05082	\$397,205,483
2011	1.5%	\$404,632,032	\$34,719,336	\$404,632,032	739,621	8,003,279	\$0.05082	\$406,726,623
2012	1.7%	\$411,402,609	\$34,283,551	\$411,402,609	751,997	8,260,593	\$0.05082	\$419,803,347
2013	2.1%	\$420,193,384	\$35,016,115	\$420,193,384	768,066	8,493,441	\$0.05082	\$431,636,664
2014	3.1%	\$433,096,082	\$36,091,340	\$433,096,082	791,650	8,748,968	\$0.05082	\$444,622,578
2015	3.0%	\$446,269,203	\$37,189,100	\$446,269,203	815,729	8,995,689	\$0.05082	\$457,161,423
2016	2.1%	\$455,775,929	\$37,981,327	\$455,775,929	833,107	8,997,486	\$0.05082	\$457,252,234
2017	1.7%	\$463,539,885	\$38,628,324	\$463,539,885	847,298	9,161,606	\$0.05082	\$465,592,836
2018	2.0%	\$472,825,348	\$39,402,112	\$472,825,348	864,271	9,302,222	\$0.05082	\$472,738,931
2019	2.2%	\$483,195,653	\$40,266,304	\$483,195,653	883,227	9,413,148	\$0.05082	\$478,376,172
2020	2.6%	\$495,834,607	\$41,319,551	\$495,834,607	906,329	9,581,667	\$0.05082	\$486,940,309
2021	3.0%	\$510,779,868	\$42,564,989	\$510,779,868	933,647	9,860,149	\$0.05082	\$501,092,788
2022	2.6%	\$523,872,923	\$43,656,077	\$523,872,923	957,580	10,101,175	\$0.05082	\$513,341,739
2023	2.6%	\$537,237,511	\$44,769,793	\$537,237,511	982,009	10,302,752	\$0.05082	\$523,585,871
2024	1.6%	\$545,735,389	\$45,477,949	\$545,735,389	997,542	10,492	\$0.05082	\$516,764,948
2025	1.0%	\$551,102,360	\$45,925,197	\$551,102,360	997,542	10,194	\$0.05082	\$497,226,423
2026	1.0%	\$556,622,033	\$46,385,169	\$556,622,033	1,007,352	9,713	\$0.05082	\$483,234,739
2027	1.4%	\$564,413,356	\$47,034,446	\$564,413,356	1,031,683	9,784,070	\$0.05082	\$503,037,951
2028	1.6%	\$573,500,744	\$47,791,729	\$573,500,744	1,048,294	9,898,425	\$0.05082	\$519,733,214
2029	1.7%	\$583,158,992	\$48,596,583	\$583,158,992	1,065,948	10,226,942	\$0.05082	\$516,063,487
2030	1.7%	\$593,309,642	\$49,442,470	\$593,309,642	1,084,503	10,402,305	\$0.05082	\$528,645,142
2031	1.4%	\$601,902,413	\$50,158,534	\$601,902,413	1,100,209	10,472,660	\$0.05082	\$532,220,587

Sales Normalization Adjustment

Year	Customer-Based Revenue	Energy-Based Revenue	Nominal SNA Amount	Overall Revenue	Percent Change	SNA with +2% Constraint	Annual Deferred SNA	Cumulative Deferred SNA
2009	\$391,955,426	\$391,959,426	\$6,070	\$639,815,814	0.00%	\$ 6,070	\$ -	\$ -
2010	\$398,553,432	\$397,205,483	\$1,347,949	\$871,456,064	0.16%	\$ 1,347,949	\$ -	\$ -
2011	\$404,632,032	\$406,726,623	(\$2,094,592)	\$871,456,145	-0.24%	(\$2,094,592)	\$ -	\$ -
2012	\$411,402,609	\$419,803,347	(\$8,400,738)	\$899,474,452	-0.93%	(\$8,400,738)	\$ -	\$ -
2013	\$420,193,384	\$431,636,664	(\$11,443,280)	\$924,828,624	-1.24%	(\$11,443,280)	\$ -	\$ -
2014	\$433,096,082	\$444,622,578	(\$11,526,496)	\$952,652,359	-1.21%	(\$11,526,496)	\$ -	\$ -
2015	\$446,269,203	\$457,161,423	(\$10,892,220)	\$979,518,204	-1.11%	(\$10,892,220)	\$ -	\$ -
2016	\$455,775,929	\$457,252,234	(\$1,476,304)	\$979,712,775	-0.15%	(\$1,476,304)	\$ -	\$ -
2017	\$463,539,885	\$465,592,836	(\$2,052,951)	\$997,583,426	-0.21%	(\$2,052,951)	\$ -	\$ -
2018	\$472,825,348	\$472,738,931	\$86,418	\$1,012,894,712	0.01%	\$ 86,418	\$ -	\$ -
2019	\$483,195,653	\$478,376,172	\$4,819,481	\$1,024,973,117	0.47%	\$ 4,819,481	\$ -	\$ -
2020	\$495,834,607	\$486,940,309	\$8,894,299	\$1,043,322,713	0.85%	\$ 8,894,299	\$ -	\$ -
2021	\$510,779,868	\$501,092,788	\$9,687,080	\$1,073,645,944	0.90%	\$ 9,687,080	\$ -	\$ -
2022	\$523,872,923	\$513,341,739	\$10,531,185	\$1,099,890,656	0.96%	\$ 10,531,185	\$ -	\$ -
2023	\$537,237,511	\$523,585,871	\$13,651,640	\$1,121,839,826	1.22%	\$ 13,651,640	\$ -	\$ -
2024	\$551,102,360	\$516,764,948	\$34,337,412	\$1,107,225,256	2.62%	\$ 34,337,412	\$ 6,825,935	\$ 6,825,935
2025	\$556,622,033	\$497,226,423	\$59,395,610	\$1,065,809,215	5.06%	\$ 59,395,610	\$ 32,568,701	\$ 39,394,636
2026	\$564,413,356	\$503,037,951	\$61,375,405	\$1,077,813,667	6.00%	\$ 61,375,405	\$ 42,251,109	\$ 81,645,745
2027	\$573,500,744	\$519,733,214	\$53,767,530	\$1,113,585,088	4.83%	\$ 53,767,530	\$ 39,819,132	\$ 121,464,877
2028	\$583,158,992	\$516,063,487	\$67,095,505	\$1,105,722,300	6.07%	\$ 67,095,505	\$ 44,981,059	\$ 152,960,706
2029	\$593,309,642	\$528,645,142	\$64,664,499	\$1,132,679,867	5.71%	\$ 64,664,499	\$ 42,010,902	\$ 239,952,666
2030	\$601,902,413	\$532,220,587	\$69,681,826	\$1,140,340,646	6.11%	\$ 69,681,826	\$ 46,875,013	\$ 286,827,679

Note: 2009 values for Customers and Annual Customer kWh are from Exhibit PGE/1208 page 2.

- Customer Growth Rate is based on PGE history for period 1986 - 2007.
- Usage per Customer Growth Rate based on PGE history for period 1986 - 2007.

UE 197 PGE

Schedule 123 Residential Sales Normalization Adjustment

Staff Example D

Customer-Based Fixed Costs Revenue										Energy-Based Fixed Cost Revenue				
Year	Customer Growth Rate ¹	Customers	Monthly Fixed Costs per Customer	Monthly Revenue	Annual Customer-Based Revenue	Usage per Customer Growth Rate ²	Customers	Annual Customer kWh	Total MWh	Volumetric Fixed Costs per kWh	Annual Energy-Based Revenue			
2009		716,468	\$45.59	\$32,663,791	\$391,965,496		716,468	10,765	7,712,700	\$0.05082	\$391,959,426			
2010	2.6%	734,834	\$45.59	\$33,501,077	\$402,012,928	-0.1%	734,834	10,752	7,901,233	\$0.05082	\$401,540,668			
2011	2.6%	753,580	\$45.59	\$34,355,727	\$412,268,730	-0.5%	753,580	10,694	8,059,908	\$0.05082	\$409,553,723			
2012	1.6%	765,500	\$45.59	\$34,899,157	\$418,789,885	-2.8%	765,500	10,390	7,953,922	\$0.05082	\$404,218,335			
2013	1.0%	773,028	\$45.59	\$35,242,369	\$422,908,426	-4.7%	773,028	9,900	7,653,190	\$0.05082	\$388,935,119			
2014	1.0%	780,771	\$45.59	\$35,595,346	\$427,144,147	-1.8%	780,771	9,723	7,591,751	\$0.05082	\$385,812,787			
2015	1.4%	791,700	\$45.59	\$36,093,592	\$433,123,102	0.6%	791,700	9,780	7,742,640	\$0.05082	\$393,480,950			
2016	1.6%	804,447	\$45.59	\$36,674,720	\$440,096,640	1.7%	804,447	9,944	7,999,609	\$0.05082	\$406,540,139			
2017	1.7%	817,994	\$45.59	\$37,292,354	\$447,508,247	-2.4%	817,994	9,710	7,943,126	\$0.05082	\$403,669,645			
2018	1.7%	832,232	\$45.59	\$37,941,476	\$455,297,717	0.7%	832,232	9,777	8,136,779	\$0.05082	\$413,511,133			
2019	1.4%	844,285	\$45.59	\$38,490,974	\$461,891,692	-0.8%	844,285	9,703	8,191,812	\$0.05082	\$416,307,878			

Sales Normalization Adjustment

Year	Customer-Based Revenue	Energy-Based Revenue	Nominal SNA Amount	Overall Revenue	Percent Change	SNA with +2% Constraint	Annual Deferred SNA	Cumulative Deferred SNA
2009	\$391,965,496	\$391,959,426	\$6,070	\$839,815,814	0.00%	6,070	\$ -	\$ -
2010	\$402,012,928	\$401,540,668	\$472,260	\$860,344,671	0.05%	472,260	\$ -	\$ -
2011	\$412,268,730	\$409,553,723	\$2,715,006	\$877,513,515	0.31%	2,715,006	\$ -	\$ -
2012	\$418,789,885	\$404,218,335	\$14,571,551	\$866,081,863	1.68%	14,571,551	\$ -	\$ -
2013	\$422,908,426	\$388,935,119	\$33,973,307	\$833,335,907	4.08%	16,666,718	\$ -	\$ -
2014	\$427,144,147	\$385,812,787	\$41,331,360	\$826,645,969	5.00%	16,532,919	\$ 17,306,589	\$ 17,306,589
2015	\$433,123,102	\$393,480,950	\$39,642,152	\$843,075,845	4.70%	16,861,517	\$ 24,798,441	\$ 42,105,030
2016	\$440,096,640	\$406,540,139	\$33,556,500	\$871,056,582	3.85%	17,421,132	\$ 22,780,635	\$ 64,885,665
2017	\$447,508,247	\$403,669,645	\$43,838,602	\$864,906,236	5.07%	17,298,125	\$ 26,540,477	\$ 107,561,511
2018	\$455,297,717	\$413,511,133	\$41,786,585	\$885,992,696	4.72%	17,719,854	\$ 24,066,731	\$ 131,628,242
2019	\$461,891,692	\$416,307,878	\$45,583,814	\$891,985,028	5.11%	17,839,701	\$ 27,744,114	\$ 159,372,355

Note: 2009 values for Customers and Annual Customer kWh are from Exhibit PGE/1208 page 2.

1. Customer Growth Rate is based on PGE history for period 1998 - 2007.
2. Usage per Customer Growth Rate based on PGE history for period 1998 - 2007.

Errata:
Staff/1302
Storm/2

1 Staff developed Staff Example C (see Staff/1302, page 1) to assess the
2 impact of PGE's SNA decoupling proposal over the next 22 years,³⁰ assuming
3 PGE residential customer growth rates and the growth rate in usage per
4 residential customer replicated PGE's experience of the last 22 years (1986 –
5 2007). Staff Example C shares many of the methodological techniques with
6 Staff Examples A and B³¹ and also with PGE/1208, page 2.³²

7 After an initial nine-year period of mostly customer credits (2009 – 2017;
8 based on PGE's 1986 – 1994 experience), the SNA provides for customer
9 charges from that point forward. After this initial period, from 2018 through
10 2031, the SNA results in customer charges (not credits). By 2024 the Sales
11 Normalization Adjustment mechanism provides adjustments maximized at the
12 two percent of revenue constraint, thereby increasing the deferred SNA
13 balance. The cumulative deferred SNA balance increases following 2024 until,
14 at the period's end in 2031, it exceeds \$~~256~~ million, which is approximately 25
15 percent of overall projected residential revenue. This balance would require
16 over 12 years to reduce to \$0 through the SNA mechanism—assuming no new
17 additions to the balance over this 12 year period.³³ While this is a hypothetical

³⁰ The timeframe (22 years) used is due to that being the timeframe for which PGE provided data.

³¹ Staff/607 and Staff/608, respectively.

³² Key assumptions include no rate increases (or decreases) over the period other than that attributable to the SNA; the same "starting place" for the number of residential customers and for usage per customer as was used in PGE/1208, page 2; and, as mentioned above, the same year-by-year growth rates in the number of residential customers and their usage per customer. In other words, for these last two items, the rates for 1986 were used for 2010, 1987 for 2011, *et cetera*.

³³ This calculation assumes no growth (or decline) in revenues—consistent with the assumption of no rate cases and no rate increases (or declines). The calculation is: ~~\$256,010,283~~; divided

1 example, it's questionable whether a balance this large in the "real world" could
2 be reduced to zero through the proposed SNA mechanism's workings—even in
3 perhaps several human generations. Yes, decoupling adjustments "go both
4 ways" as PGE witness Mr. Cavanagh points out,³⁴ except using PGE's own
5 recent history, it goes against ratepayers 15 of 22 years.³⁵

6 **Q. FOLLOWING A DIMINISHING MARGINAL RATE OF RETURN ON ENERGY**
7 **EFFICIENCY INVESTMENTS LINE OF REASONING, ARE PGE'S**
8 **EXPERIENCES IN THE 1980S AND EARLY 1990S RELEVANT TO A**
9 **DECISION ON THE COMPANY'S CURRENT SNA PROPOSAL?**

10 A. Perhaps not. It's been almost 30 years since the Harvard Business School
11 report pointed to conservation as the most cost-effective means of meeting
12 energy demands,³⁶ and much has changed.³⁷ Staff revised the analysis
13 described above to reflect the most recent 10 years of PGE experience (the
14 experience acquired from 1998 through 2007, inclusive) (see Staff Example D
15 in Staff/1302, page 2); i.e., addressing the question of what results under the
16 proposed SNA mechanism might be should the next decade essentially mirror

by the positive 2% SNA increase limitation on the ~~\$1,008,339,813~~ of 2031 revenue, or
~~\$20,166,796~~; equals 12.7 years.

³⁴ PGE/2100, page 16 at 14.

³⁵ The SNA with +2% Constraint is positive (a customer charge) in 15 of the 22 years after 2009 in Staff Example C.

³⁶ See ENERGY FUTURE REPORT OF THE ENERGY PROJECT AT THE HARVARD BUSINESS SCHOOL; edited by Robert Stobaugh and Daniel Yergin; New York: Random House 1979.

³⁷ Staff is not here making any claim as to the cost-effectiveness of any specific energy conservation programs.

1 the last decade in terms of the dynamics of the demographic environment in
2 which PGE operates. This period included four years in which total PGE
3 residential usage declined and seven years in which usage per customer
4 declined. In other words, a “mixed bag” in terms of both changes in total
5 residential usage and changes in average usage per customer. The results,
6 however, were much the same as those in Staff Example C, which used the
7 extended, 22 year period. The proposed SNA decoupling mechanism, as
8 simulated in Staff Example D, provided customer charges (not credits) in each
9 year (10 years out of 10). By the tenth year (2019), the cumulative deferred
10 SNA totals almost \$145 million, representing roughly 18% of the overall
11 projected residential revenue. This balance would require nine years to reduce
12 to \$0 through the SNA mechanism—assuming no new additions to the balance
13 over this nine year period.

14 **Q. YOU HAVE PROVIDED TWO HYPOTHETICAL EXAMPLES OF THE WAY**
15 **PGE’S PROPOSED SNA MECHANISM MIGHT WORK, ADMITTEDLY**
16 **USING PGE’S OWN EXPERIENCE. IS THIS A “REAL WORLD”**
17 **CONCERN?**

18 A. Yes. Below is a selection taken from the “Maine Public Utilities Commission
19 Report on Utility Incentives Mechanisms for the Promotion of Energy Efficiency
20 and System Reliability,” where CMP refers to Central Maine Power.

21 “Maine has experience with revenue decoupling. In 1991, the
22 Commission adopted, on a three-year trial basis, a revenue decoupling

1 **Q. THERE HAS BEEN TESTIMONY PROVIDED ON “EQUITY” BETWEEN**
2 **RATEPAYER AND SHAREHOLDER IN THIS PROCEEDING. DO YOU HAVE**
3 **ANY ADDITIONAL THOUGHTS ON EQUITY IN THIS REGARD?**

4 A. Yes. Consider the following hypothetical situation. Suppose every residential
5 PGE customer (ratepayer) who would be subject to PGE’s proposed SNA
6 decoupling mechanism reduces usage by five percent for 2010 over and above
7 any amounts included in PGE’s 2009 test year load forecast. Consider this
8 reduction is on a weather-normalized basis. Let’s also assume there is no
9 growth in customers; indeed, every 2009 customer is a 2010 customer. Each
10 customer’s reduction can be for any reason at all: they are reacting to an
11 electricity volumetric price signal, their personal circumstances have changed,
12 they want to “do the right thing,” they have incorporated energy efficiency
13 measures, *et cetera*.

14 Now, what happens to their bills? First, their bills go down vis-à-vis what
15 they otherwise would have been. Let’s say their bills go down for each of 12
16 months and that in total their bills decline by five percent.⁴⁶ They’ve done
17 “something:” they have changed their behaviors, they have invested in energy
18 efficiency measures, “something.”⁴⁷ They presumably not only feel like they

⁴⁶ This five percent decline in billed amounts is a simplification. Due to the presence of fixed charges and inverted block energy rates in Rate Schedule 7, the actual decline from a five percent decline in energy usage would likely be less than five percent. Symmetrically, the SNA charge also would likely be less than five percent. The key point is that bill reduction \$s = SNA charge \$s.

⁴⁷ This “something” is assumed by Staff to have a positive economic “cost” for each residential customer, whether it be financial outlays, opportunity costs, search costs, information costs, reduction in psychic income, other disutility, *et cetera*.

1 have saved money, they can see that this is so by viewing their monthly PGE
2 bills.

3 All else being equal, PGE shareholders would bear the burden of these
4 savings as manifested in reduced PGE earnings versus what would otherwise
5 be the case. While the Company could potentially mitigate this outcome by
6 reducing costs, shareholders have traditionally borne this type of burden and it
7 is one for which they have been and are currently compensated.

8 How would this change under PGE's proposed SNA mechanism? PGE's
9 Sales Normalization Adjustment would begin billing ~~essentially for the~~
10 ~~reductions~~ in customers' bills. In fact, under the provided assumptions, ~~every~~
11 ~~customer~~ would pay back every dollar of savings each initially realized, no
12 matter what ~~it was~~ each customer did or did not do ~~that~~ created the energy
13 savings and bill reductions.⁴⁸ Abstracting from any issues due to the time
14 shifting of cash flows, PGE shareholders are "made whole." PGE residential
15 customers are "made less."⁴⁹ This outcome captures the redistribution of equity
16 between ratepayer and shareholder inherent in PGE's proposed SNA
17 mechanism.

18 Additionally, Staff struggles to see how this arrangement is supportive of
19 energy conservation, as viewed from the perspective of the individual
20 ratepayer.⁵⁰ It is not clear to Staff that a Nash equilibrium⁵¹ under PGE's

⁴⁸ This analysis abstracts from any own price elasticity considerations.

⁴⁹ "Made less" in that they now consume less electricity ~~for the same level of expenditure.~~

⁵⁰ In a somewhat similar vein, see Staff/1200, page 1 at 15ff. for the discussion of cost-of-service versus direct access customers regarding a potential positive-feedback "death spiral."

**UE 197
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CERTIFICATE OF SERVICE

UE 197

I certify that I have this day served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-13-0070, to the following parties or attorneys of parties.

Dated at Salem, Oregon, this 22nd day of September, 2008.



Lois Meerdink
Public Utility Commission
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