

Exhibit No. \_\_\_\_ (CTM-4)  
Dockets UE-120436 et al.  
Witness: Christopher T. Mickelson

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,**

**Complainant,**

**v.**

**AVISTA CORPORATION, d/b/a  
AVISTA UTILITIES,**

**Respondent.**

**DOCKETS UE-120436/UG-120437  
(consolidated)**

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**WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,**

**Complainant,**

**v.**

**AVISTA CORPORATION d/b/a AVISTA  
UTILITIES,**

**Respondent.**

**DOCKETS UE-110876/UG-110877  
(consolidated)**

**EXHIBIT TO TESTIMONY OF**

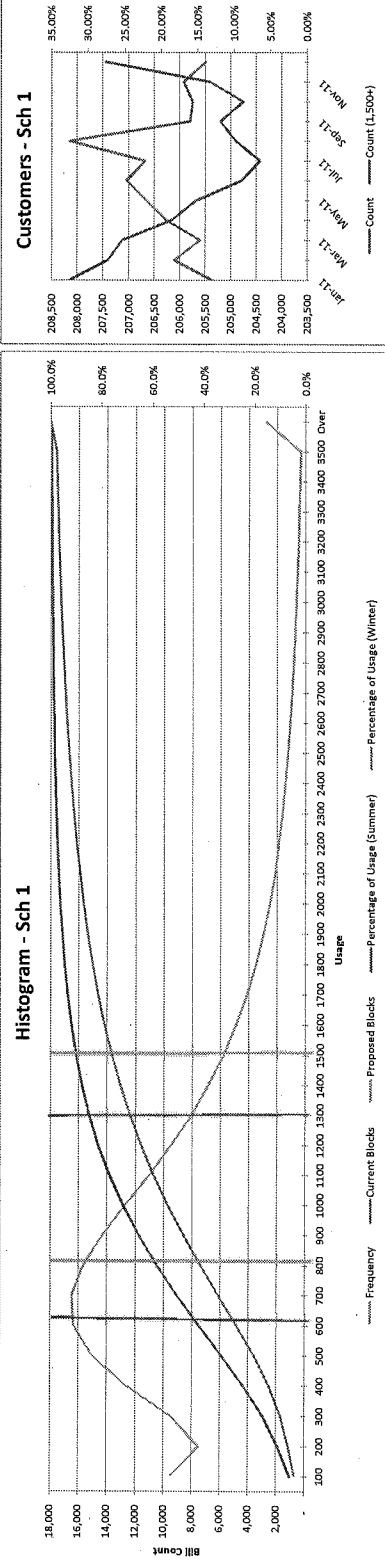
**CHRISTOPHER T. MICKELSON**

**STAFF OF  
WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION**

*Electric Bill Frequency and Histogram Analysis*

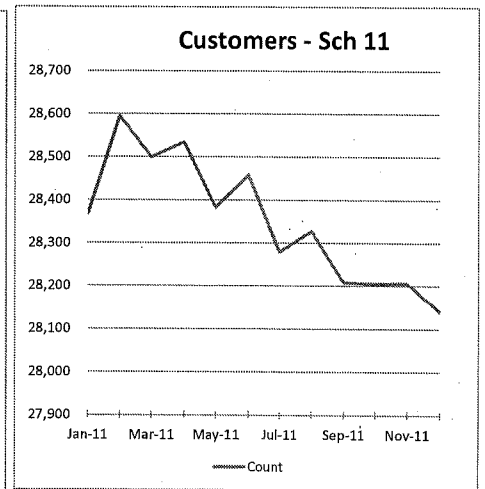
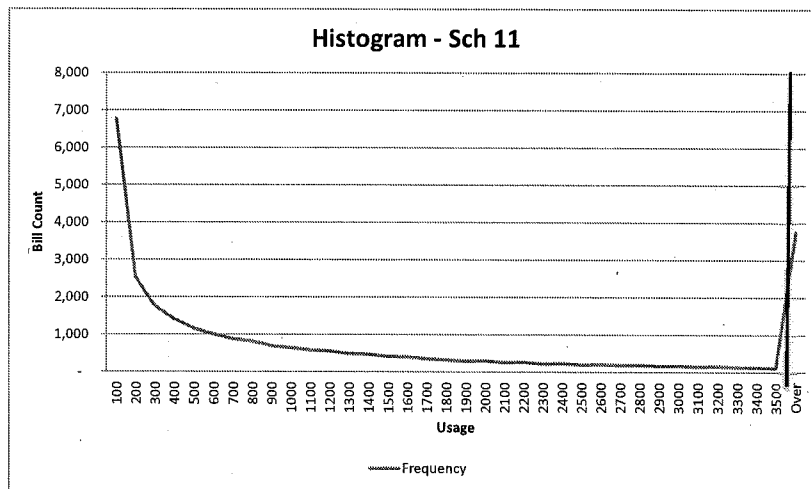
**September 19, 2012**

No.	Line	(a)	(b)		(c)	(d)												(e)	(f)	(g)	(h)	(i)	(j)		(k)		(l)		(m)		(n)	(o)		(p)	(q)	(r)	(s)	(t)	(u)	(v)		(w)	(x)																																																																																																						
			Lower	Upper		Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11						Q1-11	Q2-11	Q3-11	Q4-11	YTD-11	Avg. Count	%	Avg. Count		%	Count							%	Count			%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%																																																																																									
1	0	100	6,616	6,851	7,062	8,163	8,931	11,336	13,223	14,119	12,029	10,197	9,148	7,101	9,336	4,628	4.6%	9,336	3,044	3.6%	7,516	3,648	4.2%	7,516	3,648	4.2%	9,336	3,044	3.6%	7,516	3,648	4.2%	9,336	3,044	3.6%	11,588	5,614	5.1%	10,398	4,776	4.3%	12,452	6,022	5.3%	15,824	7,666	6.9%	17,842	8,633	7.7%	14,166	6,897	6.2%	17,965	8,699	7.8%	16,593	8,033	7.2%	14,679	7,106	6.4%	12,630	6,116	5.5%	10,712	5,189	4.7%	8,905	4,314	3.9%	7,284	3,528	3.2%	5,951	2,888	2.6%	4,786	2,329	2.1%	3,872	1,879	1.7%	3,144	1,522	1.4%	2,523	1,224	1.1%	2,015	998	0.9%	1,628	794	0.7%	1,303	633	0.6%	1,076	523	0.5%	871	420	0.4%	743	356	0.3%	594	279	0.3%	480	233	0.2%	395	191	0.2%	266	133	0.1%	243	122	0.1%	186	90	0.1%	168	83	0.1%	146	72	0.1%	118	58	0.1%	109	52	0.1%	84	41	0.1%	842	414	0.4%	206,677	100,000%
2	0	100	6,616	6,851	7,062	8,163	8,931	11,336	13,223	14,119	12,029	10,197	9,148	7,101	9,336	4,628	4.6%	9,336	3,044	3.6%	7,516	3,648	4.2%	7,516	3,648	4.2%	9,336	3,044	3.6%	7,516	3,648	4.2%	9,336	3,044	3.6%	11,588	5,614	5.1%	10,398	4,776	4.3%	12,452	6,022	5.3%	15,824	7,666	6.9%	17,842	8,633	7.7%	14,166	6,897	6.2%	17,965	8,699	7.8%	16,593	8,033	7.2%	14,679	7,106	6.4%	12,630	6,116	5.5%	10,712	5,189	4.7%	8,905	4,314	3.9%	7,284	3,528	3.2%	5,951	2,888	2.6%	4,786	2,329	2.1%	3,872	1,879	1.7%	3,144	1,522	1.4%	2,523	1,224	1.1%	2,015	998	0.9%	1,628	794	0.7%	1,303	633	0.6%	1,076	523	0.5%	871	420	0.4%	743	356	0.3%	594	279	0.3%	480	233	0.2%	395	191	0.2%	266	133	0.1%	243	122	0.1%	186	90	0.1%	168	83	0.1%	146	72	0.1%	118	58	0.1%	109	52	0.1%	84	41	0.1%	842	414	0.4%	206,677	100,000%

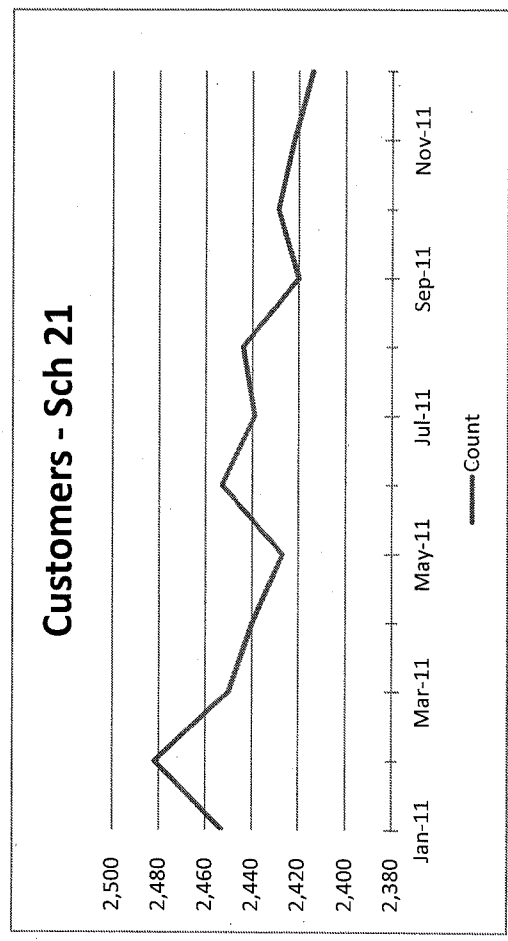
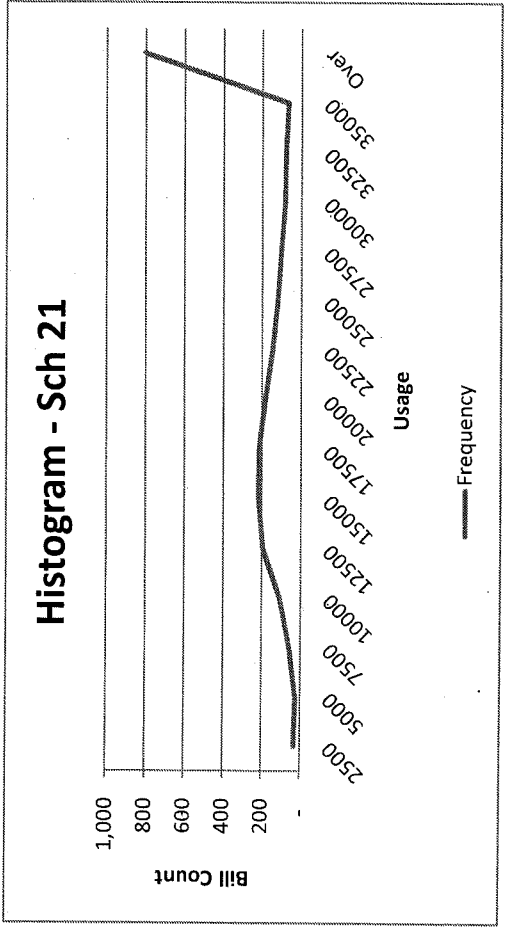


Line

No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p) (q) (r)		
																Month		
1	Sch	Lower	Upper	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Avg. Count	%	Accum. %
2	011	0	100	5,771	6,173	6,295	6,743	6,926	7,199	7,640	7,494	7,244	7,122	6,758	5,867	6,769	23.88%	23.88%
3	011	101	200	2,047	2,043	2,125	2,368	2,549	2,755	2,865	2,908	2,857	2,825	2,666	2,251	2,522	8.89%	32.77%
4	011	201	300	1,510	1,518	1,539	1,656	1,685	1,868	1,962	1,958	1,939	1,910	1,827	1,633	1,750	6.17%	38.95%
5	011	301	400	1,268	1,319	1,336	1,414	1,385	1,495	1,537	1,510	1,403	1,486	1,487	1,310	1,413	4.98%	43.93%
6	011	401	500	1,083	1,076	1,097	1,161	1,212	1,203	1,191	1,182	1,160	1,182	1,190	1,135	1,156	4.08%	48.01%
7	011	501	600	1,042	998	1,054	1,004	983	996	1,047	948	949	1,014	1,010	959	1,000	3.53%	51.53%
8	011	601	700	877	929	907	895	880	869	848	831	781	863	905	876	872	3.07%	54.61%
9	011	701	800	795	850	851	860	841	835	760	710	740	794	847	845	811	2.86%	57.47%
10	011	801	900	775	765	728	736	759	703	631	619	605	608	689	718	695	2.45%	59.92%
11	011	901	1000	666	676	677	648	645	650	638	596	577	585	651	647	638	2.25%	62.17%
12	011	1001	1100	703	646	637	594	558	578	535	484	516	515	580	618	580	2.05%	64.22%
13	011	1101	1200	615	624	621	596	547	568	483	466	488	503	532	580	552	1.95%	66.16%
14	011	1201	1300	502	534	497	537	497	477	446	423	426	456	486	550	486	1.71%	67.88%
15	011	1301	1400	523	535	522	506	496	452	399	393	432	422	465	491	470	1.66%	69.53%
16	011	1401	1500	466	451	478	445	437	357	363	384	357	367	411	455	414	1.46%	71.00%
17	011	1501	1600	462	427	402	399	418	364	342	373	327	404	421	433	398	1.40%	72.40%
18	011	1601	1700	401	430	410	369	340	334	304	302	300	309	320	345	347	1.22%	73.62%
19	011	1701	1800	364	380	345	342	348	293	275	267	317	303	336	370	328	1.16%	74.78%
20	011	1801	1900	345	342	343	327	275	277	236	232	254	241	264	300	286	1.01%	75.79%
21	011	1901	2000	344	334	320	333	295	304	244	255	285	234	299	340	299	1.05%	76.84%
22	011	2001	2100	270	300	289	278	273	233	216	243	210	253	247	263	256	0.90%	77.75%
23	011	2101	2200	346	305	301	275	228	235	229	219	229	229	248	302	262	0.92%	78.67%
24	011	2201	2300	270	239	247	247	235	207	195	197	213	189	221	253	226	0.80%	79.47%
25	011	2301	2400	275	252	278	219	231	209	186	191	223	231	224	257	231	0.82%	80.29%
26	011	2401	2500	201	264	235	199	186	166	158	161	183	187	181	200	193	0.68%	80.97%
27	011	2501	2600	242	247	236	213	209	182	165	199	188	211	179	228	208	0.73%	81.70%
28	011	2601	2700	225	218	214	191	176	172	165	156	164	163	206	212	189	0.66%	82.37%
29	011	2701	2800	229	193	208	204	171	189	164	189	148	162	184	198	187	0.66%	83.03%
30	011	2801	2900	181	201	179	168	160	166	145	146	160	147	159	201	168	0.59%	83.62%
31	011	2901	3000	203	179	173	188	173	157	171	144	136	156	155	207	170	0.60%	84.22%
32	011	3001	3100	190	184	158	141	134	130	135	131	140	122	130	186	149	0.53%	84.74%
33	011	3101	3200	194	176	177	167	183	142	137	158	157	160	147	179	165	0.58%	85.33%
34	011	3201	3300	154	146	162	155	120	121	100	123	122	118	123	147	133	0.47%	85.80%
35	011	3301	3400	163	161	153	150	140	122	105	109	130	127	124	166	138	0.49%	86.28%
36	011	3401	3500	145	141	122	111	150	110	103	92	112	81	120	134	118	0.42%	86.70%
37	011	Over		4,511	4,339	4,183	3,695	3,537	3,340	3,159	3,534	3,736	3,526	3,414	4,275	3,771	13.30%	100.00%
38	Totals			28,368	28,595	28,499	28,534	28,382	28,458	28,279	28,327	28,208	28,205	28,206	28,141	28,350		



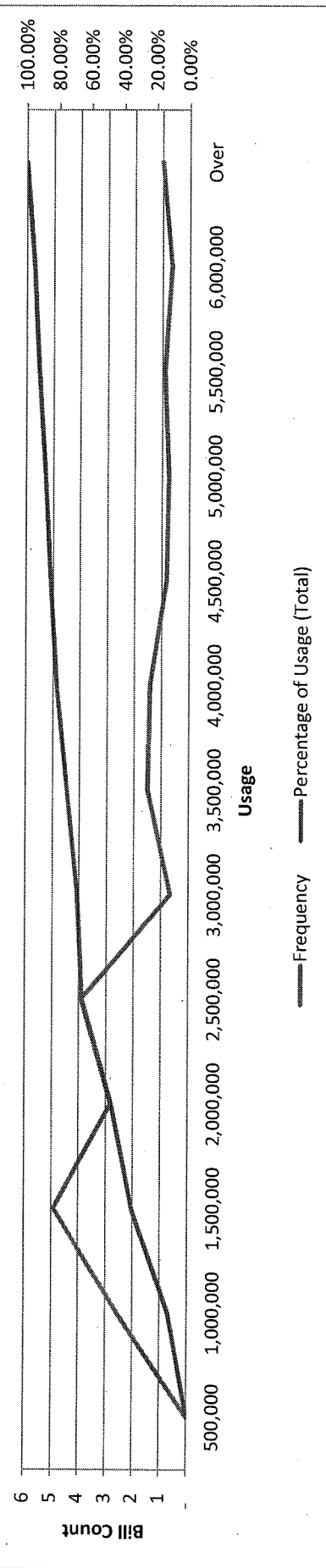
Line No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)		(r)
																Avg. Count	%	
1	Sch	Lower	Upper	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11			
2	021	0	2500	25	21	28	22	29	46	64	51	45	17	9	6	30	1.24%	1.24%
3	021	2501	5000	21	12	16	18	11	30	58	50	34	26	16	11	25	1.04%	2.28%
4	021	5001	7500	24	35	35	38	49	71	96	92	72	76	53	33	56	2.30%	4.58%
5	021	7501	10000	85	88	98	121	126	128	152	122	104	90	118	66	108	4.43%	9.01%
6	021	10001	12500	173	193	225	256	233	206	178	183	153	164	213	162	195	7.99%	17.00%
7	021	12501	15000	203	233	235	240	228	216	211	188	173	210	256	226	218	8.95%	25.95%
8	021	15001	17500	227	223	219	228	222	198	207	196	202	225	224	218	216	8.84%	34.79%
9	021	17501	20000	209	189	198	184	184	184	170	178	190	163	176	187	184	7.56%	42.35%
10	021	20001	22500	141	170	143	151	131	138	157	165	147	139	134	166	149	6.09%	48.44%
11	021	22501	25000	161	127	130	95	103	117	114	122	129	122	115	125	122	4.99%	53.42%
12	021	25001	27500	104	103	93	112	107	103	98	92	114	102	100	113	103	4.24%	57.66%
13	021	27501	30000	91	87	79	63	76	93	78	89	93	92	67	92	83	3.42%	61.08%
14	021	30001	32500	82	81	79	84	86	70	73	68	75	84	83	84	79	3.24%	64.32%
15	021	32501	35000	62	77	63	71	71	69	62	62	62	59	71	63	66	2.71%	67.03%
16	021	Over		845	843	809	757	771	784	721	786	827	860	787	862	804	32.97%	100.00%
17	Totals			2,453	2,482	2,450	2,440	2,427	2,453	2,439	2,444	2,420	2,429	2,422	2,414	2,439		



Line

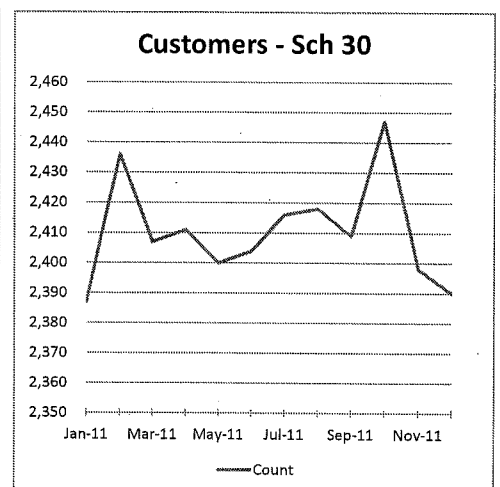
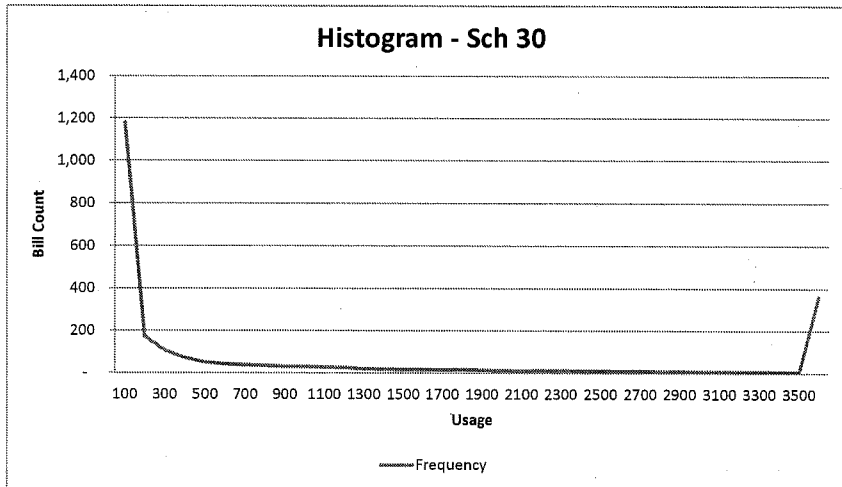
Line No.	(a) Sch	(b) Usage Blocks Lower Upper	(c)	Month												(p) Percentage of Usage (Total)		(r) Accum. %
				(d) Jan-11	(e) Feb-11	(f) Mar-11	(g) Apr-11	(h) May-11	(i) Jun-11	(j) Jul-11	(k) Aug-11	(l) Sep-11	(m) Oct-11	(n) Nov-11	(o) Dec-11	Avg. Count	%	
1	025	0	500,000															0.00%
2	025	500,000	1,000,000	2	4	1	3	3	3	2	2	1	2	3	4	3	3	11.7%
3	025	1,000,000	1,500,000	5	4	6	5	5	5	6	5	5	6	5	3	4	5	22.3%
4	025	1,500,000	2,000,000	3	2	3	2	4	4	3	4	4	2	2	3	2	3	12.9%
5	025	2,000,000	2,500,000	2	4	4	5	3	3	4	4	4	4	5	4	5	4	17.8%
6	025	2,500,000	3,000,000	4	1	1	-	-	-	-	-	-	-	-	1	1	1	3.0%
7	025	3,000,000	3,500,000	2	2	2	2	1	1	1	1	1	2	-	2	2	2	6.8%
8	025	3,500,000	4,000,000	2	2	1	2	2	2	1	1	1	-	3	1	-	1	6.4%
9	025	4,000,000	4,500,000	-	-	1	-	-	-	-	2	1	2	-	1	3	1	3.8%
10	025	4,500,000	5,000,000	-	1	-	1	2	-	1	1	2	1	-	1	-	1	3.4%
11	025	5,000,000	5,500,000	-	1	1	1	1	2	1	1	1	1	2	1	-	1	4.2%
12	025	5,500,000	6,000,000	1	-	1	-	1	1	1	1	1	1	1	1	1	1	3.0%
13	025	6,000,000	Over	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4.5%
14	025	Over	Over	22	22	22	22	22	22	22	22	22	22	22	22	22	22	100.00%

Histogram - Sch 25



Line

No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p) (q) (r)		
																Avg. Count	%	Accum. %
1	Usage Blocks															Percentage of Usage (Total)		
2	Sch	Month																
3	030	0	100	1,414	1,418	1,396	1,247	1,194	1,139	945	821	793	1,031	1,347	1,423	1,181	48.99%	48.99%
4	030	101	200	149	141	159	188	166	162	189	189	182	202	177	155	172	7.12%	56.10%
5	030	201	300	92	108	105	117	100	105	111	124	121	111	94	96	107	4.44%	60.54%
6	030	301	400	70	71	72	79	67	61	68	71	71	98	63	69	72	2.97%	63.52%
7	030	401	500	40	54	40	70	43	54	45	46	59	56	44	47	50	2.07%	65.58%
8	030	501	600	41	37	42	45	45	29	39	45	58	35	48	38	42	1.74%	67.32%
9	030	601	700	33	34	38	36	41	29	50	47	36	39	34	34	38	1.56%	68.88%
10	030	701	800	26	39	30	39	39	34	27	37	43	28	31	35	34	1.41%	70.29%
11	030	801	900	31	31	28	35	35	25	30	31	27	30	23	30	30	1.23%	71.52%
12	030	901	1000	30	33	46	25	37	26	26	24	29	29	26	23	30	1.22%	72.74%
13	030	1001	1100	26	32	27	33	28	21	26	23	29	18	28	24	26	1.09%	73.83%
14	030	1101	1200	33	23	30	21	28	28	19	26	27	26	22	22	25	1.05%	74.89%
15	030	1201	1300	15	24	19	21	18	28	15	18	13	19	21	20	19	0.80%	75.69%
16	030	1301	1400	18	16	12	18	9	22	23	16	15	20	16	16	17	0.69%	76.38%
17	030	1401	1500	16	14	16	21	17	15	13	10	15	19	18	16	16	0.66%	77.04%
18	030	1501	1600	12	14	14	18	9	17	11	14	16	19	21	21	16	0.64%	77.68%
19	030	1601	1700	13	14	13	21	13	15	19	10	20	10	11	14	14	0.60%	78.28%
20	030	1701	1800	15	16	9	14	14	13	16	20	13	13	22	15	15	0.62%	78.90%
21	030	1801	1900	13	9	10	16	16	11	20	10	5	13	11	10	12	0.50%	79.40%
22	030	1901	2000	11	7	14	9	10	14	9	14	16	13	5	13	11	0.47%	79.87%
23	030	2001	2100	10	14	7	12	10	9	12	8	12	9	9	10	10	0.42%	80.29%
24	030	2101	2200	11	9	14	12	21	10	5	12	12	14	8	4	11	0.46%	80.75%
25	030	2201	2300	10	10	8	16	10	11	10	16	9	12	7	10	11	0.45%	81.19%
26	030	2301	2400	5	14	12	7	9	5	5	14	13	10	16	10	10	0.41%	81.61%
27	030	2401	2500	9	8	7	6	8	12	14	13	11	15	9	10	10	0.42%	82.03%
28	030	2501	2600	10	7	4	10	8	11	7	10	14	10	5	3	8	0.34%	82.37%
29	030	2601	2700	8	6	5	9	7	12	14	10	13	12	8	9	9	0.39%	82.76%
30	030	2701	2800	7	7	3	4	8	13	9	9	8	9	9	2	7	0.30%	83.07%
31	030	2801	2900	6	2	5	10	7	8	8	16	4	11	11	4	8	0.32%	83.38%
32	030	2901	3000	4	2	6	5	9	8	9	5	6	16	5	3	7	0.27%	83.65%
33	030	3001	3100	2	7	10	7	8	7	13	7	9	13	9	3	8	0.33%	83.98%
34	030	3101	3200	2	10	7	11	8	9	6	5	9	11	3	1	7	0.28%	84.27%
35	030	3201	3300	3	5	7	11	5	7	7	10	10	9	3	6	7	0.29%	84.55%
36	030	3301	3400	4	5	5	6	5	7	3	4	6	6	8	3	5	0.21%	84.77%
37	030	3401	3500	7	3	2	8	7	2	7	7	7	7	4	9	6	0.24%	85.01%
38	030	Over		191	192	185	204	341	425	586	676	678	454	222	182	361	14.99%	100.00%
39	Totals			2,387	2,436	2,407	2,411	2,400	2,404	2,416	2,418	2,409	2,447	2,398	2,390	2,410		



Line

Line No.	A	B	C		D		E		F	
			2 Unit	2.5 Unit	2 Unit	2.5 Unit	2 Unit	2.5 Unit		
1										
2										
3										
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II. Natural Gas and Bottled Gas										
Line No.	A	B	C		D		E		F	
			2 Unit	2.5 Unit	2 Unit	2.5 Unit	2 Unit	2.5 Unit		
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										

Unit Size	Factor
0-BR	0.5
1-BR	0.7
2-BR	0.9
3-BR	1.1
4-BR	1.4
5-BR	1.6

<http://www.hud.gov/offices/adm/hudclips/guidebooks/7420.10G/7420g18GUID.pdf>

Line No.	A	B	C		D		E
			Electricity Consumption for 2001				
		Lower-End				Upper-End	
		kWh per household		kWh per household			
	End Use	Annual Consumption	Monthly Consumption	Annual Consumption	Monthly Consumption	Annual Consumption	Monthly Consumption
3	Refrigerators	1,462	122	1,462	122	1,462	122
4	Water Heating	2,552	213	2,552	213	2,552	213
5	Lighting	940	78	940	78	940	78
6	Other Appliances	1,585	132	1,585	132	1,585	132
7	First Block / Sub-total	6,539	545	6,539	545	9,449	787
8	Air-Conditioning						
9	Central Air-Conditioners	2,796	233	2,796	233	2,796	233
10	Room Air-Conditioners	950	79	950	79	950	79
11	Sub-Total	3,746	312	3,746	312	3,746	312
12	Space Heating						
13	Main Space-Heating Systems	3,524	294	3,524	294	3,524	294
14	Secondary Space-Heating Equipment	503	42	503	42	503	42
15	Sub-Total	4,027	336	4,027	336	4,027	336
16	Total	14,312	1,193	14,312	1,193	17,222	1,435

<http://www.eia.gov/emeu/recs/recs2001/enduse2001/enduse2001.html>