













































































**Zip codes for NRTC Member Territories**

<u>SUPER OBS Number</u>	<u>DBA Name</u>	<u>COUNTY</u>	<u>STATE ZIPCODES</u>	<u>SUPER OBS Number</u>	<u>DBA Name</u>	<u>COUNTY</u>	<u>STATE ZIPCODES</u>
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47352	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63440
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47354	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63443
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47356	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63450
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47360	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63451
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47362	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63468
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47384	1029 1078	Golden Sky Systems, Inc.	SHELBY	MO 63469
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47385	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 80423
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47386	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 80463
1029 0177	Pegasus Satellite Television, Inc.	HENRY	IN 47387	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 81621
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46011	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 81623
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46012	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 81637
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46013	1029 1079	Golden Sky Systems, Inc.	EAGLE	CO 81657
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46016	1029 1079	Golden Sky Systems, Inc.	PITKIN	CO 81611
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46017	1029 1079	Golden Sky Systems, Inc.	PITKIN	CO 81621
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46048	1029 1079	Golden Sky Systems, Inc.	PITKIN	CO 81623
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46056	1029 1079	Golden Sky Systems, Inc.	PITKIN	CO 81642
1029 0177	Pegasus Satellite Television, Inc.	MADISON	IN 46064	1029 1079	Golden Sky Systems, Inc.	PITKIN	CO 81654
1029 0177	Pegasus Satellite Television, Inc.	MARION	IN 46236	1029 1079	Golden Sky Systems, Inc.	SUMMIT	CO 80424
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46104	1029 1079	Golden Sky Systems, Inc.	SUMMIT	CO 80435
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46115	1029 1079	Golden Sky Systems, Inc.	SUMMIT	CO 80498
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46127	1029 1083	Pegasus Satellite Television, Inc.	SHAWNEE	KS 66402
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46133	1029 1083	Pegasus Satellite Television, Inc.	SHAWNEE	KS 66546
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46140	1029 1083	Pegasus Satellite Television, Inc.	SHAWNEE	KS 66610
1029 0177	Pegasus Satellite Television, Inc.	RUSH	IN 46148	1029 1083	Pegasus Satellite Television, Inc.	SHAWNEE	KS 66619



## IV. TABLE FOUR: REGRESSION COEFFICIENTS

The own-price elasticity of demand for DBS service in rural areas is derived from the following regression demand model with robust standard errors:

$\ln q_{DBS,i} = \alpha + B_1 \ln p_{DBS,i} + B_2 \ln \text{density} + B_3 \ln \text{households} + \varepsilon_i$ , where

$q_{DBS,i}$  = total DBS subscribers in Nielsen designated market area DMA  $i$ ,

$p_{DBS,i}$  = average monthly expenditure on service per subscriber in DMA  $i$ ,

density = population density in DMA  $i$ ,

households = households located in DMA  $i$ , and

$\varepsilon_i$  = an error term.

There is an error in Table Four of the declaration. The coefficient for households should be positive, not negative.

### A. Tabulating Quantity ( $q_{DBS,i}$ )

The number of DBS subscribers in each DMA comes from the November 2001 Nielsen data.

### B. Tabulating Prices ( $p_{DBS,i}$ )

I use the dataset of zip codes from the NRTC ARPU data that I previously geocoded. I assign each zip code in the NRTC database to a DMA in MapInfo. I then create a dataset of 586 unique DMA-member territory combinations and merge this with the APRU data. I calculate the average price of DBS in a DMA,  $p_{DBS,i}$ , by taking the simple average of the ARPU's for the DMA-member territory combinations by DMA.

### C. Tabulating Density and Households

I merge block group data on population, households, and land area from the Census 2000 Summary File 1 database with the dataset of Census 2000 block groups with DMA assignments

created earlier in MapInfo. I use the merged datasets to calculate the total population, number of households, and total land area for each DMA. I derive population density in each DMA by dividing the DMA's population by the DMA's land area (square miles).

**D. Regression sample**

The resulting dataset has 166 DMA observations. However, a log-linear regression on all 166 observations would result in an elasticity constrained to be the same at all prices. My goal is to estimate the own-price elasticity of demand for DBS on the higher end of the demand curve. Therefore, I limit the sample to those observations with higher average prices for DBS. For my elasticity estimations, I sort the DMA's by price ( $p_{DBS,i}$ ) and select only the observations with the highest 83 prices for use in my regression sample.

## Data Used in Own-Price Elasticity Regressions

		Unweighted Average DBS Price	DBS Subscribers	Population Density (per square mile)	Households	Included (I) or Excluded (E) from Regression Sample
DMA						
1	517	59.410386	153,490	232.643	929,063	I
2	651	57.928608	27,480	24.177	149,146	I
3	511	57.058873	245,350	432.738	2,114,059	I
4	773	57.058873	15,020	22.837	59,651	I
5	548	57.058873	54,870	365.230	668,126	I
6	571	56.742434	46,840	149.997	380,884	I
7	839	56.192701	48,980	38.495	527,102	I
8	556	55.968610	91,670	132.250	498,721	I
9	618	55.625328	298,070	300.069	1,758,178	I
10	749	55.577415	4,270	47.156	54,661	I
11	600	55.172048	20,970	47.999	190,737	I
12	626	55.172048	5,320	95.283	30,071	I
13	584	54.878348	9,940	125.570	59,040	I
14	569	54.878348	16,050	87.627	84,664	I
15	543	54.656056	15,050	367.682	260,745	I
16	533	54.656056	26,030	598.008	977,438	I
17	635	54.614497	68,720	144.071	512,399	I
18	866	54.598249	77,590	93.124	504,326	I
19	633	54.272415	18,150	10.652	133,631	I
20	650	54.098839	77,280	53.446	633,460	I
21	506	53.998475	109,890	655.565	2,333,959	I
22	641	53.960631	94,900	66.243	709,167	I
23	625	53.952302	45,950	68.948	296,608	I
24	811	53.824057	30,470	11.898	233,207	I
25	709	53.717049	64,190	72.668	242,269	I
26	862	53.694553	158,870	177.664	1,209,341	I
27	539	53.644759	158,270	463.344	1,557,217	I
28	524	53.522851	258,880	299.300	1,883,344	I
29	623	53.282197	299,010	225.361	2,106,959	I
30	525	53.275246	29,870	63.901	147,145	I
31	570	53.198591	42,440	125.408	246,794	I
32	661	52.936294	7,070	9.953	53,599	I
33	542	52.909753	77,000	253.706	527,191	I
34	634	52.904346	35,570	11.779	191,093	I
35	627	52.864882	30,900	28.324	152,559	I
36	662	52.799284	23,090	21.430	113,210	I
37	535	52.786046	84,790	224.952	804,298	I
38	881	52.540135	83,510	18.985	381,422	I
39	753	52.498854	215,410	47.011	1,443,692	I
40	523	52.468275	79,090	56.521	317,923	I
41	532	52.468275	46,350	133.899	536,618	I
42	500	52.468275	43,790	87.695	383,578	I
43	612	52.302836	88,120	48.509	392,610	I
44	546	52.072395	70,300	136.901	342,790	I

## Data Used in Own-Price Elasticity Regressions

DMA		Unweighted Average DBS Price	DBS Subscribers	Population Density (per square mile)	Households	Included (I) or Excluded (E) from Regression Sample
45	561	51.861163	72,460	167.860	563,379	I
46	751	51.835491	155,310	33.274	1,332,974	I
47	657	51.830647	28,090	35.802	120,407	I
48	567	51.778298	156,030	148.931	776,056	I
49	810	51.734838	33,600	36.401	203,699	I
50	698	51.571999	36,740	52.742	241,256	I
51	602	51.524982	187,200	991.989	3,346,647	I
52	582	51.489509	7,650	182.004	58,445	I
53	507	51.375648	45,160	82.407	276,419	I
54	671	50.768080	85,970	76.706	501,712	I
55	527	50.659799	166,590	204.127	1,013,535	I
56	513	50.586309	58,540	155.584	463,667	I
57	505	50.586309	153,450	808.929	1,892,913	I
58	686	50.320515	64,590	111.416	477,529	I
59	813	50.303015	32,770	13.275	162,704	I
60	503	50.263196	37,990	71.713	218,206	I
61	522	50.257968	24,410	77.752	202,115	I
62	770	50.143717	142,400	18.476	750,665	I
63	868	50.104886	36,110	35.895	178,764	I
64	648	50.104648	55,200	84.646	364,783	I
65	718	50.070859	72,320	62.557	320,864	I
66	647	50.070859	10,390	45.751	81,886	I
67	711	50.070859	19,760	36.629	71,863	I
68	673	50.070859	49,360	50.980	186,472	I
69	575	49.990143	64,020	142.446	336,913	I
70	581	49.965331	39,140	59.188	161,636	I
71	670	49.946638	49,950	76.728	241,348	I
72	800	49.937744	20,070	93.682	182,816	I
73	855	49.937744	28,860	106.935	229,361	I
74	828	49.937744	32,090	137.813	228,260	I
75	752	49.821864	43,950	34.818	294,199	I
76	630	49.788024	108,320	120.327	689,408	I
77	520	49.787212	33,180	79.149	244,017	I
78	606	49.781377	18,200	66.166	97,403	I
79	693	49.699148	115,250	52.375	526,001	I
80	519	49.695801	34,340	126.076	257,800	I
81	530	49.595766	47,480	63.143	242,252	I
82	619	49.503116	108,470	45.495	392,277	I
83	605	49.481615	26,110	37.789	171,873	I
84	564	49.405028	91,120	85.850	502,695	E
85	821	49.258704	7,720	38.224	45,595	E
86	765	49.222222	26,420	65.180	271,722	E
87	790	49.193976	116,060	14.225	630,998	E
88	555	48.851769	33,370	195.713	388,204	E



## Data Used in Own-Price Elasticity Regressions

DMA		Unweighted Average DBS Price	DBS Subscribers	Population Density (per square mile)	Households	Included (I) or Excluded (E) from Regression Sample
89	597	48.820447	10,000	140.095	64,299	E
90	515	48.604624	98,710	293.348	848,599	E
91	675	48.407776	26,800	98.592	238,408	E
92	603	48.405125	32,840	46.844	153,603	E
93	640	48.324456	104,630	106.755	665,162	E
94	762	48.267418	23,310	14.444	99,565	E
95	609	48.257532	178,070	190.091	1,160,852	E
96	560	48.256186	172,630	191.263	908,751	E
97	545	48.256186	54,800	84.561	263,682	E
98	764	48.074067	19,870	5.580	91,466	E
99	588	47.997280	56,380	196.049	327,161	E
100	754	47.990721	13,280	8.185	59,296	E
101	766	47.980495	4,440	16.098	22,850	E
102	758	47.975619	17,050	9.734	112,803	E
103	510	47.821760	131,810	502.032	1,536,768	E
104	536	47.821760	29,370	319.785	281,292	E
105	820	47.741580	130,600	62.546	1,051,504	E
106	541	47.714519	96,580	95.105	449,812	E
107	557	47.714519	79,920	129.689	484,301	E
108	551	47.709274	31,520	216.657	247,916	E
109	757	47.669157	39,100	15.463	209,008	E
110	529	47.599774	96,320	160.676	606,514	E
111	649	47.551506	60,200	85.372	282,331	E
112	678	47.506087	62,800	20.717	450,060	E
113	687	47.493214	31,290	5.523	139,071	E
114	737	47.403679	7,200	47.358	55,070	E
115	502	47.381744	21,440	98.640	139,670	E
116	565	47.381744	17,100	76.731	97,419	E
117	538	47.381744	42,880	353.784	390,969	E
118	725	47.218766	37,120	11.847	243,041	E
119	563	47.147914	104,240	214.611	702,435	E
120	604	47.118316	38,140	52.245	162,883	E
121	632	46.988125	99,020	51.389	390,717	E
122	756	46.965721	21,860	4.788	100,061	E
123	531	46.896121	56,250	108.204	316,698	E
124	801	46.829466	34,800	47.549	226,632	E
125	638	46.700283	9,330	46.530	57,915	E
126	613	46.679595	198,540	102.687	1,568,669	E
127	592	46.666951	21,320	92.158	111,602	E
128	501	46.571883	372,330	1766.620	7,349,339	E
129	819	46.538011	167,760	164.325	1,658,835	E
130	547	46.450253	52,360	185.896	432,070	E
131	717	46.424177	24,530	32.484	113,796	E
132	554	46.338304	24,950	101.399	160,799	E

## Data Used in Own-Price Elasticity Regressions

DMA		Unweighted Average DBS Price	DBS Subscribers	Population Density (per square mile)	Households	Included (I) or Excluded (E) from Regression Sample
133	679	46.182063	63,410	51.942	400,676	E
134	722	46.138363	45,720	18.040	267,624	E
135	616	46.118154	123,480	132.372	846,436	E
136	759	46.032053	7,330	23.200	51,875	E
137	652	46.014326	42,180	70.105	388,661	E
138	631	45.997882	11,290	26.779	50,869	E
139	682	45.921462	42,300	81.970	309,636	E
140	669	45.877341	48,200	102.319	343,636	E
141	659	45.634461	174,000	115.244	863,862	E
142	740	45.587974	2,540	5.614	15,677	E
143	802	45.559645	5,900	33.628	60,408	E
144	558	45.441224	3,840	268.215	40,646	E
145	509	45.404265	51,440	143.689	262,466	E
146	611	45.315066	19,730	51.838	138,685	E
147	755	45.303461	17,250	4.220	66,587	E
148	559	45.259324	31,680	65.247	145,263	E
149	705	45.179317	38,860	40.874	173,485	E
150	573	45.161699	95,220	85.239	431,647	E
151	702	45.066465	34,980	51.561	199,525	E
152	798	44.931692	510	2.285	5,302	E
153	724	44.922372	40,330	14.370	232,621	E
154	598	44.854847	23,920	52.388	107,811	E
155	637	44.754023	42,450	64.579	324,069	E
156	736	44.728728	24,790	64.990	80,926	E
157	624	44.655106	28,780	31.529	155,018	E
158	734	44.638348	16,740	46.753	81,492	E
159	553	44.521653	15,280	19.732	89,861	E
160	658	44.368198	58,130	100.743	409,150	E
161	639	44.311250	16,480	76.495	68,063	E
162	760	43.644785	9,570	15.472	58,457	E
163	676	43.455018	41,740	17.466	186,637	E
164	540	43.314060	57,560	39.676	235,923	E
165	691	43.301632	60,540	110.101	360,305	E
166	518	41.267223	108,310	201.922	629,309	E



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V. TABLE FIVE: CONJECTURAL VARIATION

I calculate the coefficient of conjectural variation in each regional cluster by solving for  $v_i$  in the equation:

$$\frac{(p_{0,i} - mc)}{p_{0,i}} = \frac{HHI(1 + v_i)}{|e|}, \text{ where}$$

$p_{0,i}$  = pre-merger price of DBS in regional cluster  $i$  (as calculated in Table Three),

$mc$  = the lower of the two firms' marginal costs per month (\$26.80, as calculated in Table Two),

$HHI$  = Herfindahl Hirschman Index,

$v_i$  = coefficient of conjectural variation in regional cluster  $i$ , and

$|e|$  = absolute value of the own-price elasticity of demand for DirecTV (as calculated in Table Four).

I calculate an HHI of 0.54 from 2000 year-end subscriber data from the SEC filings of Hughes Electronics and Echostar Communications. On December 31, 2000, DirecTV had approximately 9.5 million subscribers<sup>3</sup> and Echostar had 5.26 million subscribers.<sup>4</sup>

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<sup>3</sup> Hughes Electronics SEC Form 10-K, filed March 6, 2001, at 2.

<sup>4</sup> Echostar Communications SEC Form 10-K, filed March 13, 2001, at 29.

### Estimates of Coefficients of Conjectural Variation

Cluster	Marginal Cost (mc)	Own-Price Elasticity (e)	Pre-Merger Monthly Price (P <sub>0</sub> )	Pre-Merger Margin (P <sub>0</sub> -mc) / P <sub>0</sub>	HHI	HHI /  e	1+v = [(P <sub>0</sub> -mc) / P <sub>0</sub> ] / (HHI /  e )	v	DBS Penetration Rate	Correlation Coefficient Between DBS Penetration Rate and P <sub>0</sub>
Carolinas	\$26.80	-1.547597	\$51.15	47.6%	0.54	0.34893	1.36415	0.36415	18.4%	-0.504756907
Gulf Coast	\$26.80	-1.547597	\$50.98	47.4%	0.54	0.34893	1.35915	0.35915	17.7%	
Hoosier	\$26.80	-1.547597	\$49.66	46.0%	0.54	0.34893	1.31893	0.31893	17.8%	
Appalachian	\$26.80	-1.547597	\$46.40	42.2%	0.54	0.34893	1.21027	0.21027	18.8%	
Chesapeake	\$26.80	-1.547597	\$57.06	53.0%	0.54	0.34893	1.51961	0.51961	11.5%	
Central Midwest	\$26.80	-1.547597	\$47.40	43.4%	0.54	0.34893	1.24521	0.24521	22.3%	
Upper Midwest	\$26.80	-1.547597	\$44.13	39.3%	0.54	0.34893	1.12527	0.12527	16.6%	
Gator	\$26.80	-1.547597	\$49.10	45.4%	0.54	0.34893	1.30144	0.30144	11.9%	
Sierra Nevada	\$26.80	-1.547597	\$55.14	51.4%	0.54	0.34893	1.47271	0.47271	12.5%	
Native American Plains	\$26.80	-1.547597	\$51.07	47.5%	0.54	0.34893	1.36177	0.36177	16.4%	
Plains	\$26.80	-1.547597	\$48.43	44.7%	0.54	0.34893	1.27983	0.27983	14.9%	
Northern Plains	\$26.80	-1.547597	\$47.29	43.3%	0.54	0.34893	1.24148	0.24148	18.2%	
Northwest	\$26.80	-1.547597	\$47.97	44.1%	0.54	0.34893	1.26438	0.26438	17.0%	
Upper New England	\$26.80	-1.547597	\$50.61	47.0%	0.54	0.34893	1.34814	0.34814	21.5%	



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## VI. TABLE SIX: DIRECTV POST MERGER MONOPOLY PRICES

I calculate the post merger monthly monopoly price of \$75.75 for DirecTV in Table Six by solving for  $p$  in the following equation:

$$\frac{(p - mc)}{p} = -\frac{1}{e}, \text{ where}$$

$p$  = post-merger price of DirecTV,

$mc$  = the lower of the two firms' marginal costs per month (\$26.80, as calculated in Table Two), and

$e$  = the own-price elasticity of demand for DirecTV (-1.55, as calculated in Table Four).

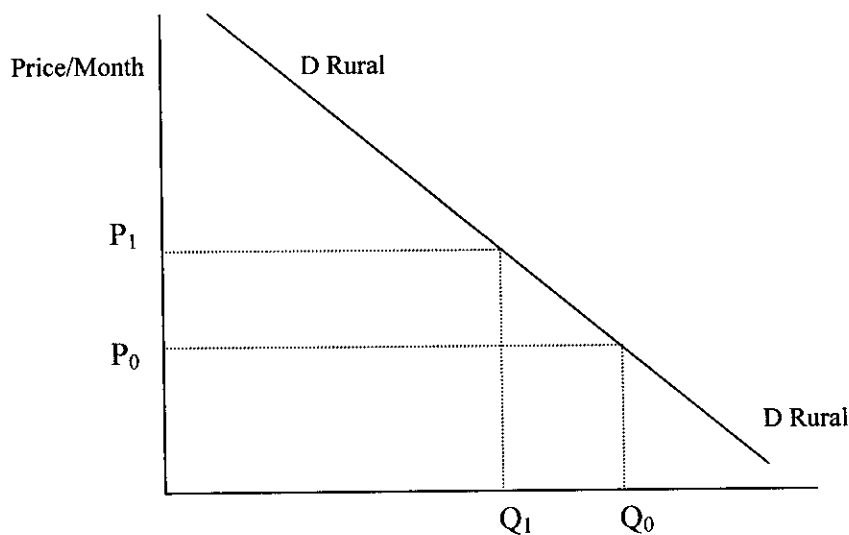
The post merger monopoly price is the same in all of the regional clusters because my calculations of  $mc$  and  $e$  do not vary across the regional clusters.





**VII. TABLE SEVEN: CONSUMER LOSSES FROM POST MERGER PRICE INCREASES**

What consumers lose from the higher prices when there is only one DBS provider in rural areas can be indicated by considering the “transfer” and “deadweight” losses illustrated by areas A and B in the figure below. The figure depicts the increase in price ( $P_1 - P_0$ ) from only a single provider and the effect that has on the number of subscribers as reduced from  $Q_0$  to  $Q_1$ . The “transfer” loss for surviving subscribers is how much more they pay, the increase in price times the number of subscribers  $(P_1 - P_0)Q_1$  or Area A. The deadweight loss in subscribers is shown by the increase in price  $(P_1 - P_0)$  multiplied by the loss of subscribers  $(Q_0 - Q_1)$  divided by two or Area B. The consumer losses for each regional cluster in Table Seven are equal to the sum of areas A and B for each regional cluster.



### Estimates of DirecTV Monthly Consumer Losses

Cluster	Marginal Cost (mc)	Own-Price Elasticity (e)	Pre-Merger Monthly Price (P <sub>0</sub> )	Post-Merger Monthly Price P <sub>1</sub> = mc / (1+1/e)	Pre-Merger Monthly Subscribers (Q <sub>0</sub> )	Post-Merger DBS Subscribers (Q <sub>1</sub> = ε Q <sub>0</sub> (P <sub>1</sub> -P <sub>0</sub> ) / P <sub>0</sub> + Q <sub>0</sub> )	A = Q <sub>1</sub> (P <sub>1</sub> -P <sub>0</sub> )	B = [(P <sub>1</sub> -P <sub>0</sub> )(Q <sub>0</sub> -Q <sub>1</sub> )] / 2	Total Consumer Losses = A + B
Carolinas	\$26.80	-1.547597	\$51.15	\$75.75	191,739	49,027	\$1,206,127	\$1,755,439	\$2,961,565
Gulf Coast	\$26.80	-1.547597	\$50.98	\$75.75	142,521	35,356	\$875,796	\$1,327,274	\$2,203,070
Hoosier	\$26.80	-1.547597	\$49.66	\$75.75	82,909	15,478	\$403,921	\$879,851	\$1,283,772
Appalachian	\$26.80	-1.547597	\$46.40	\$75.75	67,738	1,414	\$41,496	\$973,482	\$1,014,978
Chesapeake	\$26.80	-1.547597	\$57.06	\$75.75	36,432	17,959	\$335,739	\$172,669	\$508,408
Central Midwest	\$26.80	-1.547597	\$47.40	\$75.75	62,108	4,608	\$130,657	\$815,203	\$945,861
Upper Midwest	\$26.80	-1.547597	\$44.13	\$75.75	21,806	-2,374	-\$75,055	\$382,290	\$307,235
Gator	\$26.80	-1.547597	\$49.10	\$75.75	19,243	3,079	\$82,057	\$215,397	\$297,455
Sierra Nevada	\$26.80	-1.547597	\$55.14	\$75.75	12,691	5,348	\$110,244	\$75,692	\$185,936
Native American Plains	\$26.80	-1.547597	\$51.07	\$75.75	11,958	3,014	\$74,397	\$110,376	\$184,773
Northern Plains	\$26.80	-1.547597	\$48.43	\$75.75	6,565	834	\$22,782	\$78,288	\$101,070
Northwest	\$26.80	-1.547597	\$47.29	\$75.75	9,145	626	\$17,829	\$121,237	\$139,065
Upper New England	\$26.80	-1.547597	\$47.97	\$75.75	12,918	1,336	\$37,131	\$160,915	\$198,046
			\$50.61	\$75.75	17,197	3,977	\$99,989	\$166,176	\$266,166