

New York Load Profile Development

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Purpose

- ◆ To identify potential for demand response by customer segment
 - *Residential*
 - *Commercial*
 - *Industrial*
- ◆ To identify potential for demand response by end use
- ◆ To improve load forecasting
- ◆ To understand where additional opportunities for demand response resource deployment may exist

Residential Load Profile

- ◆ Create a Residential Load Profile for 2006
 - *Utility Data from 2001 and 2006*
 - *Number of Households from Eshapes 2001*

- ◆ Results
 - *Total number of Households per Market Area*
 - *Total number of Households as Single and Multi Family*
 - *Total number of Households as Single and Multi Family by Fuel Type and by AC Type*
 - *Total MWh by Single and Multi Family by End Use Consumption*
 - June, July, August
 - All 24 Hours, Noon to 6pm
 - Peak Use
 - *Load Shape by Month by Hour*

Categories of Data from Eshapes

Market Areas

- *Albany-Schenectady-Troy*
- *Buffalo-Niagara Falls*
- *Nassau-Suffolk*
- *New York*
- *Rochester*
- *Non-MSA*

Fuel Type/AC Type

- *Elec Heat/CAC*
 - *Elec Heat/RAC*
 - *Elec Heat/No AC*
 - *Gas Heat/CAC*
 - *Gas Heat/RAC*
 - *Gas Heat/No AC*
 - *Other/No Heat*
- Electric**
- Fossil**

Categories of Data from Eshapes

Household Type

- *MultiFamily*
- *SingleFamily*

End Use Consumption

- *ElecHeat*
- *Cooling*
- *Refrig*
- *Freezer*
- *ElecCook*
- *Dishwash*
- *ElecMisc*
- *ElecDryer*
- *ElecDHW*
- *ClothesWash*
- *PoolSpa*
- *ColorTV*
- *Lighting*

NY Housing Units and Saturation

		AC_Type				
House_Type	Fuel_Type	CAC	HP	None	RAC	Grand Total
MF	Elec	84519	0	148091	130507	363117
	Fossil	555373	0	1065952	1861780	3483105
SF	Elec	16102	20349	77191	17882	131524
	Fossil	605939	0	934824	1562560	3103322
Grand Total		1261932	20349	2226059	3572729	7081069

		AC_Type				
House_Type	Fuel_Type	CAC	HP	None	RAC	Grand Total
MF	Elec	1.19%	0.00%	2.09%	1.84%	5.13%
	Fossil	7.84%		15.05%	26.29%	49.19%
SF	Elec	0.23%	0.29%	1.09%	0.25%	1.86%
	Fossil	8.56%		13.20%	22.07%	43.83%
Grand Total		17.82%	0.29%	31.44%	50.45%	100.00%

Annual MWh Totals by End Use

Annual MWh Totals							
	wElecHeat	wCooling	wRefrig	wFreezer	wElecCook	wDishwash	wElecMisc
Annual MWh Totals MF	850,783	1,828,012	4,108,214	1,045,504	586,881	684,677	5,236,582
Annual MWh Totals SF	1,599,933	1,484,271	3,505,539	117,495	349,941	453,910	3,215,155
Annual Total	2,450,716	3,312,284	7,613,753	1,162,998	936,821	1,138,587	8,451,737

Annual MWh Totals							
	wElecDryr	wElecDHW	wCIWash	wPoolSpa	wColorTV	wLighting	wTotal
Annual MWh Totals MF	1,384,616	1,596,239	275,880	430,046	2,964,974	3,762,946	24,755,353
Annual MWh Totals SF	553,808	465,655	125,322	200,777	2,879,173	2,594,149	17,545,129
Annual Total	1,938,424	2,061,894	401,202	630,823	5,844,148	6,357,095	42,300,482

Multi Family MWh by End Use

Total Households: 3,846,223

Max MW Values MF							
	wElecHeat	wCooling	wRefrig	wFreezer	wElecCook	wDishwash	wElecMisc
June All Hrs	156	1824	507	15	109	102	422
June 12 - 6	39	1824	494	15	109	80	395
July All Hrs	18	2000	519	17	105	97	422
July 12 - 6	5	2000	506	17	105	77	395
Aug All Hrs	45	1663	519	17	109	97	422
Aug 12 - 6	12	1663	506	17	109	77	395
Summer Peak	156	2000	519	17	109	102	422

Max MW Values MF							
	wElecDryr	wElecDHW	wCIWash	wPoolSpa	wColorTV	wLighting	wTotal
June All Hrs	131	102	28	54	486	676	3309
June 12 - 6	131	70	26	53	454	174	3309
July All Hrs	126	87	27	54	486	648	3479
July 12 - 6	126	60	24	53	454	167	3479
Aug All Hrs	126	82	27	54	486	648	3252
Aug 12 - 6	126	56	24	53	454	181	3252
Summer Peak	131	102	28	54	486	676	3479

Single Family MWh by End Use

Total Households: 3,234,846

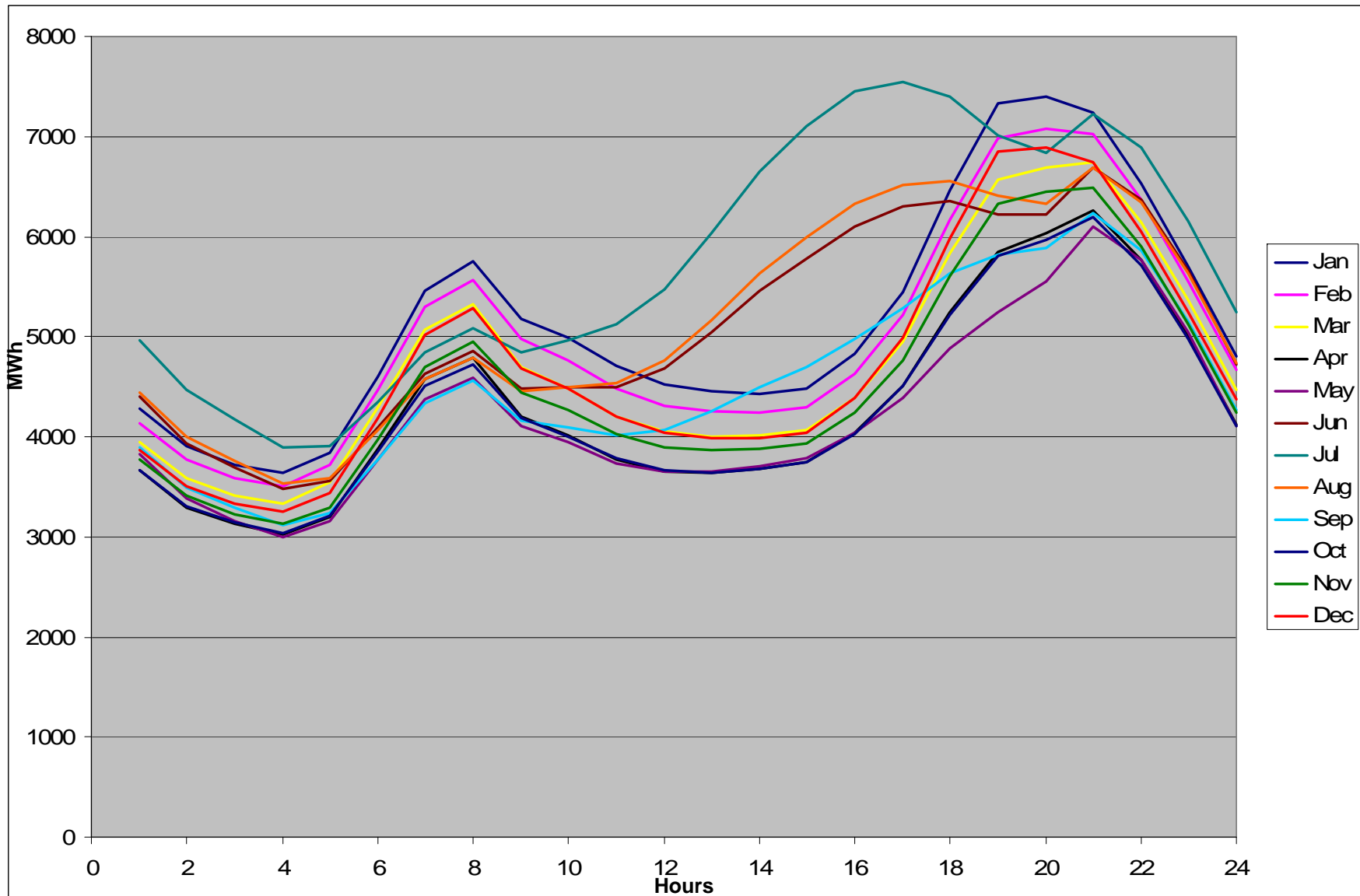
Max MW Values SF

	wElecHeat	wCooling	wRefrig	wFreezer	wElecCook	wDishwash	wElecMisc
June All Hrs	94	2723	594	136	185	162	681
June 12 - 6	14	2723	579	136	185	122	659
July All Hrs	0	2984	608	148	178	155	681
July 12 - 6	0	2984	593	148	178	116	659
Aug All Hrs	20	2431	608	148	185	155	681
Aug 12 - 6	4	2431	593	148	185	116	659
Summer Peak	94	2984	608	148	185	162	681

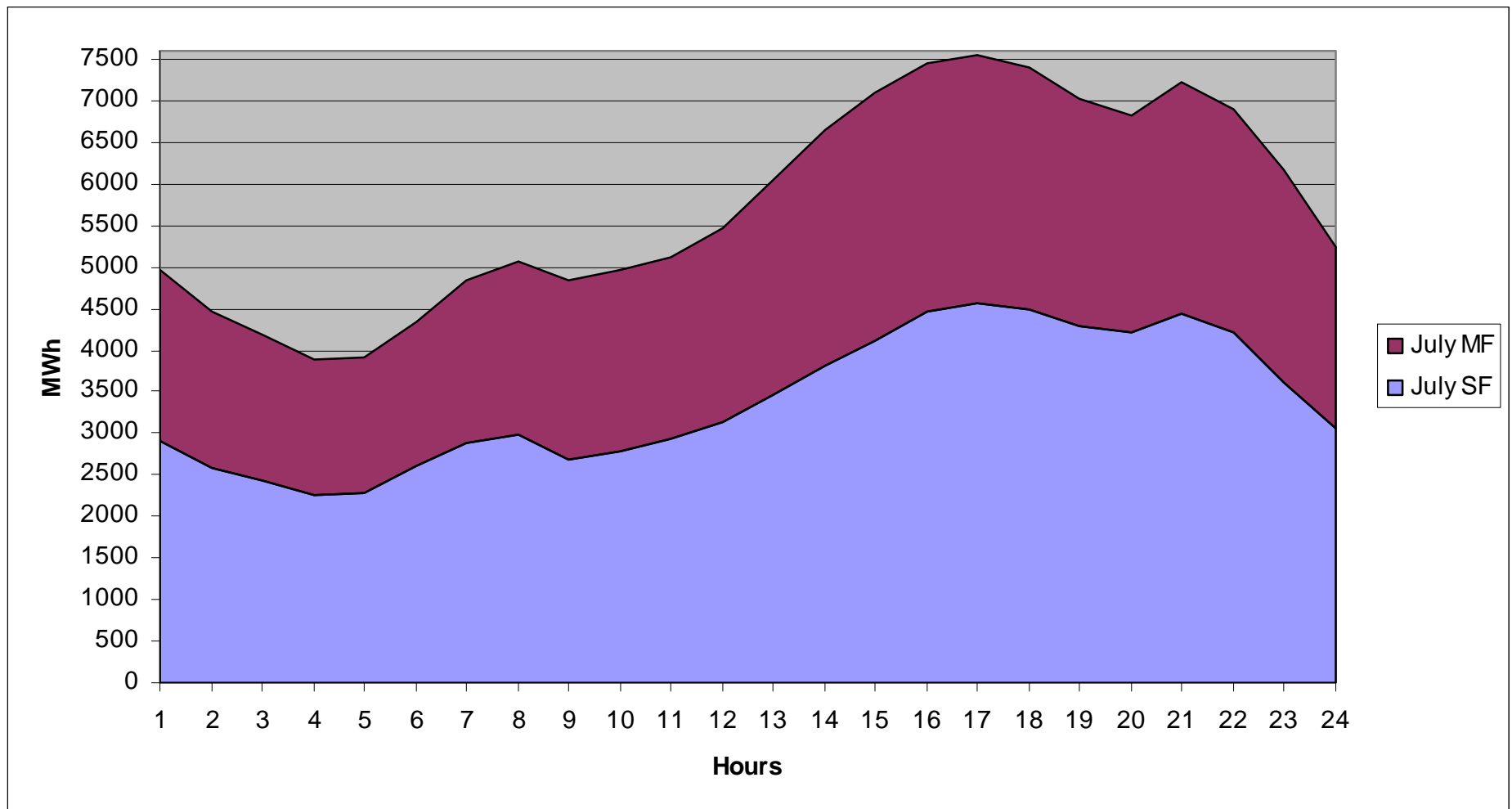
Max MW Values SF

	wElecDryr	wElecDHW	wCIWash	wPoolSpa	wColorTV	wLighting	wTotal
June All Hrs	329	346	63	116	551	1108	5188
June 12 - 6	329	238	57	114	512	246	5188
July All Hrs	316	295	59	116	551	1062	5416
July 12 - 6	316	202	53	114	512	236	5416
Aug All Hrs	316	277	59	116	551	1063	5111
Aug 12 - 6	316	190	53	114	512	281	5111
Summer Peak	329	346	63	116	551	1108	5416

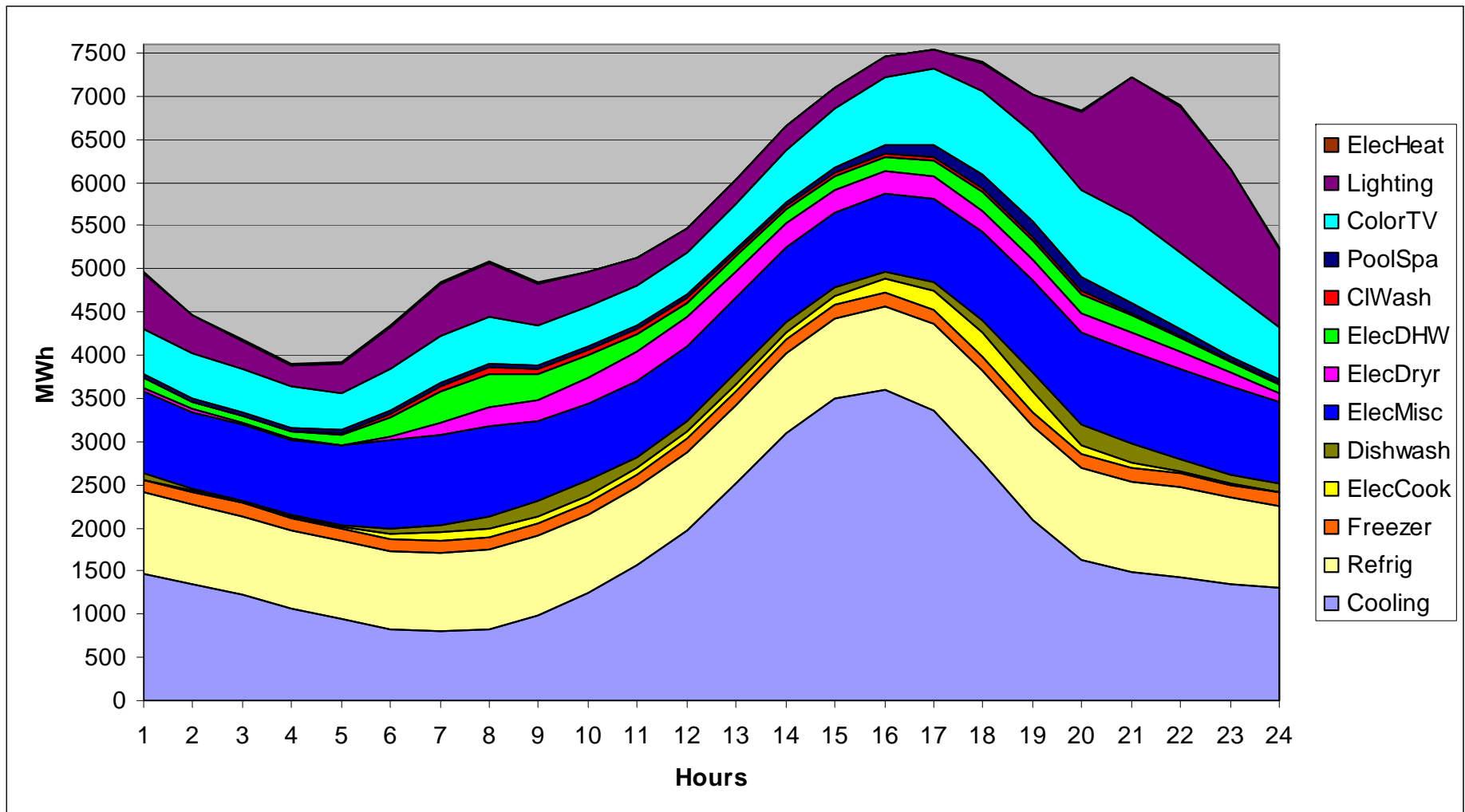
Residential Load Profile: 54% Load Factor



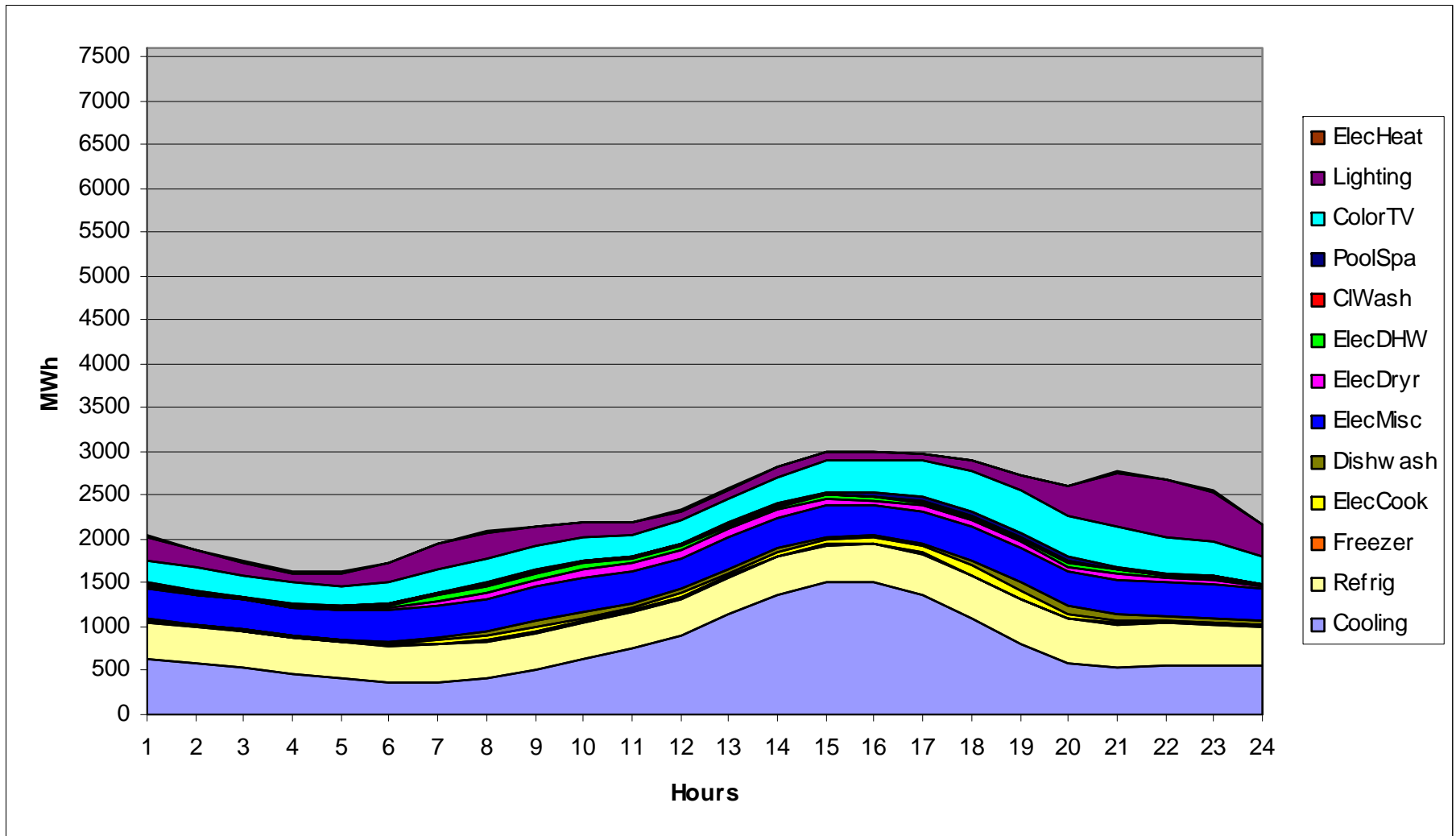
Ave MWh End Use Total: July Multi-Family and Single-Family



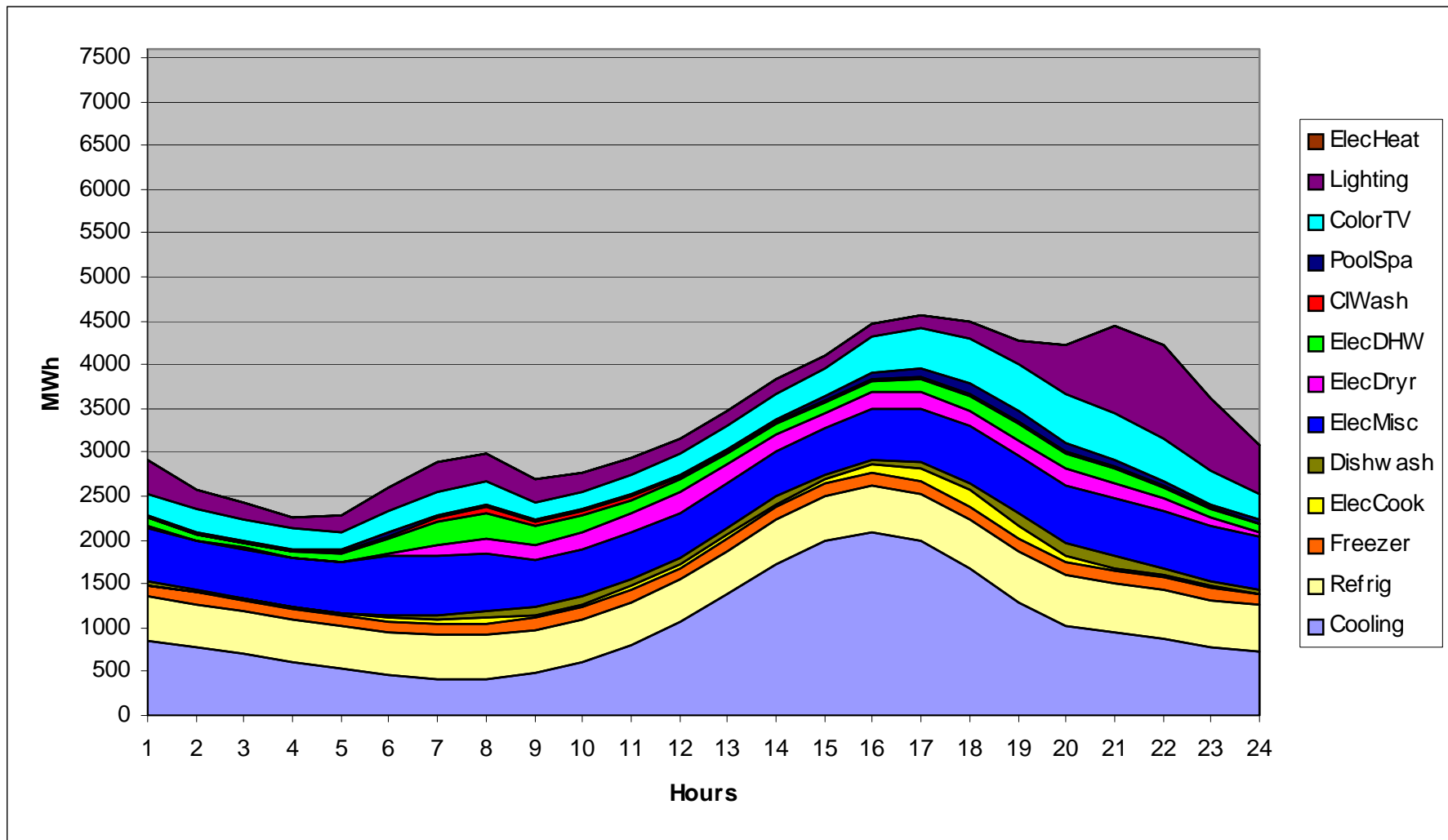
Average MWh End Use: July All Households



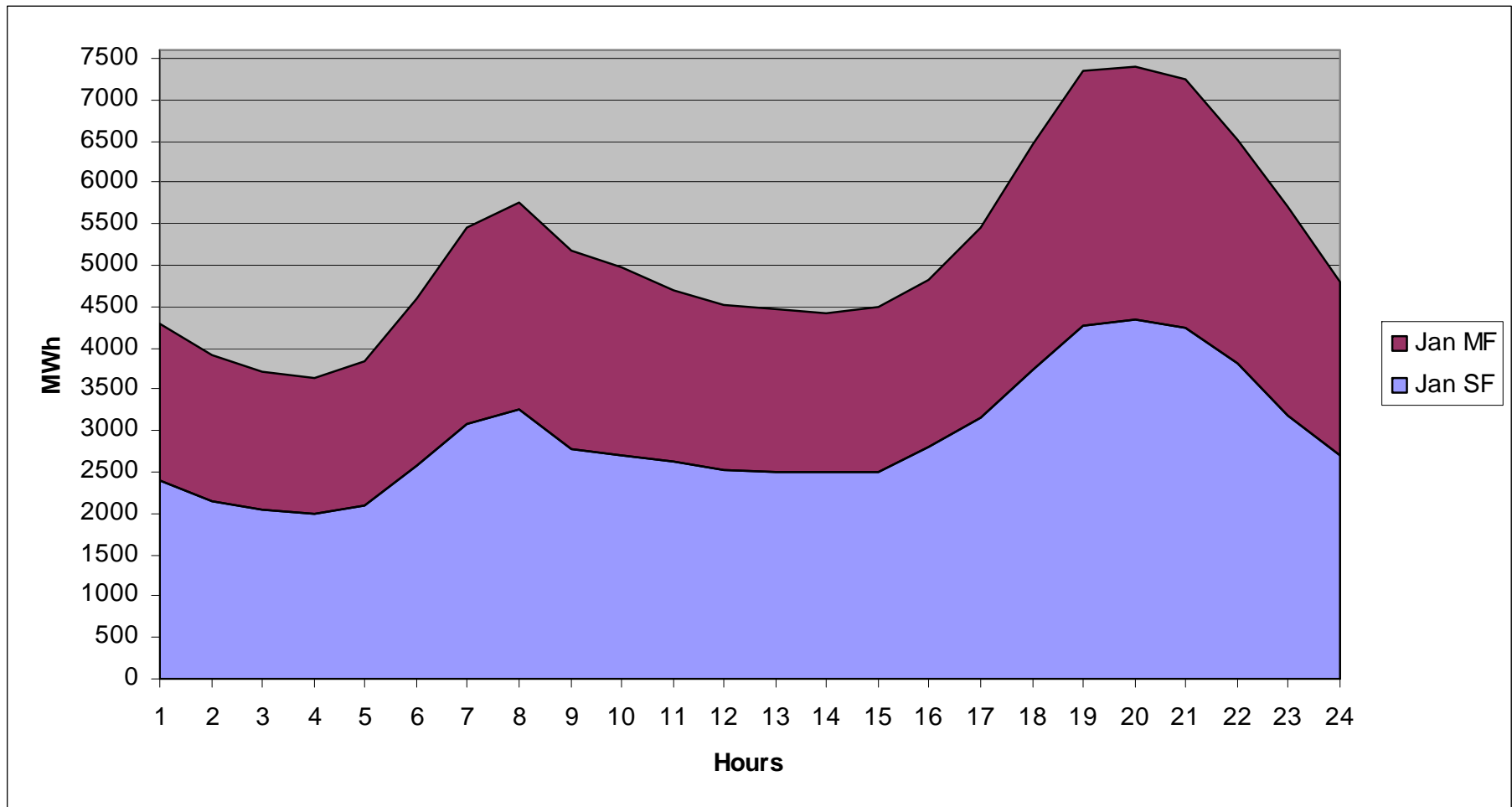
Ave MWh End Uses: July Multi-Family



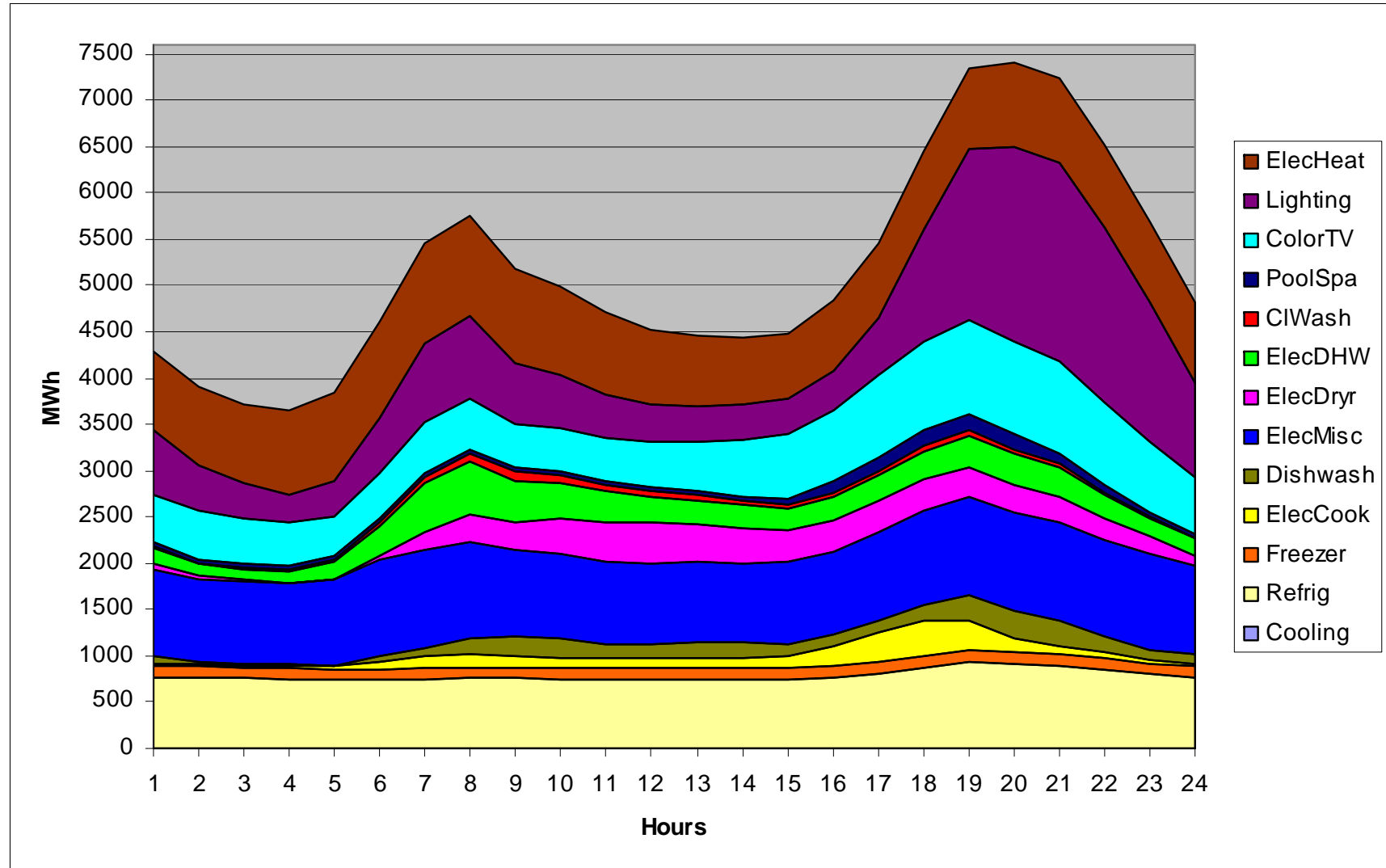
Ave MWh End Uses: July Single-Family



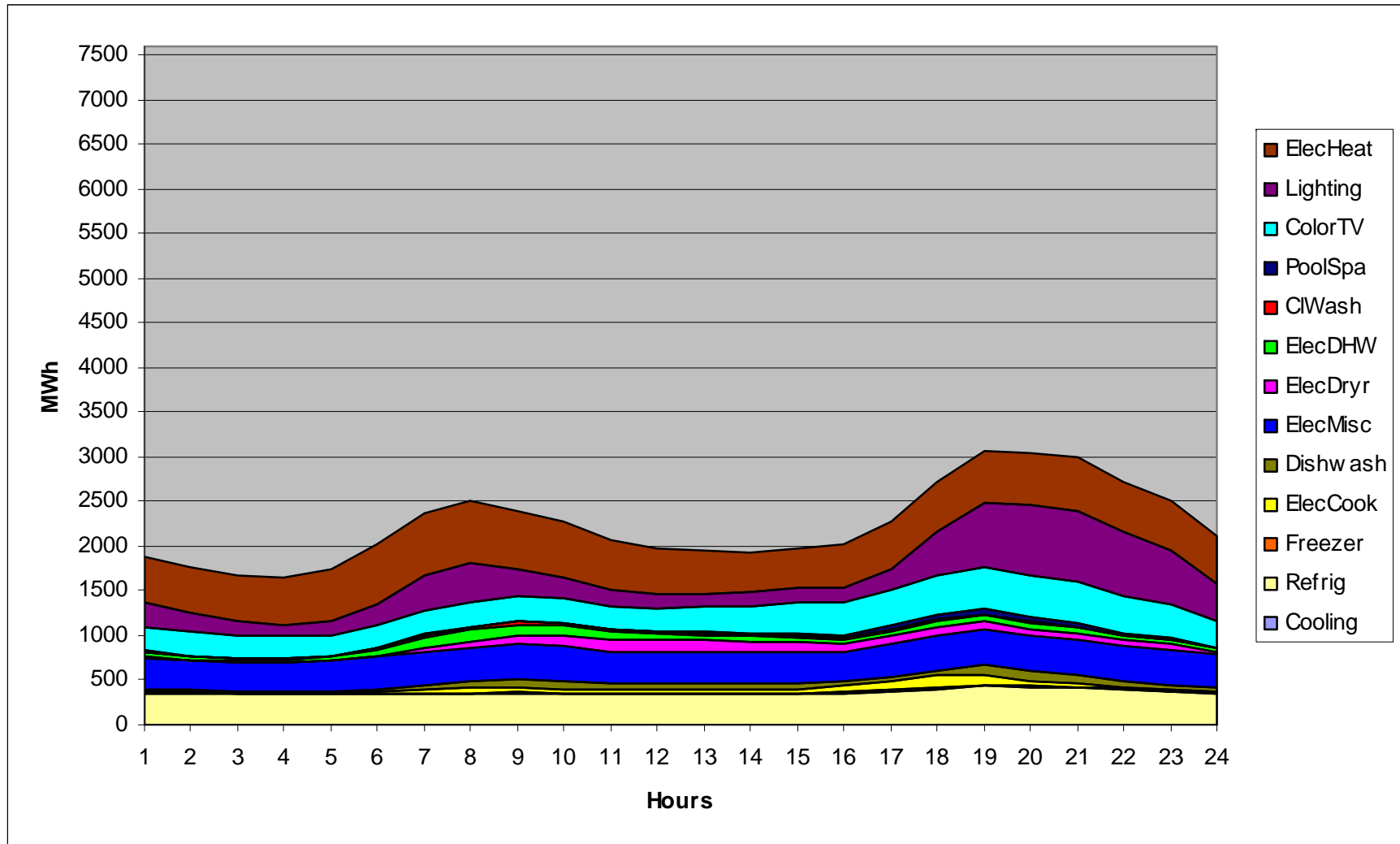
Ave MWh End Use Total: January Multi-Family and Single-Family



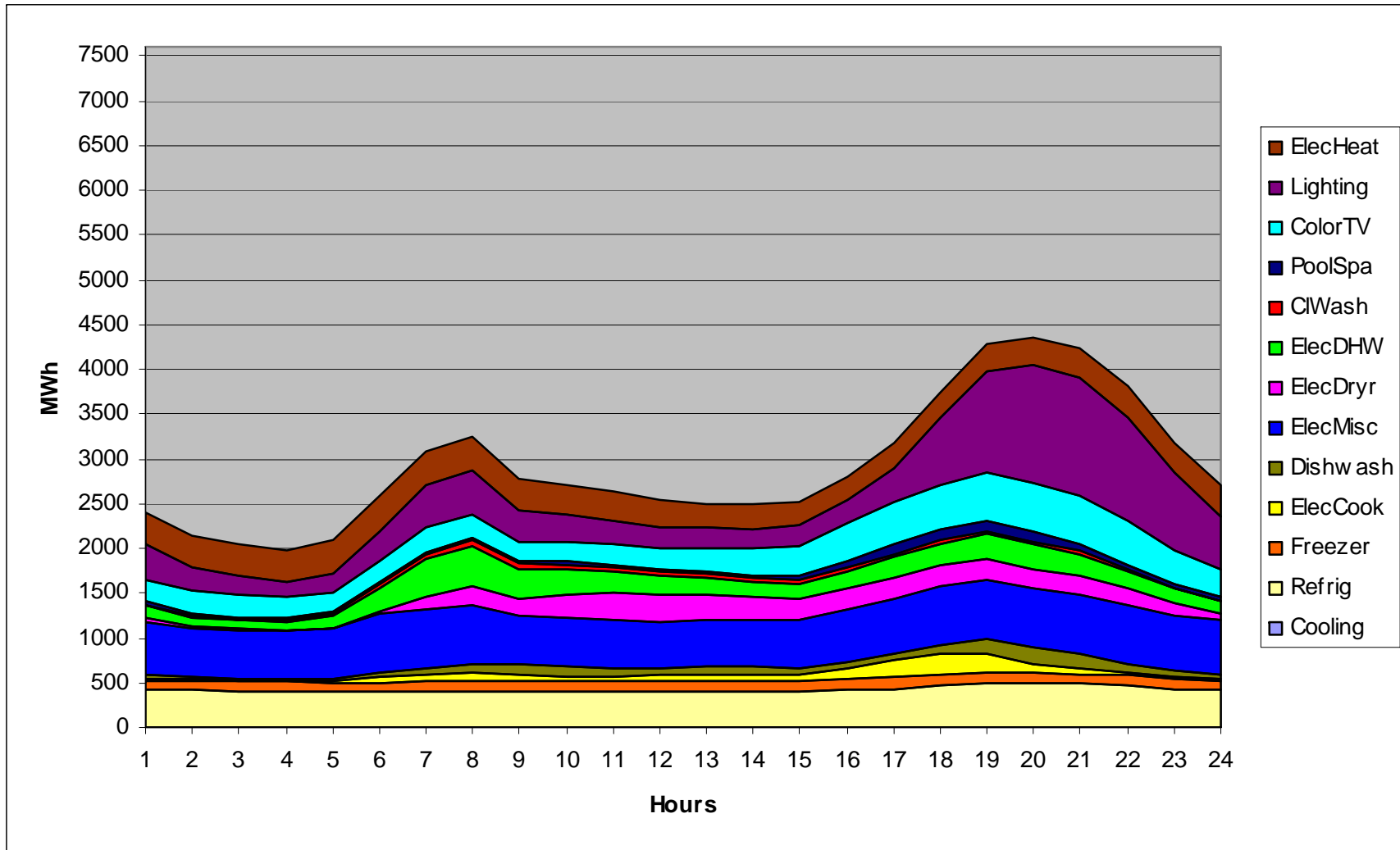
Average MWh End Use: January All Households



Ave MWh End Uses: January Multi-Family



Ave MWh End Uses: January Single-Family



Data for Commercial Sector

- ◆ Commercial Building Statistics (2003)
 - *EIA CBECS (Mid Atlantic Region – NY, NJ, PA)*
 - Number of buildings (in thousands)
 - Total Floorspace (million square feet)
 - Energy consumption by end use (micro data not available)
- ◆ Energy Consumption Data
 - *2003 EIA State Energy Profiles*
 - MW hrs sold for NY, NJ, PA respectively.
 - *2003 & 2006 FERC Form 1*
 - MW hrs as sold by the NYS distribution utilities
 - *Eshapes (2001)*
 - End use load profile data by business type, market area and end use

Data for Commercial Sector

◆ Employment data

- *County Business Patterns (US Census) (2003 & 2006)*
 - employment data for the NYS metropolitan statistical areas
 - Building data for the NYS metropolitan statistical areas
 - Does not include Government employees
- *Economy.com (2003 & 2006)*
 - Employment data, including Government employees

Next Steps - Commercial

- ◆ Use State Energy Profiles and EIA CBECS data to determine NY's share of number of buildings and sq. ft. from Mid Atlantic totals
- ◆ New York employment data by business type and market area
- ◆ Using an average sq ft per employee, determine the number of businesses by market area, building size, and business type
- ◆ Use energy consumption data from Eshapes to build end use profiles by market area, building size and business type
- ◆ Reconcile total consumption to 2006 FERC Form 1 distribution utility electricity sales reports



The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for the state's bulk electricity system.

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