

2010

Historical energy consumption data

A look at historical energy consumption helps provide a context and base line for our energy conservation, energy efficiency and renewable energy development efforts. Xcel Energy and the San Luis Valley Rural Electrical Cooperative were willing to provide this project, with local government approval, energy consumption data, aggregated so that no proprietary customer or member information was disclosed. The two entities initially provided monthly electricity and gas data for a two year period, from 2009 and 2010, as requested.

Xcel Energy and the SVL Rural Electrical Cooperative have very different organizational structures: one, an investor-owned utility; the other, a rural electrical association. As such, the two have different regulatory reporting requirements and different data base designs. In particular, different customer/member categories posed a challenge. Looking for common ground in the user category definitions for the data analysis left us with just two categories: residential, and commercial/industrial/municipal.

The next six pages provide spreadsheet and graphic summaries of the information provided. This information shows:

- A **3%** increase in annual residential electricity consumption from 2009 and 2010.
- A **15%** increase in annual commercial/ industrial/ municipal electricity consumption from 2009 and 2010.
- A **12%** increase in total electricity consumption in the San Luis Valley from 2009 to 2010.
- A **5%** increase in residential gas data from 2009 and 2010.
- A **57%** in 2010 in annual commercial/ industrial/municipal gas consumption, with 850% and 446% spikes in September and October, respectively. (The Community Energy Coordinator has asked Xcel to double-check the spreadsheet data and formula that resulted in these spikes.)
- A **26%** increase in total gas consumption in the San Luis Valley from 2009 to 2010.

Because a comparison of just two years of energy consumption data may be influenced by weather and other short-term factors, the Community Energy Coordinator solicited utility data as far back as 2001 from the REC and Xcel. That ten year range is significant to San Luis Valley life: it captures the 2002 drought, a watershed event that shifted the agricultural community's framework for managing the Valley's ability to meet its Rio Grande Water Compact delivery obligations. Unfortunately, Xcel had a significant change in its database in the last four to five years, so it will not be able to go back the full ten years.

The REC provided a chart that illustrates its total annual kilowatt hours sold since 1970, as well as its annual Form 7 reports back to 2001.

The chart that illustrates the REC's total annual kilowatt hours sold since 1970 appears on page 21. A few significant events are incorporated into the timeline:

- The 230 transmission line going live in 1984.

- The closing of the silver mine in Creede, one of the REC's biggest accounts, from 1984 through 1986, representing an estimated 3MW loss (which equates to 26 million kWh annually, assuming a 24/7/365 operation). Note the rebound exceeding 1984 sales, within just four years.
- The closing of a second big REC electricity account, the South Fork lumber mill, over the two year period 1999 - 2001. The mill's electrical consumption dropped from 6.6 million kWh in 2000 to 537 kWh in 2001. There was no discernable dip in overall annual sales.
- The 2002 drought prompted record electricity sales that year.
- Finally, another big account, the Closed Basin Project coming online and pumping in 1987 and 1988, then the start of their right-sizing the 1700 pumps in the system in 2006. To date about half the pumps have been replaced.

The information provided in the REC's annual Form 7 reports dated 2001-2010 are the source of the final three graphs in this chapter:

- Annual electricity sales by member classification, 2001-2010
- Monthly electricity sales by member classification, 2001-2005
- Monthly electricity sales by member classification, 2006-2010

When assessing the graphs, it is interesting to note the following:

- While the REC's year-round residential members increased consumption 23% from 2000 to 2010, overall San Luis Valley population actually dropped by 166 people, or 0.33% over the same period. (That's 1/3%, not 33%.) Nationally, average household consumption used to be 6-7 kWh/month, but in the last 3-4 years, it has increased to 9 kWh/month. Some of the increase can be attributed to the installation of electrical thermal systems (ETSs) in areas of the Valley not served by natural gas for home heating. Since those in poverty pay a disproportionate amount of household income on utilities, residential energy efficiency is a high priority.
- While irrigator members proportionally consume a lot of REC electricity, we can't necessarily conclude that that sector provides the best opportunity for efficiency. The two farm audits conducted during Summer 2011 assessed irrigation pumps and motors, but not sprinkler heads. CSU is pursuing a grant to conduct irrigation efficiency audits in 2012. There have been several programs and trends within the farming community towards efficiency over the years: the REC energy efficient pump incentives, Agro Engineering testing services, and a shift from high to low pressure systems.

A comparison of the REC charts with the consolidated REC/Xcel data shows that while the REC sold 216.5+ million kWh of electricity in 2010, the total combined REC + Xcel sales totaled 788 million kWh that same year.

There was some discussion at the September 2011 Steering Committee meeting about the feasibility of modeling the impact of drying up cropland in Subdistrict #1 on electricity consumption, and if it were possible to do that, how that might impact the transmission line discussion. While the talk around the Valley is that it will take five to ten years for 40,000 acres to move out of production, during that same period the silver mine near Creede is expected to reopen, and the Wolf Creek Village development may open. So history, as illustrated by the first graph, may repeat itself. Some of the strongest influences on consumption will be price, and perhaps the 19th century Jevons Paradox, which suggests that humans consider their energy efficiency gains as giving permission to consume more energy. For an explanation of the Jevons Paradox, go to

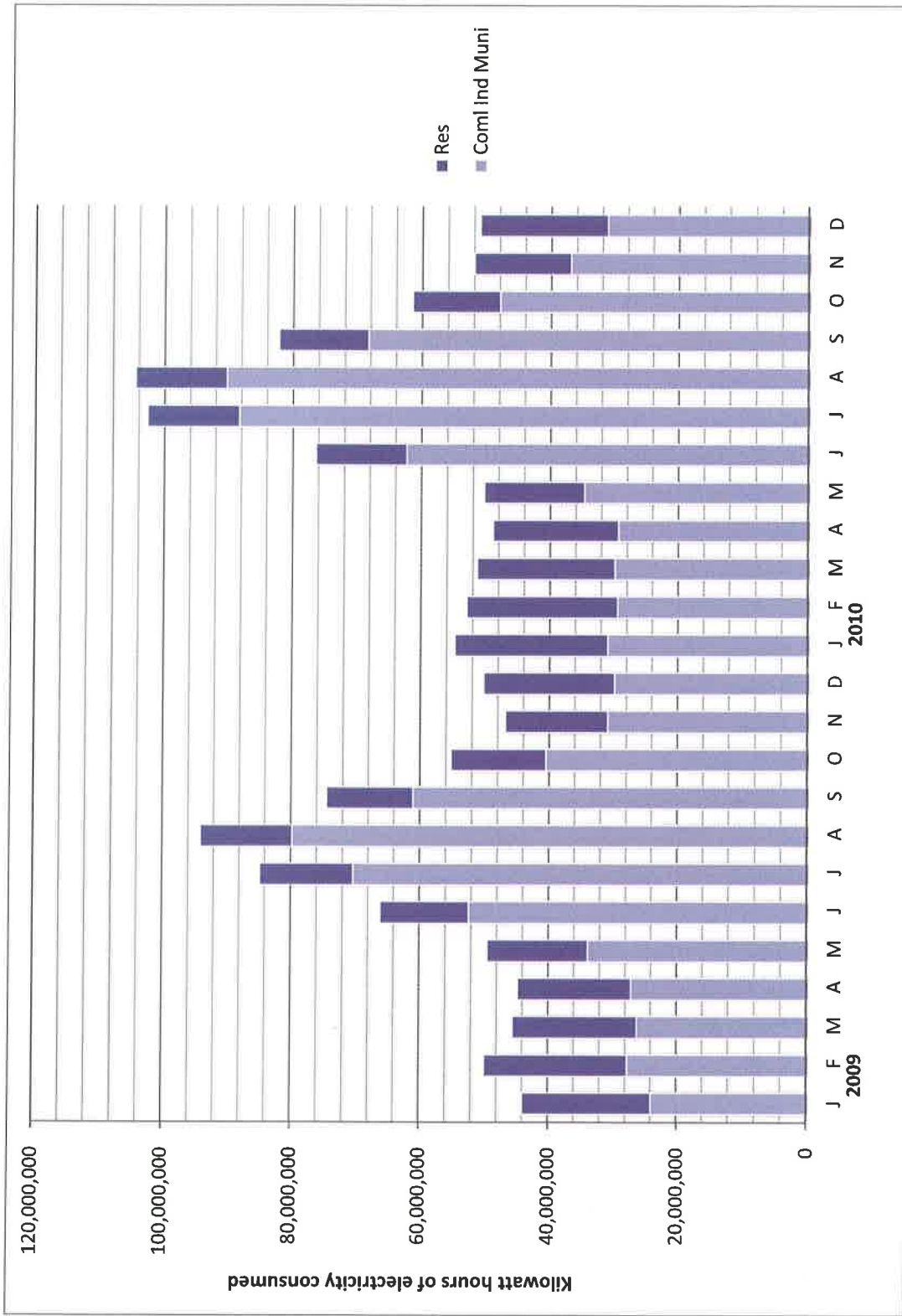
http://thebreakthrough.org/blog/2011/02/new_report_how_efficiency_can.shtml and/or
http://www.newyorker.com/reporting/2010/12/20/101220fa_fact_owen .)

ELECTRICITY CONSUMPTION IN THE SAN LUIS VALLEY (kWh)

	Residential		Commercial, Industrial & Municipal		Total		Change
	2009	2010	2009	2010	2009	2010	
January	19,996,986	23,738,023	24,035,925	30,995,888	44,032,911	54,733,911	24%
February	22,216,796	23,472,607	27,725,262	29,452,223	49,942,058	52,924,830	6%
March	19,346,425	21,403,296	26,220,337	29,930,354	45,566,762	51,333,650	13%
April	17,625,471	19,509,432	27,147,711	29,385,208	44,773,182	48,894,640	9%
May	15,660,759	15,631,595	33,876,334	34,659,199	49,537,093	50,290,794	2%
June	13,644,284	14,108,979	52,441,720	62,306,310	66,086,004	76,415,289	16%
July	14,389,880	14,283,344	70,394,151	88,329,776	84,784,031	102,613,120	21%
August	14,244,514	14,224,264	79,834,014	90,281,685	94,078,528	104,505,949	11%
September	13,484,649	13,884,563	61,028,567	68,313,101	74,513,216	82,197,664	10%
October	14,753,179	13,552,627	40,511,740	47,923,701	55,264,919	61,476,328	11%
November	15,928,282	14,978,784	30,934,912	36,974,501	46,863,194	51,953,285	11%
December	20,324,201	19,841,800	29,923,816	31,233,499	50,248,017	51,075,299	2%
TOTAL	201,615,426	208,629,314	504,074,489	579,785,445	705,689,915	788,414,759	12%

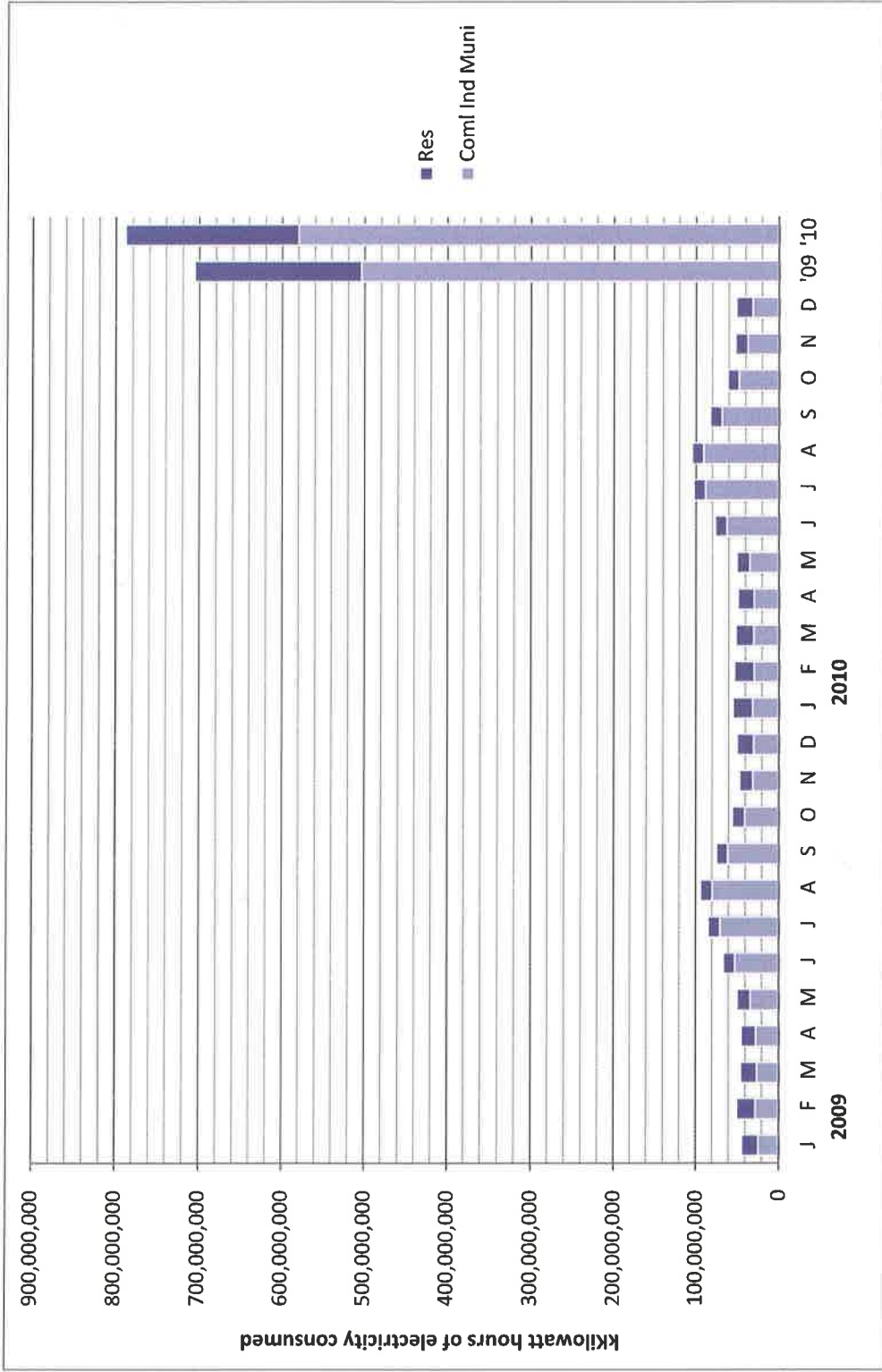
Aggregated data collected from the San Luis Valley Rural Electric Cooperative's annual Form 7 and Xcel Energy, with permission from San Luis Valley counties.

MONTHLY ELECTRICITY CONSUMPTION (KWH) IN THE SAN LUIS VALLEY BY SECTOR, 2009 – 2010



Aggregated data collected from the San Luis Valley Rural Electric Cooperative's annual Form 7 and Xcel Energy, with permission from San Luis Valley counties.

MONTHLY ELECTRICITY CONSUMPTION (KWH) IN THE SAN LUIS VALLEY, BY SECTOR, 2009 – 2010
WITH ANNUAL TOTALS



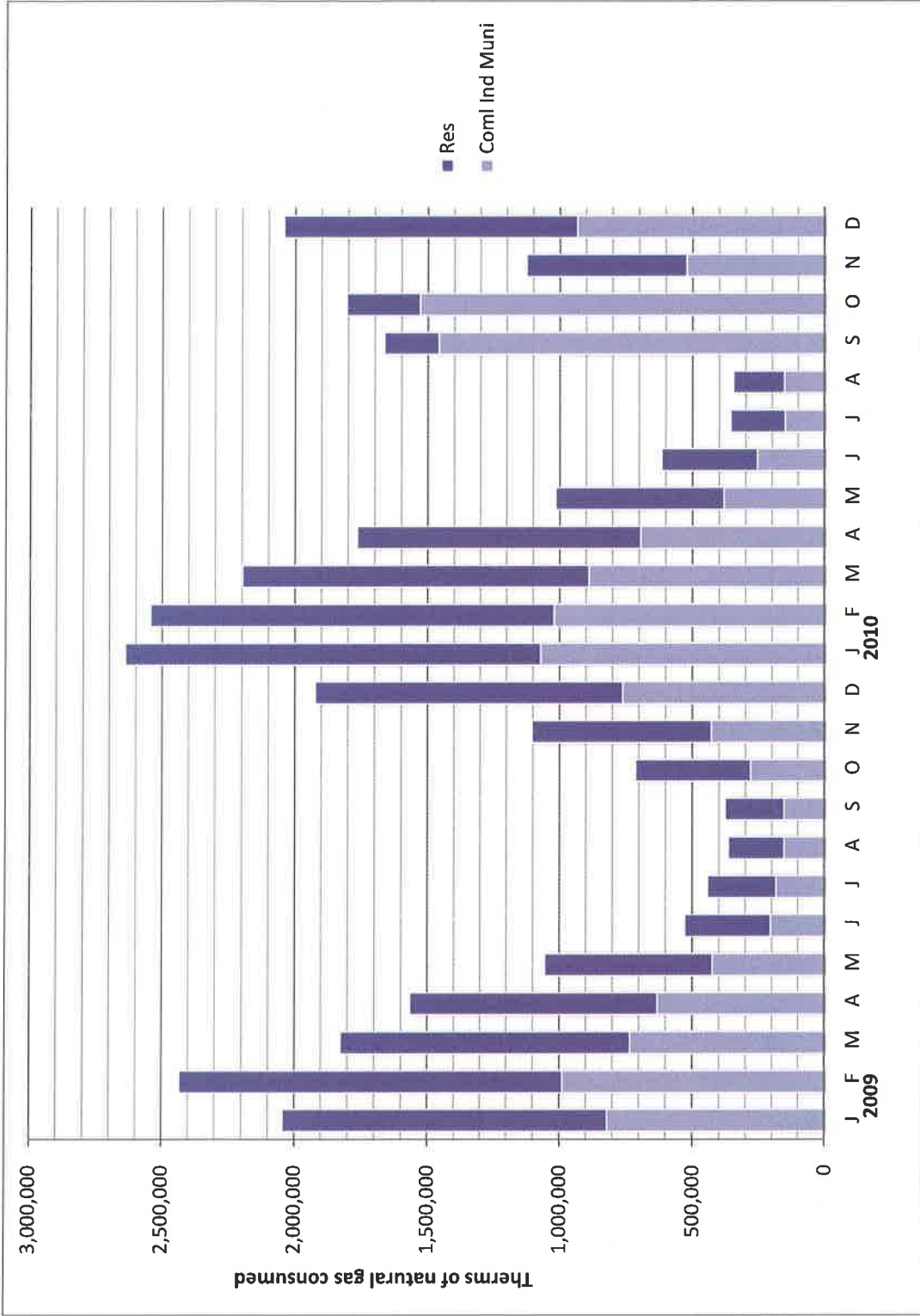
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NATURAL GAS CONSUMPTION IN THE SAN LUIS VALLEY (therms)

	Residential		Commercial, Industrial & Municipal		Total		Change
	2009	2010	2009	2010	2009	2010	
January	1,224,742	1,568,463	819,473	1,071,604	2,044,215	2,640,067	29%
February	1,443,879	1,522,981	989,145	1,020,756	2,433,024	2,543,737	5%
March	1,091,706	1,309,125	734,131	888,885	1,825,837	2,198,010	20%
April	936,518	1,070,275	630,037	694,088	1,566,555	1,764,363	13%
May	631,213	632,688	423,868	382,937	1,055,081	1,015,625	-4%
June	323,796	360,028	204,423	255,878	528,219	615,906	17%
July	259,696	208,512	183,314	149,068	443,010	357,580	-19%
August	211,262	192,869	153,224	153,467	364,486	346,336	-5%
September	223,042	206,268	153,515	1,458,681	376,557	1,664,949	342%
October	432,648	275,958	280,119	1,529,487	712,767	1,805,445	153%
November	674,255	604,145	428,556	521,925	1,102,811	1,126,070	2%
December	1,159,974	1,107,613	762,399	933,944	1,922,373	2,041,557	6%
TOTAL	8,612,731	9,058,925	5,762,204	9,060,720	14,374,935	18,119,645	26%

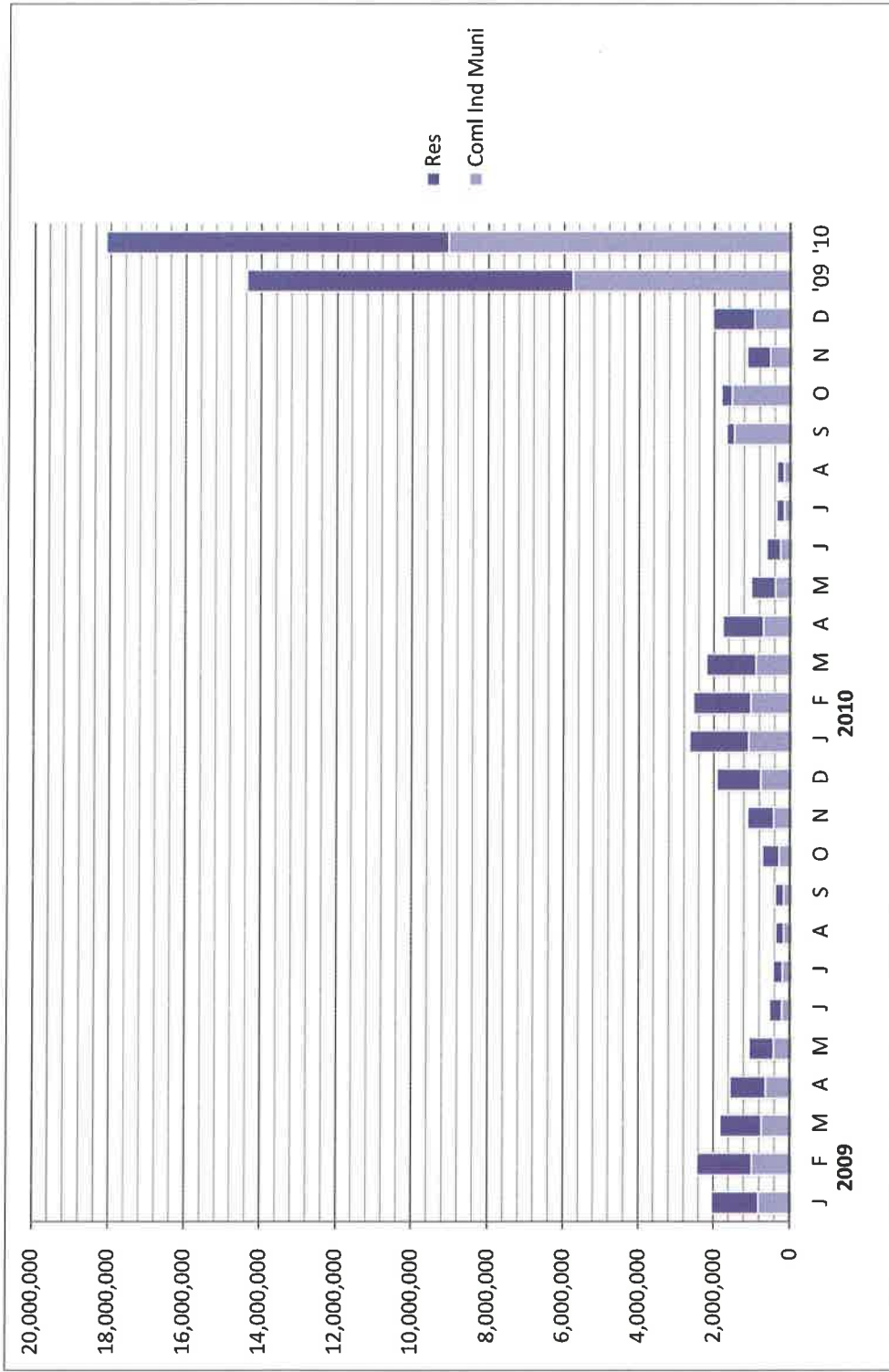
Aggregated gas data provided by Xcel Energy, with permission from San Luis Valley counties

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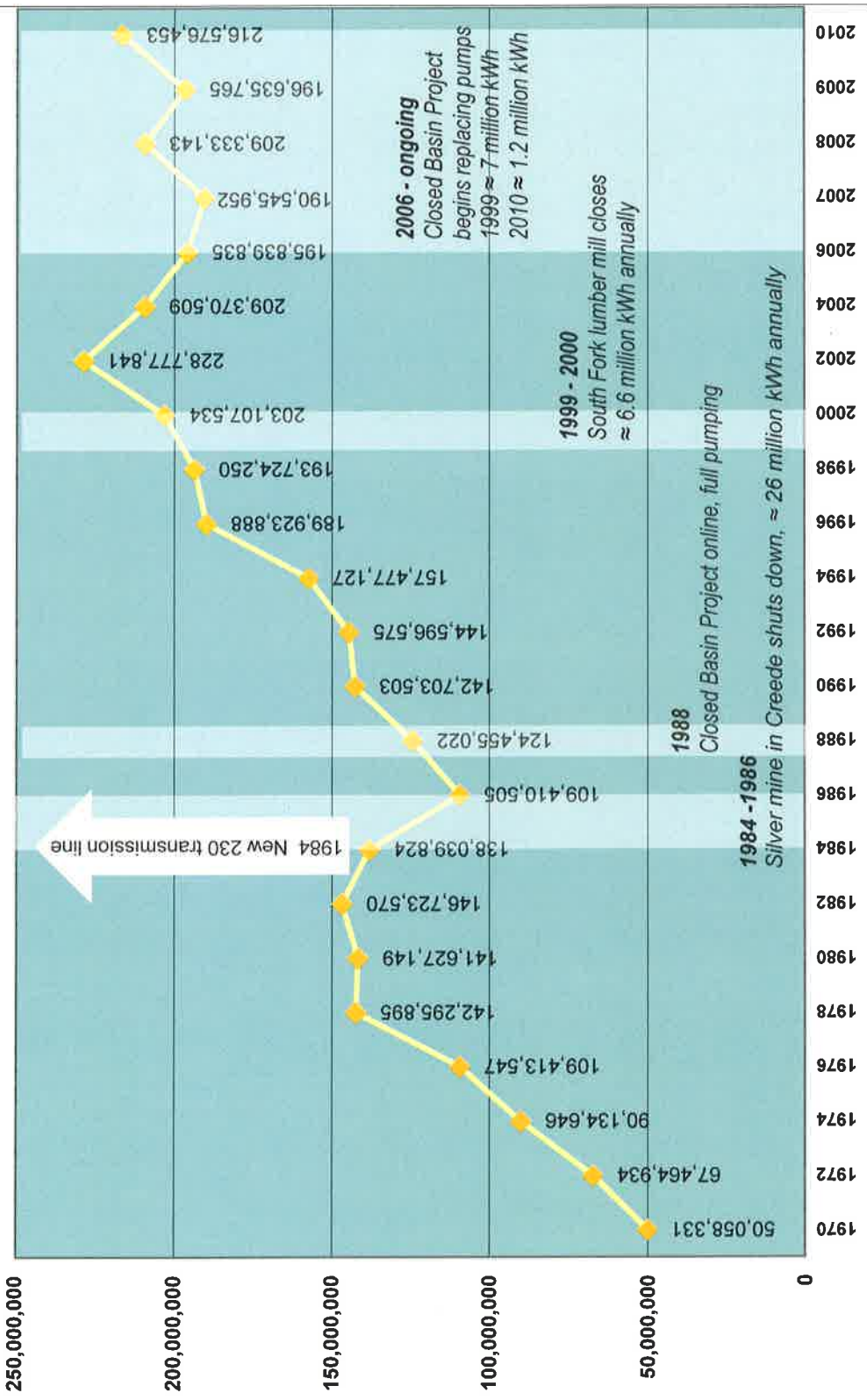
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WITH ANNUAL TOTALS



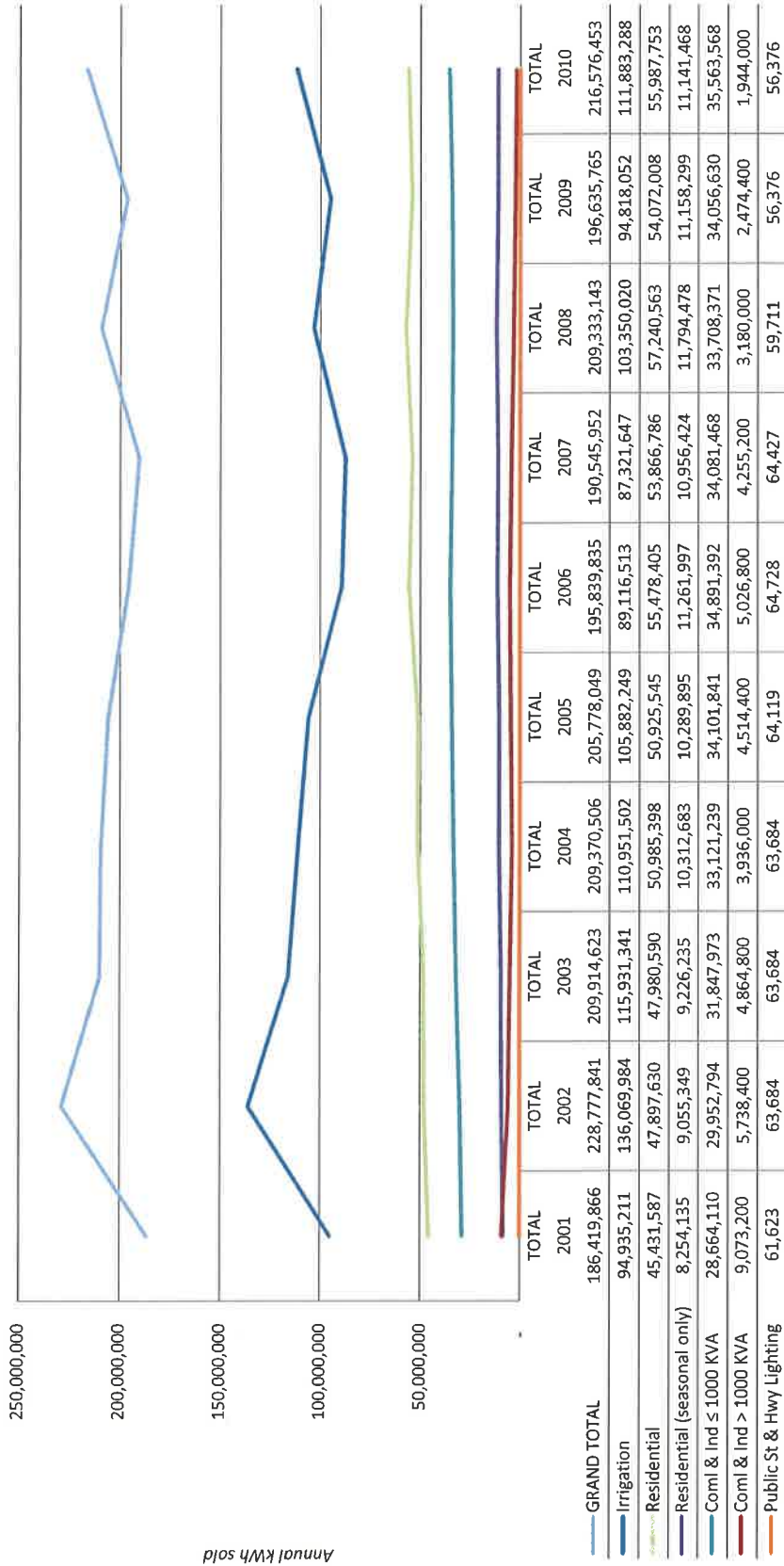
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SLV REC annual total kiloWatt hours (kWh) sold, 1970 - 2010



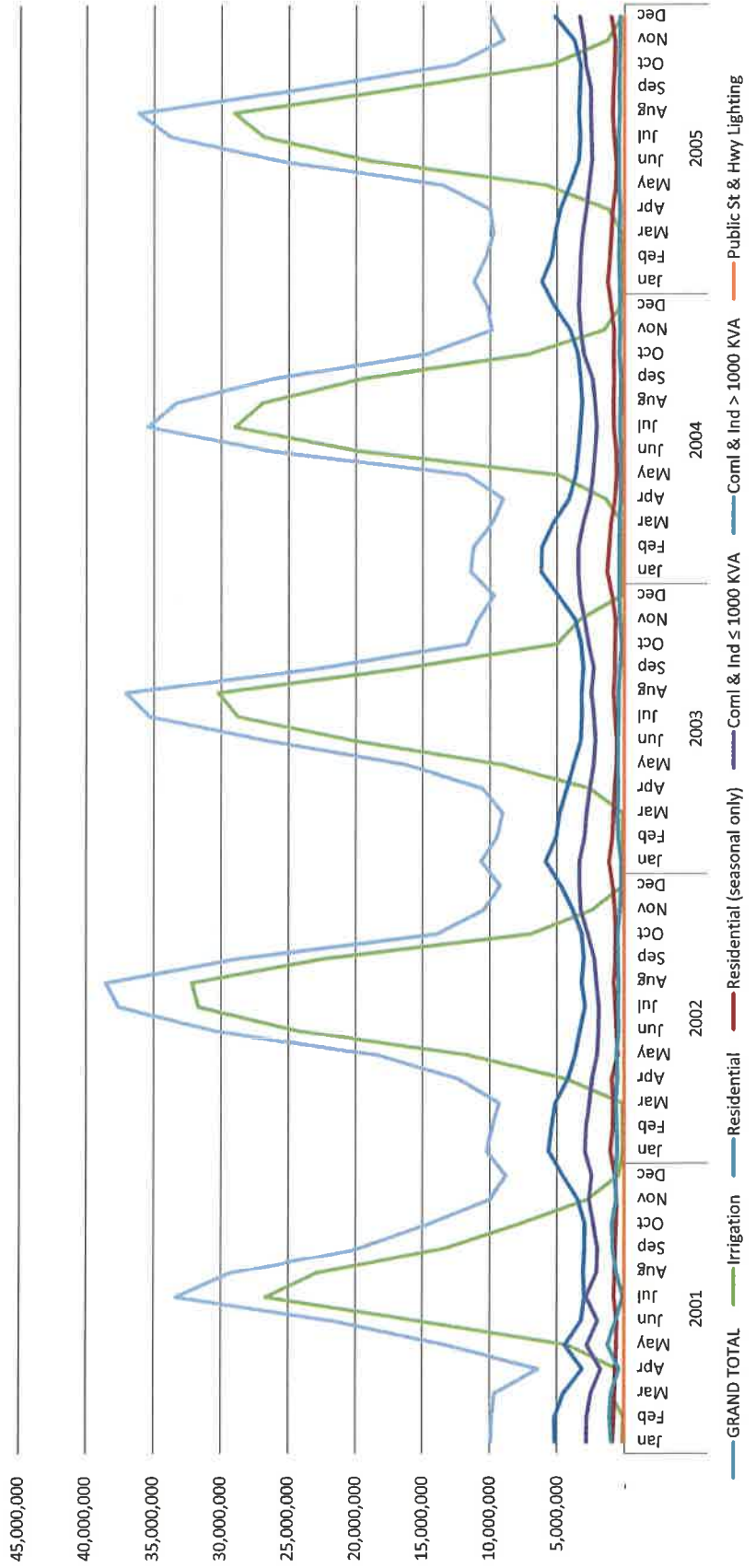
Data source: San Luis Valley Rural Electrical Cooperative

SLVREC Annual kWh sold by member classification, 2001-2010



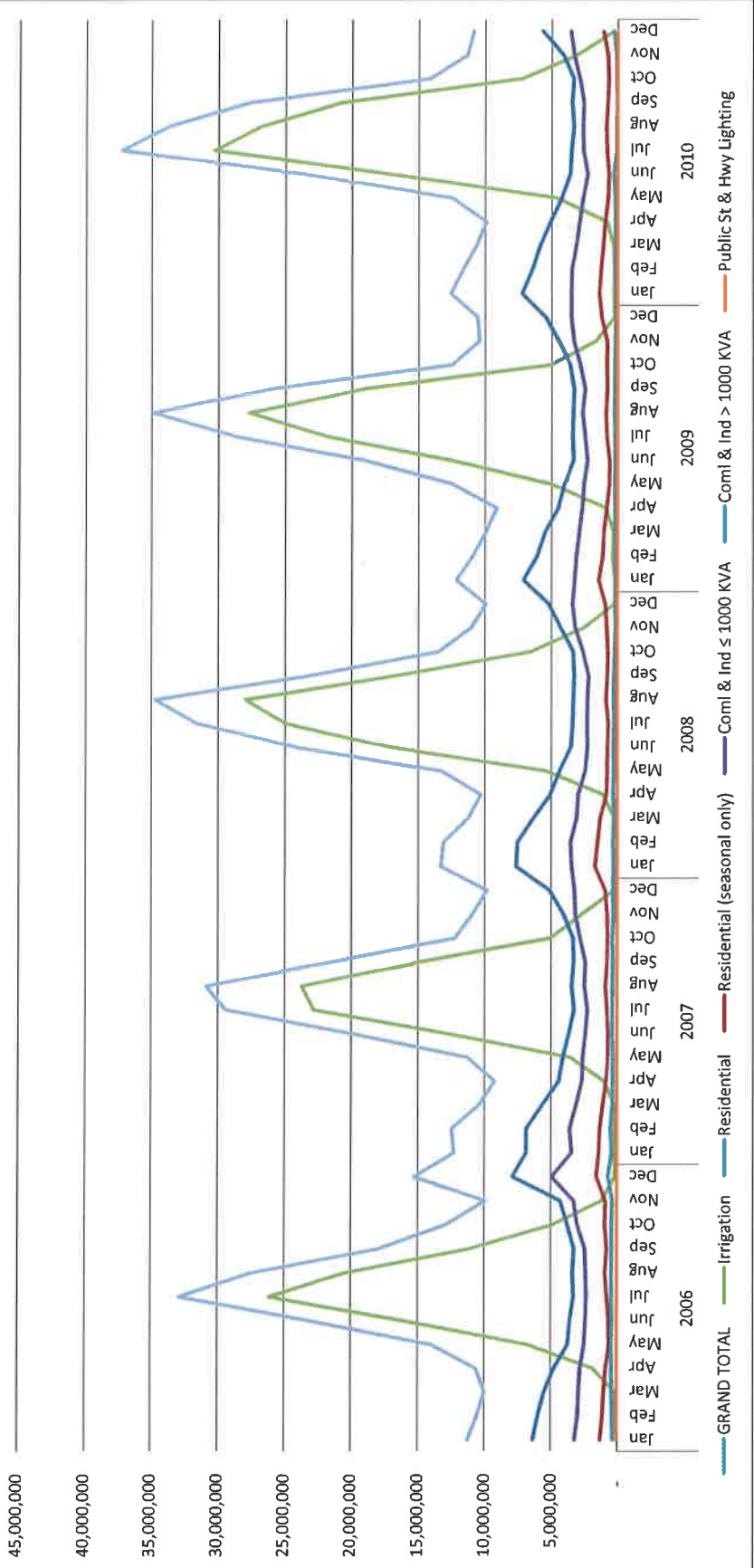
Data source: San Luis Valley Rural Electrical Cooperative annual Form 7 reports.

SLVREC Monthly kWh sold by member classification, 2001 - 2005



Data source: San Luis Valley Rural Electrical Cooperative annual Form 7 reports.

REC Monthly kWh sold by member classification, 2006 - 2010



Data source: San Luis Valley Rural Electrical Cooperative annual Form 7 reports.