

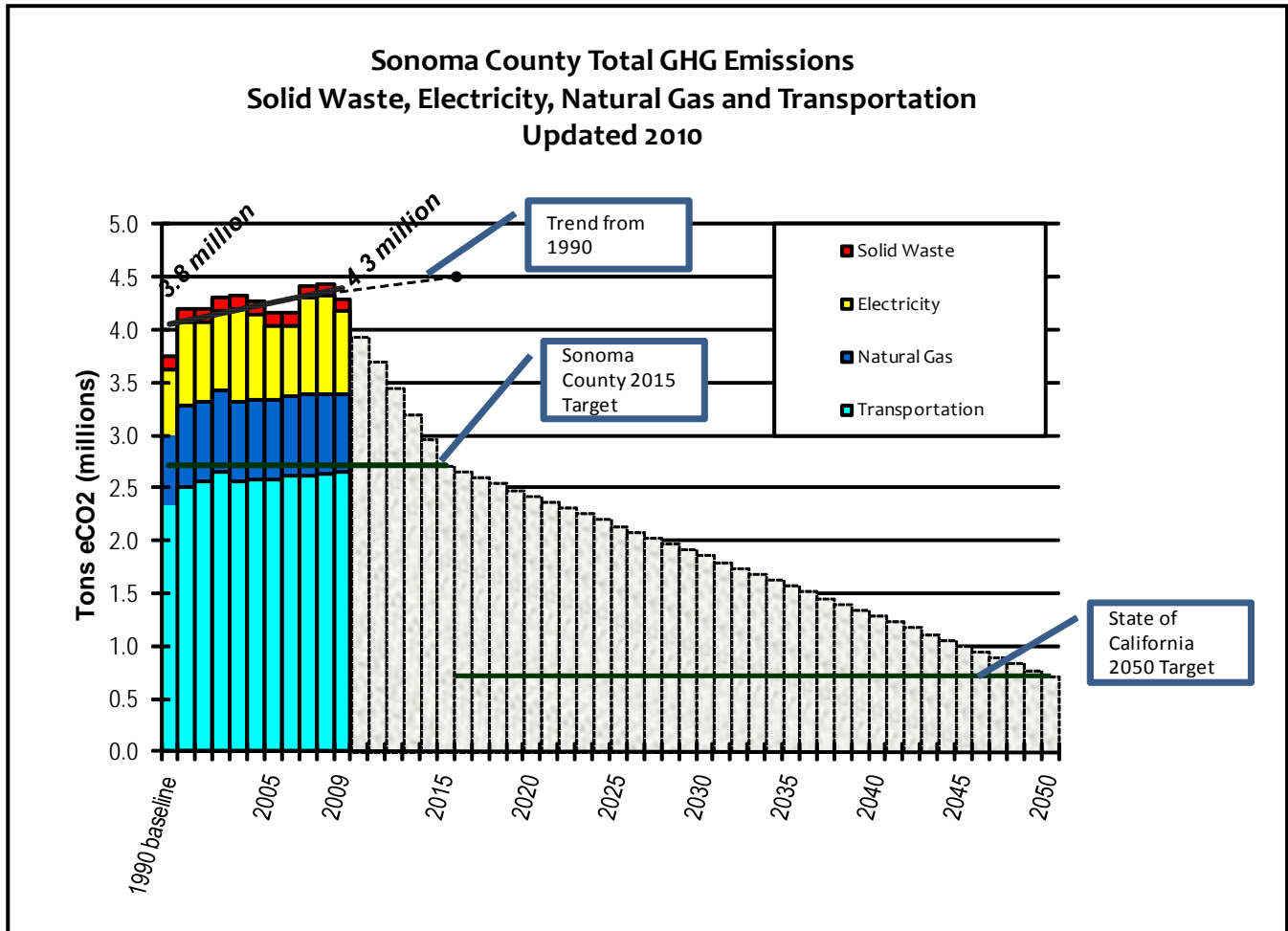
Climate Protection in Sonoma County

2009 Greenhouse Gas Emission Assessment ♦ Presented May 13, 2010

“Positive signs – and still a long way to go”

Summary

Total greenhouse gas emitted by Sonoma County in 2009 decreased. Although many possible causes for this change exist, the economic downturn is the probable main one. Despite last year’s decrease in emissions, Sonoma County’s quest to attain a 25% emission reduction by 2015 remains an enormous challenge. Concerted action is needed not only at the local level, but also at regional, state and national levels because many powerful emission reduction measures are not applicable at the local level.



The dip in emissions in 2005 and 2006 corresponds with an increase in the proportion of electricity from hydropower.

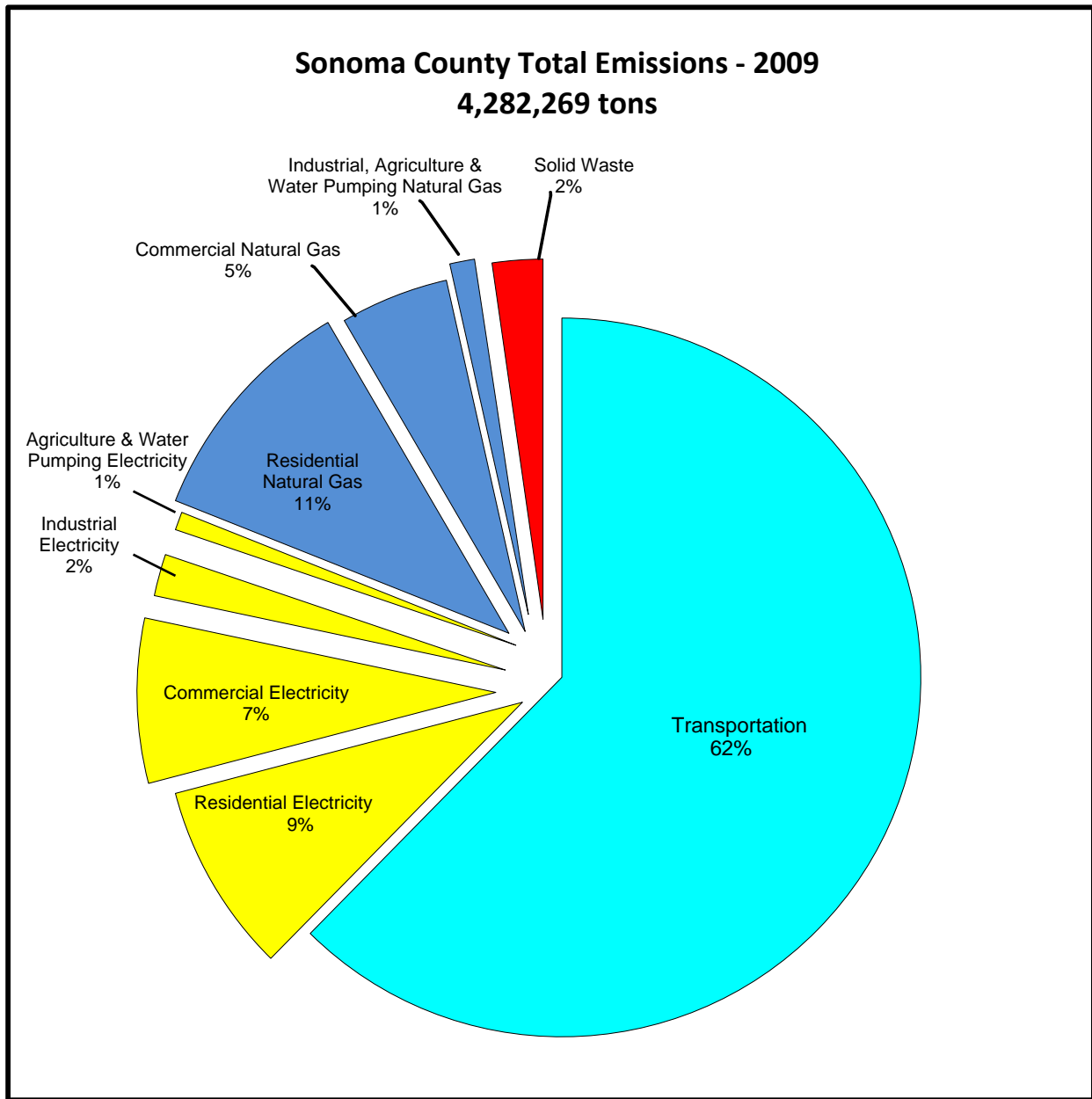
Background

Beginning in 2002 Sonoma County has taken many bold steps for climate protection – including several national precedents:

- All nine Sonoma cities, the County and the Water Agency pledged to reduce greenhouse gas (GHG) emissions.
- All nine cities, the County and the Water Agency completed inventories of the emissions produced by their internal municipal operations, and all set GHG emission reduction targets for their internal municipal operations.
- All Sonoma mayors signed the U.S. Climate Protection Agreement.
- In 2005 all nine cities and the County passed resolutions adopting a greenhouse gas emission reduction target aligned with the scientific imperative - 25% below 1990 levels by 2015.
- In 2007 and 2008 Sonoma County local governments, businesses, community representatives, and the Climate Protection Campaign developed a Community Climate Action Plan which identifies the most cost-effective local solutions for significant greenhouse gas reductions (www.coolplan.org).
- In 2009 all nine cities and the County began participating in the Sonoma County Energy Independence Program, and all began participating in the Sonoma County Regional Climate Protection Authority.

Reducing GHG emissions has vast co-benefits such as improving economic vitality, public health and energy independence.

The following chart details the relative contributions from major sectors to Sonoma County's GHG emissions in 2009.



NOTES

Accounting methods and scope of assessment

Standard GHG accounting protocol were used to produce this GHG report. It includes Scope 1 and Scope 2 emissions from sources within Sonoma County's geographic area, excluding aviation fuel. Scope 1 (direct) includes gasoline, diesel, and natural gas. Scope 2 (indirect) includes electricity (PG&E, Healdsburg Municipal Utility, California system). Not included: Propane, other fuel oil (bunker fuel, etc.), liquid fuels used for off road vehicles and stationary sources (methanol, red dye diesel, aviation fuels). Coal (except from delivered electricity), waste oil, process emissions or leakage (carbon dioxide, methane, nitrous oxide) from industrial processes, methane emissions from livestock cultivation or human waste, carbon dioxide or nitrous oxide emissions from agricultural practices (soil tillage, fertilizer application, or pesticide application).

Gases included in inventory are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Not included are: PFC, HFC, SF₆. HFCs are refrigerants (e.g., R-134 is used for refrigeration and automobile air conditioning). PFCs are used primarily in the semiconductor manufacturing industry. They have very high global warming potential but relatively short atmospheric lifetimes. SF₆ is used as an insulator and is also used in semiconductor manufacturing. It has the highest known global warming potential: 23,900 times more potent than carbon dioxide.

GHG emission figures for municipal operations were not shown in this report because only electricity and natural gas data for municipal operations is currently available of a sufficient amount for a meaningful assessment, and because municipal operations account for a small fraction of Sonoma County's overall GHG emissions (about 1-2%).

GHG emission figures for individual cities and the unincorporated portion of Sonoma County were not included in this report because of the general lack of accurate data. Cities' transportation GHG emissions are calculated using cities' miles of roadways, a weak indicator of GHG emissions. Additionally, PG&E breaks down energy consumption by zip codes, but zip codes do not generally correspond to city jurisdictional boundaries.

Emissions from agriculture, forestry and other biomass were not included in this report due to the lack of an accepted, cost-effective protocol for accounting for GHG emissions in this sector.

Energy efficiency, solar plus more background on electricity, natural gas, propane and transportation

In February 2010, PG&E announced that since 2006, it had helped Sonoma County reduce energy consumption by over 33 megawatts and reduce carbon emissions by over 120,000 tons. These calculations are derived from deemed savings from energy efficiency projects. The 120,000 ton figure is cumulative since 2006, and represents the combined calculated GHG savings for electricity and natural gas efficiency programs. The PG&E calculation uses a figure of 1.1 lbs/kWh for the GHG reduction due to electricity savings.

For PG&E efficiency programs, in 2008 PG&E reports 102,771,310 kWh saved. This is approximately a 3.3 percent reduction below what would have been consumed had the efficiency measures not been implemented. PG&E reported 427,262 therms saved in 2008. This savings represents a 0.4 percent reduction in what would have been consumed had the measures not been implemented.

In March 2008 there were 13 megawatts of installed solar power systems in Sonoma County. Between March 2008 and December 2009 an additional 10.3 megawatts of solar were added to Sonoma County, not including solar thermal installations, totaling about 23 megawatts of solar. From the utility side of the meter, net metered solar photovoltaics (PV) reduce the apparent energy consumption of the customer. Thus the amount of electricity reported to the CEC by PG&E is reduced by the energy production of the installed solar PV. The amount of energy produced in Sonoma County by installed solar PV is about 40 million kWh (20% capacity factor). This production reduces the total grid electricity consumption of the County by about 1.5 percent.

Electricity Consumption

(million kWh)							PG&E emission factor (lb./kWh)	GHG Emissions (Tons eCO2)
Residential	Commercial	Industrial	Agriculture & Water Pumping	Total				
1990					2,186	0.56	612,080	
2000					2,816	0.56	788,480	
2001	1,126	1,088	375	105	2,694	0.56	754,249	
2002	1,152	1,105	372	109	2,739	0.56	766,830	
2003	1,216	1,125	368	112	2,822	0.62	874,688	
2004	1,231	1,137	364	120	2,852	0.566	807,345	
2005	1,249	1,145	360	115	2,870	0.489	701,910	
2006	1,293	1,177	347	103	2,920	0.456	665,557	
2007	1,285	1,159	351	122	2,917	0.635	926,200	
2008	1,328	1,171	341	126	2,967	0.641	951,349	
2009	1,302	1,126	287	124	2,840	0.558*	791,650	

* Estimate based on average from previous five years.

Natural Gas Consumption

(million therms)						GHG Emissions (Tons eCO2)
1990					109	669,735
2000					125	768,750
2001	75.8	33.7	10.6	1.4	121	746,919
2002	78.7	33.2	10.5	1.3	124	760,899
2003	79.2	34.4	9.5	1.8	125	768,080
2004	78.2	36.1	8.4	1.6	124	764,288
2005	77.1	36.8	6.6	1.1	122	747,401
2006	77.8	37.8	8.1	1.0	125	767,150
2007	76.2	39.2	9.3	1.1	126	773,110
2008	76.3	37.1	8.1	1.0	123	753,652
2009	76.8	35.4	8.1	0.9	121	745,679

Propane Consumption

2007	GHG Emissions
Residential	63,218
Commercial	22,316
Resellers	12,509
Internal combustion engines	9,113
Industrial	11,162
Agricultural	16,422
TOTAL	134,740

Figures indicate GHG magnitude of propane, but are not included in overall totals due to insufficient data.

Healdsburg's greenhouse gas emissions from electric consumption have risen sharply since 2003 due to increased consumption coupled with a reduced proportion of the city's electricity coming from renewable sources, primarily hydropower. Healdsburg is unique in Sonoma County because its electricity is provided through the city's Municipal Utility District by the Northern California Power Authority (NCPA) rather than through PG&E. NCPA has consistently supplied greener power than PG&E, reflected by the difference between the two entities' emission factors.

Healdsburg – Electricity Consumption

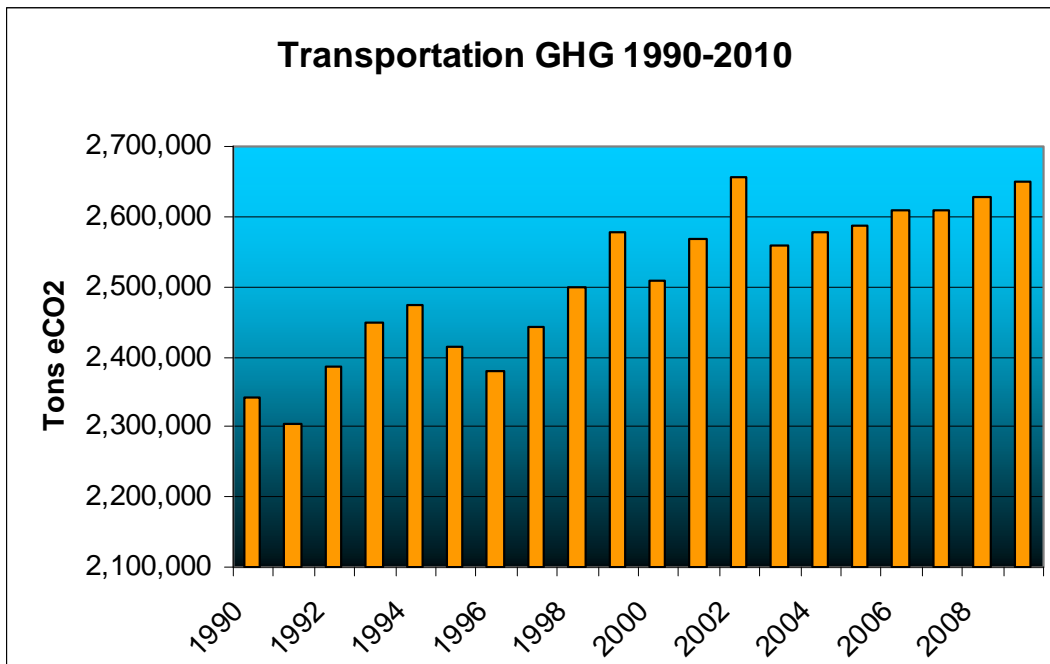
	Megawatt Hours	NCPA's Emission Factor	GHG (tons)
2000	65,620		
2001	68,945		
2002	67,443		
2003	68,847	0.158	5,429
2004	71,351	0.232	8,273
2005	73,364	0.325	11,928
2006	72,678	0.256	9,288
2007	74,613	0.432	16,110
2008	77,192	0.46	17,754
2009	77,045	0.46*	17,720

* Estimated

PG&E Renewable Portfolio Standard Periodic Compliance Report, March 2008

RPS Procurement and Targets (MWh)	Actual					Forecast		
	2003	2004	2005	2006	2007	2008	2009	2010
Bundled Retail Sales	71,099,363	73,616,302	72,726,639	76,692,370	79,450,904	79,981,029	81,148,828	82,303,173
Total RPS Eligible Procurement	8,828,065	8,574,976	8,650,362	9,113,616	9,047,125	11,518,780	12,276,771	13,808,131
Annual Procurement Target (APT)	7,096,147	7,807,140	8,543,303	9,270,570	10,037,493	10,832,003	11,631,813	16,229,766
Incremental Procurement Target	N/A	710,994	736,163	727,266	766,924	794,509	799,810	4,597,953
Prelim. Proc. Surplus/(Deficit)	1,731,918	767,836	107,059	(156,954)	(990,369)	686,777	644,958	(2,421,634)
APT Percentage	N/A	11.0%	11.6%	12.7%	13.1%	13.6%	14.5%	20.0%
Actual Procurement Percentage	11.7%	12.1%	11.8%	12.5%	11.8%	14.5%	15.3%	17.0%
Adjusted Procurement Percentage	N/A	12.1%	11.8%	12.7%	13.1%	14.5%	15.3%	20.0%

California law requires electric corporations to procure 20% from eligible renewable energy resources by 2010. As of this date, according to the California Public Utilities Commission, PG&E is supplying 14.4 percent of its electricity from renewable sources. There is a "flexible compliance" provision that allows a three year grace period to meet the 20 percent requirement. In 2008, Executive Order S-14-08 set a new Renewable Portfolio Standard of 33 percent by 2020. .



In 2009 the Sonoma County Transportation Authority approved the 2009 Comprehensive Transportation Plan (CTP). According to the Environmental Impact Report for the CTP, implementing this Plan will result in increased vehicle miles traveled and fuel consumption during the 25-year planning period – both factors in GHG emission increases. The EIR called these impacts “significant and unavoidable.” Elsewhere the CTP states that better fuel economy would reduce greenhouse gas emissions slightly below 1990 levels by 2035. Regardless of this possible contradiction, a slight reduction in GHG emissions is still far short of achieving Sonoma County’s 25% GHG reduction target.

REFERENCES & ACKNOWLEDGMENTS

Thank you to the following for data and assistance:

- Chris Barney, Sonoma County Transportation Authority, and Harold Brazil, Metropolitan Transportation Commission–transportation
- Andrea Gough, California Energy Commission – electricity and natural gas
- Joe Horak and Carol Foreman, Pacific Gas and Electric Company - electricity and natural gas including deemed savings from energy efficiency
- Elizabeth Kirkley, City of Healdsburg – electricity figures
- California Climate Action Registry – PG&E emission coefficients (Note: years 2000 through 2002 not available)
- Lawrence Berkeley National Lab study estimate for 1990 emission coefficient for IOU emissions
- U.S.EPA – emission coefficient for electricity from direct access
- California State Department of Finance – population figures
- California Public Utilities Commission - PG&E’s RPS compliance report
- Solar Sonoma County – Sonoma County solar electricity generation
- Western Propane Gas Association, American Petroleum Institute Survey, County estimate of sales – propane
- CalRecycle Disposal Reporting System – solid waste
- Cordel Stillman, Sonoma County Water Agency – overall support
- More information on GHG emission accounting – Sonoma County GHG Emissions Inventory, 2005 – www.climateprotection.org, and tools for local governments - www.coolcalifornia.org

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