

PATTERNS OF CLIMATE, WATER PER CAPITA, WATERGY, & SUN: SANTA CRUZ, CA

CLIMATE	AVERAGE HIGH & LOW TEMPERATURES: 1893 – 2010												Source: www.wrcc.dri.edu	
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
	60.3	62.4	64.6	67.9	70.5	74.0	74.7	75.1	76.1	73.0	66.7	61.2	68.9	°F HIGH
	38.8	40.9	41.9	43.3	46.1	48.8	51.1	51.4	49.8	46.7	42.2	39.1	45.0	°F LOW
	15.7	16.9	18.1	19.9	21.4	23.3	23.7	23.9	24.5	22.8	19.3	16.2	20.5	°C HIGH
3.8	4.9	5.5	6.3	7.8	9.3	10.6	10.8	9.9	8.2	5.7	3.9	7.2	°C LOW	
HIGHEST TEMP ON RECORD:		108	42.2	August 1, 1900	LOWEST TEMP ON RECORD:		15	-9.4	January 3, 1907					
		°F	°C				°F	°C						
													Source: www.wrcc.dri.edu	

WATER PER CAPITA	AVERAGE RAINFALL: 1893 – 2010												Source: www.wrcc.dri.edu	
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
	6.18	5.47	4.30	1.92	0.81	0.22	0.06	0.07	0.42	1.39	3.31	5.24	29.39	INCHES
	157.0	138.9	109.2	48.8	20.6	5.6	1.5	1.8	10.7	35.3	84.1	133.1	746.5	mm
	WETTEST YEAR'S RAINFALL:		59.76	1517.9	1983	DRIEST YEAR'S RAINFALL:		11.85	301.0	1929				
		INCHES	mm				INCHES	mm						
													Source: www.wrcc.dri.edu	
LONGEST PERIOD W/ NO MEASURABLE PRECIPITATION: 175 days: 5/1 - 10/23/2011												Source: Michelle Breckner, WRCC, 6/21/2011		
AREA:	15.60	SQ MILES	POPULATION:	56,810	RAINFALL INCOME:		384	GPCD						
Wikipedia	40.4	km ²	Source/Year:	census.gov / 2009 est			1454	¢pcd						

WATERGY	# of kWh used in a year by City of Santa Cruz to pump & treat water: ²	7,479,473	2007	MUNICIPAL USE:		100	GPCD
	# of average California homes that could be powered with this energy: ³	1,062	2009			379	¢pcd
	% of total homes in Santa Cruz that this represents: ⁴	4.9%	2005-09	Source/Year:		See note 1 / 2010	

SUN	LATITUDE:	37	WINTER-SOLSTICE SHADOW RATIO:*				
	Source: Google Earth		1: 1.76	^ DEGREES N or S of DUE E THE SUN RISES:			
	ELEVATION:	35	FT	^ DEGREES N or S of DUE W THE SUN SETS:			
	11	m	^ # of DEGREES SUN IS ABOVE THE SOUTHERN HORIZON AT NOON:				
				ON MAR 21	ON JUN 21	ON SEP 21	ON DEC 21
				0	30N	0	30S
				0	30N	0	30S
				53	76	53	30

To find current magnetic declination for location: HarvestingRainwater.com/books/volume1/volume-1-resource-pages-appendix-6/#magdec

*Object height:length of shadow cast at solar noon (Dec 21's is longest noontime shadow of year). The ratio is 1:x, where x = 1/(tangent(90-(latitude+23.44))

Notes: 1. "A New Framework for Urban Water Conservation in California," SCMU Review, No. 50, October 2010, Santa Cruz Municipal Utilities // 2. Per Bill Kocher, Director, Santa Cruz Water Dept, via phone 6/22/2011 // 3. Per eia.gov, an avg CA home uses 587 kWh/mo (=7,044 kWh/yr). 7,479,473 kWh/yr ÷ 7,044 kWh/yr/home = 1,062 homes. // 4. Per census.gov, the average number of occupied dwelling units in Santa Cruz from 2005-09 was 21,761. 1,062 ÷ 21,761 = 0.049 (or 4.9%)

A. Rainwater Harvesting for Drylands & Beyond, Vol 1, or www.esrl.noaa.gov/gmd/grad/solcalc/ // B. RWHDB Vol 1, or Mar 21 =90-latitude, Jun 21 =90-(lat-23.44), Sep 21 =90-lat, Dec 21 =90-(lat+23.44)