# PATTERNS OF CLIMATE, WATER PER CAPITA, WATERGY, & SUN: LUBBOCK, TEXAS

## CLIMATE

AVERAGE HIGH & LOW TEMPERATURES: 1948-1993 *Source: worldclimate.com*

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 52.7 | 57.4 | 65.5 | 75.0 | 82.8 | 90.5 | 91.9 | 90.3 | 83.5 | 74.7 | 62.4 | 54.7 | 73.4 | ˚F HIGH |
| | 25.0 | 28.9 | 35.6 | 45.9 | 55.0 | 64.0 | 67.6 | 65.8 | 58.6 | 47.5 | 34.9 | 27.5 | 46.2 | ˚F LOW |
| | 11.5 | 14.1 | 18.6 | 23.9 | 28.2 | 32.5 | 33.3 | 32.4 | 28.6 | 23.7 | 16.9 | 12.6 | 23.0 | ˚C HIGH |
| | -3.9 | -1.7 | 2.0 | 7.7 | 12.8 | 17.8 | 19.8 | 18.8 | 14.8 | 8.6 | 1.6 | -2.5 | 7.9 | ˚C LOW |

HIGHEST TEMP ON RECORD: 114 ˚F, 45.6 ˚C, June 27, 1994 *Source: srh.noaa.gov*

LOWEST TEMP ON RECORD: -17 ˚F, -27.2 ˚C, February 8, 1933

## WATER PER CAPITA

AVERAGE RAINFALL: 1947-1995 *Source: srcc.lsu.edu*

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.55 | 0.59 | 0.81 | 1.13 | 2.76 | 2.82 | 2.21 | 2.13 | 2.42 | 1.75 | 0.67 | 0.56 | 18.4 | INCHES |
| | 13.9 | 14.9 | 20.7 | 28.6 | 70.0 | 71.7 | 56.2 | 54.2 | 61.5 | 44.4 | 17.0 | 14.3 | 467.4 | mm |

WETTEST YEAR'S RAINFALL: 40.55 INCHES, 1030.0 mm, 1941 *Source: srh.noaa.gov*

DRIEST YEAR'S RAINFALL: 8.73 INCHES, 221.7 mm, 1917

LONGEST PERIOD W/ NO MEASURABLE PRECIPITATION: 98 days (10/28/2005-2/2/2006) *Source: srh.noaa.gov*

AREA: 123.60 SQ MILES; *Wikipedia* 320.0 $km^2$

POPULATION: 225,859 *Source/Year: census.gov / 2009 est*

RAINFALL INCOME: 479 GPCD; 1815 ℓpcd

## WATERGY

| | |
|---|---|
| # of avg TX homes that could be powered w/ kWh used by TX's water & wastewater systems:[2] | 112,850 |
| # of gallons of water used annually to generate avg Texan's residential electricity:[3] | 5,288 |
| # of avg Lubbock residents' water usage consumed by Texas' thermoelectric power plants:[4] | 2.8 mil |

MUNICIPAL USE: 155 GPCD; 587 ℓpcd

*Source/Year: see note #1 / 2005-2009 avg*

## SUN

LATITUDE: 33.5 *Source: Google Earth*

ELEVATION: 3198 FT; 975 m

WINTER-SOLSTICE SHADOW RATIO:* 1: 1.54

| | ON MAR 21 | ON JUN 21 | ON SEP 21 | ON DEC 21 |
|---|---|---|---|---|
| [A] DEGREES N or S of DUE E THE SUN RISES: | 0 | 28N | 0 | 28S |
| [A] DEGREES N or S of DUE W THE SUN SETS: | 0 | 28N | 0 | 28S |
| [B] # of DEGREES SUN IS ABOVE THE SOUTHERN HORIZON AT NOON: | 57 | 80 | 57 | 33 |

*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. City of Lubbock, 2010 Water Use Management Plan, http://67.224.12.198/public/2010waterPlan.pdf // 2. 4.3 TWh used by TX water & wastewater systems (Energy-Water Nexus in Texas, 2011, www.ecologyandsociety.org/vol16/iss1/art2/) & 1130 kWh used monthly in residential setting by avg Texan (US Energy Info Administration, www.eia.doe.gov/cneaf/electricity/esr/table5.html) & avg TX household size = 2.81 (census.gov) // 3. 595,000 Mℓ/year used by TX power plants to generate 400 TWh of electricity (Energy-Water Nexus in Texas) & US EIA data in note #2) // 4. Energy-Water Nexus in TX data in note #3 & gpcd data from note #1)

A. R'water 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)

Available online at: www.harvestingrainwater.com/watergy-climate/water-conservation-and-climate-overview-data-sheets/