

SUPPORT DOCUMENTATION

UTILITY PROVIDER RATES AND CHARGES

HOUSING AUTHORITY OF THE CITY OF MCALLEN, TX
(Retama Village Phase I & II)
Mixed-Finance Tax Credit Property

Utility Providers Residential Rates and Charges
As of November 2020

INITIAL 2020

ELECTRICITY

Source: Reliant Energy

877-524-5231

www.reliantenergy.com*

Year Round		Secure Advantage 18
Base Charge	Per Month	\$9.95
AEP Texas Central Delivery Charges	Per Month	\$4.27
Total Monthly Charge	Per Month	\$14.22
Tiers*		All
Energy Charge	Per KWH	0.070765
AEP Texas Central Delivery Charges	Per KWH	0.042929
Total Energy Charges	Per KWH	0.113694
Public Utility Gross Receipts Tax	% of Total	0.1667%
Misc Gross Receipts Tax (pop > 10000)	% of Total	1.997%
City Tax	% of Total	2%
Total Taxes	% of Total	4.1637%

UTILITY PROVIDER DOCUMENTATION

Texas Taxes
Public Utility Gross Receipts Assessment

Public Utility Gross Receipts Assessment

A fee is imposed on each public utility within the jurisdiction of the Public Utility Commission.

Rate Details and Other Information

Rates

Public Utility Gross Receipts Tax:

1/6 of 1% (.001667) of gross receipts from rates charged to the ultimate customers in Texas.

Percentage of gross receipts from business done in incorporated cities and towns, according to population:

Miscellaneous Gross Receipts Tax

- 1,000 to 2,499 = .581% (.00581)
- 2,500 to 9,999 = 1.07% (.0107)
- 10,000 or more = 1.997% (.01997)

Listing of Cities with sales tax for electricity and natural gas -

http://www.window.state.tx.us/taxinfo/utility/gas_elec.html

For individual city rates – www.window.state.tx.us/taxinfo/local/city.html

<http://www.window.state.tx.us/taxinfo/audit/utility/ch3.htm#nontaxableutil>

Nontaxable Utilities

The following types of utilities are exempt from taxation under the Miscellaneous Gross Receipts Tax:

- A plant or utility used for distribution but who does not make retail sales to the ultimate consumer within an incorporated city or town in this state. (*Tax Code, Sec. 182.021*)
- **Municipal utilities:**
Any utility owned and operated by any city or town, county, water improvement district or conservation district. (*Tax Code, Sec. 182.026*)
- **Co-ops:**
A utility organized under the "Electric Cooperative Corporation Act" is exempt. (*Miscellaneous Tax Rule. 3.52*)

TEXAS SALES AND USE TAX RATES – January 2020

Name	Local Code	Local Rate	Total Rate	Name	Local Code	Local Rate	Total Rate
Maud	2019036	.015000	.082500	Meadow	2223029	.010000	.077500
Bowie Co	4019009	.005000		Terry Co	4223001	.005000	
Mauriceville			.067500	Meadowlakes (Burnet Co)			.062500
Orange Co	4181001	.005000		Meadows Place (Fort Bend Co)	2079168	.020000	.082500
Maurin			.067500	Medicine Mound			.067500
Gonzales Co	4089004	.005000		Hardeman Co	4099002	.005000	
Maxdale			.067500	Medina			.067500
Bell Co	4014004	.005000		Bandera Co	4010008	.005000	
Maxey			.067500	Meeker			.067500
Lamar Co	4139004	.005000		Jefferson Co	4123002	.005000	
Maxwell			.067500	Meeks			.067500
Caldwell Co	4028008	.005000		Bell Co	4014004	.005000	
Maydelle			.067500	Megargel	2005041	.010000	.077500
Cherokee Co	4037007	.005000		Archer Co	4005005	.005000	
Mayfield			.077500	Melissa (Collin Co)	2043170	.020000	.082500
Hill Co	4109000	.005000		Melrose (Nacogdoches Co)			.072500
Hill Co ESD 2-A	5109527	.010000		Nacogdoches Co Hosp Dist	5174509	.010000	
Maypearl (Ellis Co)	2070087	.020000	.082500	Melvin	2160024	.010000	.080000
Maysfield			.067500	McCulloch Co	4160006	.005000	
Milam Co	4166000	.005000		McCulloch Co Hosp Dist	5160505	.002500	
McCoy			.067500	Memphis (Hall Co)	2096014	.020000	.082500
Atascosa Co	4007003	.005000		Menard	2164011	.015000	.082500
Mc Dade			.067500	Menard Co	4164002	.005000	
Bastrop Co	4011007	.005000		Mendoza			.067500
Mc Gregor	2161112	.015000	.082500	Caldwell Co	4028008	.005000	
McLennan Co	4161005	.005000		Menlow			.077500
McAdoo			.067500	Hill Co	4109000	.005000	
Dickens Co	4063004	.005000		Hill Co ESD 2-A	5109527	.010000	
McAllen (Hidalgo Co)	2108056	.020000	.082500	Mentz			.067500
McBeth			.067500	Colorado Co	4045007	.005000	
Brazoria Co	4020006	.005000		Mercedes (Hidalgo Co)	2108038	.020000	.082500
McCamey (Upton Co)	2231029	.015000	.077500	Mercury			.070000
McClanahan			.067500	McCulloch Co	4160006	.005000	
Falls Co	4073002	.005000		McCulloch Co Hosp Dist	5160505	.002500	
McFaddin			.067500	Mereta			.067500
Victoria Co	4235007	.005000		Tom Green Co	4226008	.005000	
McKinney (Collin Co)	2043045	.020000	.082500	Meridian	2018028	.015000	.082500
McLean (Gray Co)	2090029	.020000	.082500	Bosque Co	4018000	.005000	
McLendon Chisholm (Rockwall Co)	2199065	.020000	.082500	Merit			.067500
McMahan			.067500	Hunt Co	4116001	.005000	
Caldwell Co	4028008	.005000		Merkel (Taylor Co)	2221021	.020000	.082500
McNeil			.067500	Mertens	2109117	.010000	.082500
Caldwell Co	4028008	.005000		Hill Co	4109000	.005000	
McNeil (Travis Co)			.072500	Hill Co ESD 2	5109518	.005000	
Austin MTA	3227999	.010000		Mertzon (Irion Co)	2118018	.010000	.072500
McQueeney			.067500	Mesquite (Dallas Co)	2057039	.020000	.082500
Guadalupe Co	4094007	.005000		Mesquite (Kaufman Co)	2057039	.020000	.082500
Meador Grove			.067500	Mexia (Limestone Co)	2147013	.020000	.082500
Bell Co	4014004	.005000		Miami (Roberts Co)	2197012	.020000	.082500

Electricity Facts Label
Reliant Energy Retail Services, LLC
Reliant Secure Advantage® 18 plan
AEP Texas Central service area
Date: 11/02/2020

Electricity price

Average monthly use:	500 kWh	1000 kWh	2000 kWh
Average price per kWh:	14.2¢	11.8¢	11.6¢

This price disclosure is based on the following components:

Usage Charge: \$9.95 per billing cycle < 800 kWh
\$0.00 per billing cycle ≥ 800 kWh
Energy Charge: 7.0765¢ per kWh

AEP Texas Central Delivery Charges: \$4.27 per month and 4.2929¢ per kWh

AEP Texas Central Delivery Charges include all recurring charges from AEP Texas Central passed through without mark-up and may include an Income Tax Refund Rider (ITR). The ITR refund amount varies based on usage and is expected to expire in Spring 2021.

This price disclosure is an example based on average prices - your average price for electricity service will vary according to your usage. The price you pay each month will consist of the Usage Charge, Energy Charge, and AEP Texas Central Delivery Charges. The Usage Charge will not be included for each billing cycle in which your usage is 800 kilowatt hours (kWh) or more.

****Customers in the McAllen/Mission area formerly served by Oncor will not be assessed TC-2, TC-3, NDC, or SRC charges or the ADFIT credit associated with the SRC.**

Other Key Terms and questions

See Terms of Service statement for full listing of fees, deposit policy, and other terms.

Disclosure Chart

Type of Product	Fixed Rate
Contract Term	18 months
Do I have a termination fee or any fees associated with terminating service?	Yes. \$180. Applies through the end of the contract term. This fee does not apply if the customer moves, and provides a forwarding address and other evidence that may be requested to verify that the customer moved.
Can my price change during the contract period?	Yes
If my price can change, how will it change and by how much?	Your price may change only to reflect actual changes in TDSP charges, changes to the Electric Reliability Council of Texas or Texas Regional Entity administrative fees charged to loads, or changes resulting from federal, state or local laws or regulatory actions that impose new or modified fees or costs on Reliant that are beyond Reliant's control.
What other fees may I be charged?	Fees not included in the price above: Disconnect Notice Fee: \$10; Returned Payment Charge: \$25; Disconnect Recovery: \$30; Late Payment Penalty: 5% of past due balances; Information on other non-recurring fees is available in the pricing section of your Terms of Service.
Is this a pre-pay or pay in advance product?	No

R1F00112996153B

DEVELOPMENT CHARACTERISTICS

Utility Provider Name*	Utility Type*	Phone Number	Website	Paid By*
TBD	Electric			Resident
Add Utility				

Complete for Public Housing *at TC Mixed-Finance property*

(Complete only for developments with Resident-Paid and/or Check-Metered Utilities.)

Development Name*	Development Code*	Year Built	Building Type*	Total Units*	Bedroom Sizes (check all that apply)*						Resident-Paid Utilities*** (See Legend)					A/C?
					0	1	2	3	4	5	Electric	Natural Gas	Water	Sewer	Trash	
Retama Village Ph. 1	TX02800001	2008	Apartment/Walk-Up	128	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A	N/A	N	N	N	N
Add Development					89 P4											

Legend: I = Resident-Paid / Individual Meters, C = Check-Metered / Paid by Agency, M = Master-Metered / No Allowances

Utility Provider Name*	Utility Type*	Phone Number	Website	Paid By*
TBD <i>Reliant Energy</i>	Electric			Resident
Add Utility				

Complete for Section 8 Project-Based

Development Name*	Development Code*	Year Built	Building Type*	Total Units*	Bedroom Sizes (check all that apply)*						Resident-Paid Utilities*** (See Legend)					A/C?
					0	1	2	3	4	5	Electric	Natural Gas	Water	Sewer	Trash	
Vine Terrace	TX02800001	1982	Apartment/Walk-Up	49	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N/A	N/A	N	N	N	N
Add Development																

Legend: I = Resident-Paid / Individual Meters, C = Check-Metered / Paid by Agency, M = Master-Metered / No Allowances

Utility Provider Name*	Utility Type*	Phone Number	Website	Paid By*
TBD	Electric			Resident
Add Utility				

Management Company Name:	McAllen Housing Development Corporation
Property Type:	Section 8 Project-Based
New Construction/Existing?	Existing

Property Name:	Vine Terrace
Property Address:	2250 N. 27th Street
City:	McAllen
State:	Texas
Zip Code:	78501
Type of Study:	HUD Utility Schedule Model (HUSM)

Total # of Units*	Total # of Buildings*	Building Types Construction*	# of Stories for Building*	# of Stories for Unit*	Utility Allowances Needed* (check all that apply)
49	50	Apartment/Walk-Up	All 1 story	1 story	<input type="checkbox"/> Electric Only <input checked="" type="checkbox"/> Gas and Electric <input checked="" type="checkbox"/> Including Water and Sewer <input checked="" type="checkbox"/> Trash

# of each Bedroom Size*					# of Floor Plans for each Bedroom Size*					Square Footage for each Bedroom Size*				
1 BR	2 BR	3 BR	4 BR	5 BR	1 BR	2 BR	3 BR	4 BR	5 BR	1 BR	2 BR	3 BR	4 BR	5 BR
7	28	4	10	0	1	1	1	1	0	798	783	977	1238	0

Heating Equipment*	Air Conditioning*	Stove Fuel*	Water Heater Fuel*
Electric Resistance	Yes	Electric	Electric

Other Energy Improvements: (Please Specify)

Nest AC T-Stats, R-60 Attic Insulation, ECM Motors, LED lighting pl
AEI consultants

Compliance Agency:

Utility Provider Name:

Add Utility Provider

ResidentLife Utility Allowances Request Quote

Home → Government Agency Services → Specialty Services (Brands) → ResidentLife Utility Allowances → Request Quote

If you have any difficulty submitting a quote request, print the completed information and email it to Cheryl Lord at Cheryl@nelrod.com, or fax it to 817-922-8885.

If you have questions please contact Cheryl Lord at 817-922-9000 x139.

Please make sure your browser is up to date and javascript is enabled.

(Fields marked with an asterisk * are required)

Contact Person's Name:*	Daniel Delgado
Title:*	Deputy Director
Agency Name:*	Housing Authority of The City of McAllen
HACode: (Required for Public Housing) (See HUD's HA Profiles Website)	TX028
Fiscal Year End:*	Jun. 30
Address:*	2301 Jasmine Avenue
City:*	MCALLEN
State:*	Texas
Zip Code:*	78501
Phone Number:*	(956) 686-3951
Fax Number:*	(956) 627-3317
Email Address:*	ddelgado@mcaha.org
Website:	www.mcallenha.org
Agency Facebook Page:	

Please upload a copy of your currently adopted utility allowance schedules.

File 1:	<input type="button" value="Choose File"/>	UA Low Rise06.16).pdf
File 2:	<input type="button" value="Choose File"/>	UA Low-Rise ...rtments.pdf
File 3:	<input type="button" value="Choose File"/>	UA LRG Apar....06.16).pdf
File 4:	<input type="button" value="Choose File"/>	UA LRG Apar....06.16).pdf
File 5:	<input type="button" value="Choose File"/>	UA Single Fa....06.16).pdf

Study Types*:
(Check all that apply)

<input checked="" type="checkbox"/> Section 8 HCV , # of Units	1233
<input checked="" type="checkbox"/> Public Housing , # of Units	89
<input checked="" type="checkbox"/> Section 8 Project-Based , # of Units	49
<input type="checkbox"/> Mixed Finance , # of Units	
<input type="checkbox"/> USDA/Rural , # of Units	
<input type="checkbox"/> Tax Credit (under Housing Agency):	<input type="checkbox"/> New Construction <input type="checkbox"/> Existing , # of Units
<input checked="" type="checkbox"/> Tax Credit (for LIHTC or Section 8 Project-Based):	<input type="checkbox"/> New Construction <input checked="" type="checkbox"/> Existing , # of Units 36
(Complete Tax Credit section below.)	
Other (specify)	, # of Units

Complete for Section 8 HCV

S8 Building Types*:
(Check all that apply)

- ☒ Apartment/Walk-Up
- ☐ Elevator High-Rise
- ☒ Row House/Townhouse
- ☒ Semi-Detached/Duplex
- ☒ Detached House/Single-Family
- ☒ Mobile Home/Manufactured Home

Do you group building types on HUD form 52667?*

No

Number of HUD schedules (form 52667) requested?*

7

Do you have energy efficient utility allowances?*

Yes

Do you need energy efficient utility allowances?*

Yes

CUSTOMIZATION FOR BASE REM/RATE MODELS

Housing Agency:

Customization & Energy Efficiency Measures for Base REM/Rate Models

Please check appropriate box(s) for **each development/property** and note if different for other bedroom sizes in property. NOTE: Use separate form if criteria is different for BR sizes or more than one building type per property. **Blue text represents energy efficiency measures/equipment.**

Development Name & No.:

Retama Village Phase I & II

Building: Year Built: 2008

Structure Type: ☐ Apt ☐ High-Rise ☐ RH ☒ SD ☐ DH

Legend: Apt=Apartment, RH=Row House/Townhouse, SD=Semi-Detached/Duplex, DH=Detached House

Resident-Paid Utilities: ☒ Electric ☐ Natural Gas ☐ Water ☐ Sewer ☐ Trash

Agency-Paid Utilities: ☐ Electric ☐ Natural Gas ☒ Water ☒ Sewer ☒ Trash

OR ☐ All Utilities are Master Metered (Paid by the Agency) (Stop here if ALL utilities are Master Metered)

Bedroom Sizes: ☐ OBR/EFF ☒ 1BR ☒ 2BR ☒ 3BR ☐ 4BR ☐ 5BR ☐ 6BR

1	Foundation Type:	<input checked="" type="checkbox"/> Concrete Slab	<input type="checkbox"/> Pier-Beam (Crawl Space)	<input type="checkbox"/> Basement
2	Window Type:	<input type="checkbox"/> Single Pane	<input checked="" type="checkbox"/> Double Pane Low-E/Vinyl	<input type="checkbox"/> Other:
	U-Factor: _____ SHGC: _____	(Solar Heat Gain Coefficient)		
3	# of Stories in Unit:	<input type="checkbox"/> one	<input type="checkbox"/> two	<input checked="" type="checkbox"/> Building has multiple stories
4	Exterior Veneer/Cladding:	<input checked="" type="checkbox"/> Siding	<input type="checkbox"/> Brick	<input type="checkbox"/> Stucco <input type="checkbox"/> Other: _____
HVAC				
5a	Heating Fuel:	<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Natural Gas	<input type="checkbox"/> Other: _____
5b	Is Heating Individually Metered?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
5c	Heating Type:	<input type="checkbox"/> Electric Baseboard	<input type="checkbox"/> Central Boiler (Radiant)	<input type="checkbox"/> Individual Boiler
	Energy Efficiencies:	<input type="checkbox"/> Heat Pump	<input type="checkbox"/> Forced Air Furnace w/ ducts/Wall unit (80 AFUE)	
	Heat Pump Efficiency Rating: SEER: _____ HSPF: _____			
	<input type="checkbox"/> Solar Panels Installed	<input type="checkbox"/> (High Efficiency) Gas Furnace (90 AFUE)		
	(additional information is needed)			
5d	Heating Equipment Location:	<input checked="" type="checkbox"/> Conditioned Space	<input type="checkbox"/> Unconditioned Space (attic/garage)	
5e	Air Conditioning:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type: <input type="checkbox"/> Window Unit <input checked="" type="checkbox"/> Central	Tonage: _____
6	Air Ducts:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
	If Yes, Location:	<input checked="" type="checkbox"/> Conditioned Space	<input type="checkbox"/> Unconditioned Space (attic)	
7a	Water Heater:	<input checked="" type="checkbox"/> Electric (30 gal)	<input type="checkbox"/> Natural Gas (30 gal)	<input type="checkbox"/> Oil
	40-50 gallon	<input type="checkbox"/> Elec Tank .90 EF	<input type="checkbox"/> Gas Tank .58 EF	<input type="checkbox"/> Solar Water Heating
		<input type="checkbox"/> Elec Tank .95 EF	<input type="checkbox"/> Gas Tank .62 EF	(additional information is needed)
		<input type="checkbox"/> Elec Tankless	<input type="checkbox"/> Gas Tankless .80 EF or higher	
7b	Water Heater Type:	<input checked="" type="checkbox"/> Individual units	<input type="checkbox"/> Central Boiler	
7c	Water Htr Location:	<input checked="" type="checkbox"/> Conditioned Space	<input type="checkbox"/> Unconditioned Space (attic/garage)	
8	Stove/Range:	<input checked="" type="checkbox"/> Electric	<input type="checkbox"/> Natural Gas	
9	Energy Efficiencies:			
	Insulation:	<input checked="" type="checkbox"/> Ceiling (R-20)(min.)	<input type="checkbox"/> Ceiling (R-38)	<input type="checkbox"/> Wall (R-13)
		<input type="checkbox"/> Ceiling (R-30)	<input type="checkbox"/> Ceiling (R-49)	<input type="checkbox"/> Wall (R-19)
	Low Flow Water:	<input type="checkbox"/> Shower, Faucets, Toilets	Lighting: <input type="checkbox"/> 100% CFL	<input type="checkbox"/> 100% LED
10	<input type="checkbox"/> GeoThermal (HVAC and DHW) COP Rating: _____			

Notes/Comments:

DEVELOPMENT REPORTS


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[New](#)
[Open/Edit](#)

Current Study

Type: **Low-Rent Utility Study - [New]**

Date: **November 19, 2020**

Agency: **Housing Authority of the City of McAllen, TX**

ResidentLife Utility Allowance® Calculator

Developments / AMPs

INSTRUCTIONS

Use the Development Characteristics Chart and the Energy Customization Charts for reference.

- Click on tabs below in number order and answer questions. Don't **[SAVE]** until tabs 1 - 4 have been completed. **[SAVE]** will take you back to this screen.
- To **start** click on **[ADD DEVELOPMENT]** button below.
- After all development information has been input, click **[HOME]** and go to 2. Utility Companies.

Details

What is the development's name? Retama Village Phase I & II (

What is the development's extension number? (EE Equip: Win-V)

What is the development's building type? Apartment/Multi-Family Walk-Up ▾

[Click here for HELP with building type descriptions.](#)

What type of residents occupy the development? Family ▾

Are water saving devices used? NO ▾

Do the units have air conditioning? YES ▾

How old is the development? 0 - 5 years ▾

Utilities

What utility is used for space heating? Electricity ▾

What utility is used for domestic hot water? Electricity ▾

What utility is used for cooking stove? Electricity ▾

Do the Residents pay for natural gas? NO ▾

Do the Residents pay for electricity? YES ▾

Do the Residents pay for water or sewer? NO ▾

Do the Residents pay for trash pickup? NO ▾

Unit Details

	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
How many units?	0	1	1	1	0	0	0
Is there a pier beam foundation (Crawlspace)?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Are there double-pane or Low-E windows?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Is there an electric base board?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Is there a heat pump?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Is there a space heater in unconditioned space?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Is there domestic hot water in unconditioned space?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Are there ducts in the attic?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾
Is this a 2-story unit?	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾	NO ▾

Energy Improvements (Natural Gas) - **SHOW**

Energy Improvements (Electric) - **HIDE**

Space Heating

☐ Heat Pumps (15 SEER)

Water Heating

- ☐ 0.93 EF
- ☐ 0.95 EF
- ☐ Tankless

Insulation

- ☐ Ceiling (R-30)
- ☐ Ceiling (R-38)
- ☐ Wall (R-13)

Windows

- ☒ Double Pane Vinyl

Lighting

- ☐ 100% CFL

Save

Delete

Reset

End-Use Consumptions

	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
Space Heating (kWh)		27	33	42			
Domestic Hot Water (kWh)		107	131	155			
Lights & Appliances (kWh)		168	209	256			
Cooking Stove (kWh)		47	52	62			
Water & Sewer (Gallons)		3100	4650	7750			

End-Use Consumption Calculations - [SHOW](#)

Adjusted Consumption Totals

	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
Electricity Winter (kWh)		356	433	525			
Electricity Summer (kWh)		322	392	473			

Consumption Total Adjustment Calculations - [SHOW](#)

Select a Development / AMP

Available Developments:

Vine Terrace TX-
Retama Village Phase I & II (All Electric) TX-(EE Equip: Win-V)

Edit Development

HOUSING AUTHORITY OF THE CITY OF MCALLEN, TX

Standard Schedule

Resource: HUSM 13i

November 30, 2020

Apartment - Total Monthly Consumptions

Utility or Service	Units	0BR	1BR	2BR	3BR	4BR	5BR
Air Conditioning	kWh		195	271	347		

LOCAL CLIMATOLOGICAL DATA ANNUAL CLIMATIC DATA SUMMARY

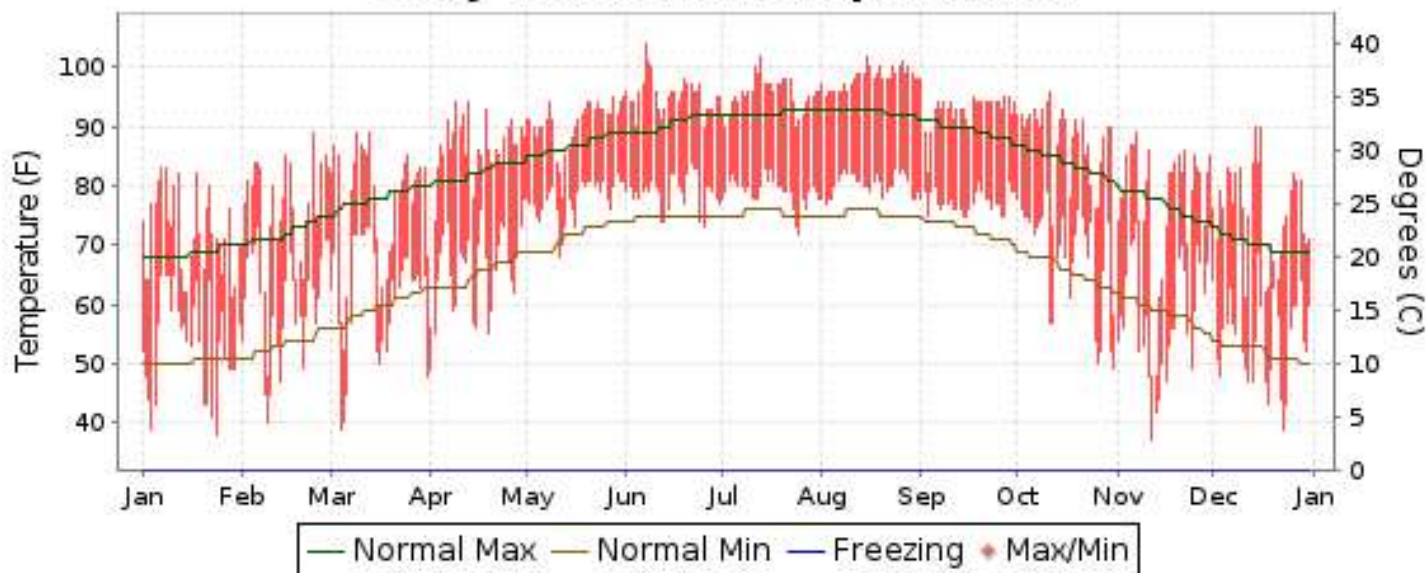


2019 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

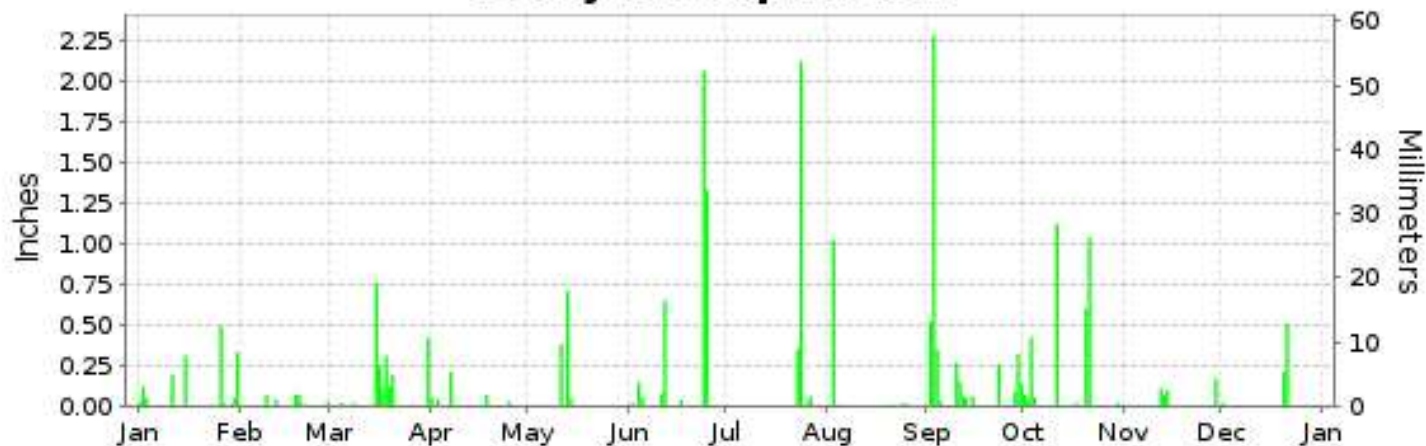
**BROWNSVILLE,
TEXAS (KBRO)**

ISSN 0198-4942

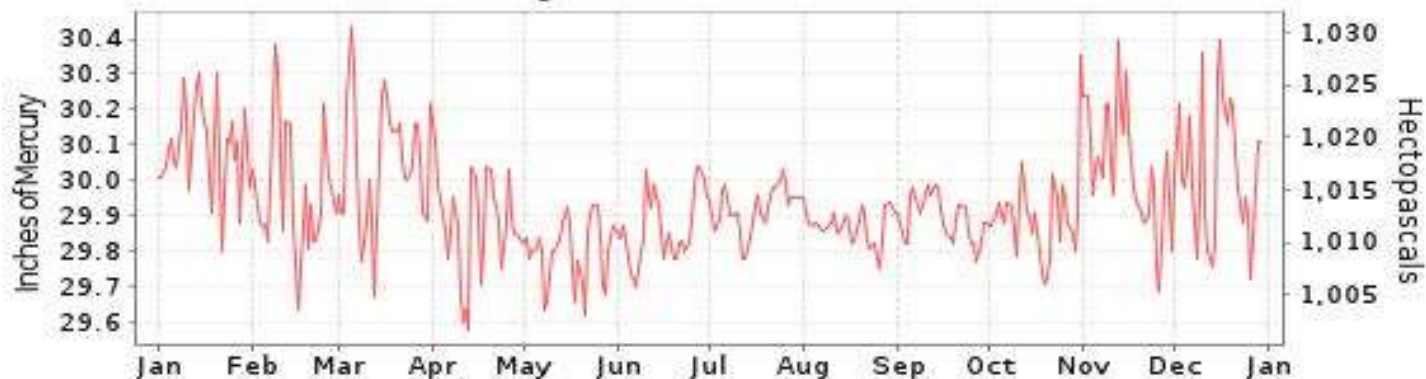
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

METEOROLOGICAL DATA FOR 2019

BROWNSVILLE (KBRO)

LATITUDE: 25° 54'N **LONGITUDE:** 97° 25'W **ELEVATION (FT):** GRND: 24 BARO: 24 **TIME ZONE:** CENTRAL (UTC -6) **WBAN: 12919**

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	MEAN DAILY MAXIMUM	72.1	75.9	76.8	85.9	90.5	95.4	95.5	98.2	92.9	87.1	77.6	75.7	85.3
	HIGHEST DAILY MAXIMUM	83	89	89	94	95	104	102	102	98	96	89	90	104
	DATE OF OCCURRENCE	08+	23	13+	13+	31+	07	13	15	01	11	07	16+	JUN 07
	MEAN DAILY MINIMUM	53.4	59.8	61.2	65.9	77.7	79.0	79.0	80.4	77.4	68.0	58.3	54.6	67.9
	LOWEST DAILY MINIMUM	38	40	39	49	68	73	72	77	75	49	37	39	37
	DATE OF OCCURRENCE	24	09	04	01	11	25	25	02	27+	31	12	23	NOV 12
	AVERAGE DRY BULB	62.8	67.9	69.0	75.9	84.1	87.2	87.2	89.3	85.1	77.5	68.0	65.2	76.6
	MEAN WET BULB	58.6	64.1	64.3	69.1	77.6	80.3	79.9	80.8	77.4		62.0		
	MEAN DEW POINT	55.4	62.1	62.0	65.7	75.9	78.2	77.4	78.1	74.6		58.3		
	NUMBER OF DAYS WITH:													
	MAXIMUM >= 90°	0	0	0	9	24	30	31	31	27	18	0	2	172
	MAXIMUM <= 32°	0	0	0	0	0	0	0	0	0	0	0	0	0
	MINIMUM <= 32°	0	0	0	0	0	0	0	0	0	0	0	0	0
	MINIMUM <= 0°	0	0	0	0	0	0	0	0	0	0	0	0	0
H/C	HEATING DEGREE DAYS	121	62	83	12	0	0	0	0	0	13	74	80	445
	COOLING DEGREE DAYS	58	149	213	349	600	674	696	759	611	409	170	91	4779
RH	MEAN (PERCENT)	81	86	83	76	81	79	76	75	75	72	75	72	78
	HOUR 00 LST	89	92	90	88	90	91	89	88	84	78	84	80	87
	HOUR 06 LST	91	94	93	94	93	95	94	95	89	84	84	83	91
	HOUR 12 LST	66	77	72	56	66	61	58	52	60	57	61	56	62
	HOUR 18 LST	75	82	77	66	77	71	65	65	67	67	72	68	71
W/O	NUMBER OF DAYS WITH:													
	HEAVY FOG(VISBY <= 1/4 MI)	0	4	0	0	0	0	0	0	0	0	2	6	12
	THUNDERSTORMS	0	0	0	0	2	7	2	0	6	4	0	0	21
PR	MEAN STATION PRESS. (IN.)	30.09	29.96	30.06	29.88	29.80	29.86	29.92	29.87	29.90	29.90	30.03	30.04	29.94
	MEAN SEA-LEVEL PRESS. (IN.)	30.12	29.98	30.07	29.91	29.82	29.89	29.94	29.89	29.92	29.92	30.05	30.06	29.96
WINDS	RESULTANT SPEED (MPH)	1.4	2.5	4.5	7.4	10.9	8.8	9.6	9.9	5.6		1.3		
	RES. DIR. (TENS OF DEGS.)	08	12	12	14	13	14	15	14	12		14		
	MEAN SPEED (MPH)	9.7	10.3	11.8	12.4	13.9	11.2	11.2	10.8	8.5	9.4	10.0	8.9	10.7
	PREVAIL.DIR.(TENS OF DEGS.)	33	16	16	15	14	15	15	15	14	14	16	18	15
	MAXIMUM 2-MINUTE WIND													
	SPEED (MPH)	45	31	38	33	36	32	30	28	30	36	36	37	45
	DIR. (TENS OF DEGS.)	17	18	16	15	17	16	16	18	16	22	19	18	17
	DATE OF OCCURRENCE	22	14	13	30	21	22	28	26	10	21	26	15	JAN 22
	MAXIMUM 3-SECOND WIND:													
	SPEED (MPH)	55	41	51	44	41	39	45	38	38	47	45	51	55
PRECIPITATION	DIR. (TENS OF DEGS.)	17	03	16	33	17	15	14	13	16	32	19	17	17
	DATE OF OCCURRENCE	22	07	13	18	21	22	19	10	10	25	26	15	JAN 22
	WATER EQUIVALENT:													
	TOTAL (IN.)	1.60	0.30	2.22	0.41	1.15	4.38	2.56	1.07	4.58	3.38	0.45	0.74	22.84
	GREATEST 24-HOUR (IN.)	0.51	0.13	0.89	0.21	0.72	3.39	2.47	1.02	2.36	1.62	0.17	0.69	3.39
SNOWFALL	DATE OF OCCURRENCE	26-27	18-19	15-16	07	13-14	24-25	23-24	03	03-04	20-21	29	20-21	JUN 24-25
	NUMBER OF DAYS WITH:													
	PRECIPITATION 0.01	10	6	11	6	4	8	4	5	13	9	4	3	83
	PRECIPITATION 0.10	5	0	7	1	2	4	2	1	8	4	3	2	39
	PRECIPITATION 1.00	0	0	0	0	0	2	1	1	1	2	0	0	7
SNOWFALL	SNOW,ICE PELLETS,HAIL													
	TOTAL (IN.)													
	GREATEST 24-HOUR (IN.)													
	DATE OF OCCURRENCE													
	MAXIMUM SNOW DEPTH (IN.)													
SNOWFALL	DATE OF OCCURRENCE													
	NUMBER OF DAYS WITH:													
	SNOWFALL >= 1.0													

NORMALS, MEANS, AND EXTREMES BROWNSVILLE (KBRO)

WBAN: 12919

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	70.6	73.7	78.9	83.7	88.4	92.1	93.6	94.4	90.5	85.7	79.1	71.8	83.5
	MEAN DAILY MAXIMUM	96	70.5	71.7	78.3	83.0	87.9	90.8	92.6	94.0	89.7	85.5	77.2	71.3	82.7
	HIGHEST DAILY MAXIMUM	81	95	94	106	104	102	104	104	105	105	97	97	94	106
	YEAR OF OCCURRENCE		2017	1986	1984	2017	1999	2019	2003	2012	2000	2012	1988	1977	MAR 1984
	MEAN OF EXTREME MAXS.	96	83.3	86.3	90.5	93.6	94.1	95.9	97.0	98.0	96.1	92.1	88.4	84.6	91.7
	NORMAL DAILY MINIMUM	30	51.6	54.7	59.6	65.9	72.3	75.7	76.3	76.2	73.1	66.9	59.6	52.7	65.4
	MEAN DAILY MINIMUM	95	51.2	53.0	59.5	65.4	71.3	74.3	75.5	75.8	72.4	66.4	58.3	52.3	64.6
	LOWEST DAILY MINIMUM	81	19	22	32	38	51	60	68	63	55	35	31	16	16
	YEAR OF OCCURRENCE		1962	1951	1989	1980	2013	1975	1989	1967	1995	1993	1993	1989	DEC 1989
	MEAN OF EXTREME MINS.	96	34.2	37.7	42.0	50.9	60.7	68.7	72.1	71.7	64.4	52.3	41.8	35.8	52.7
	NORMAL DRY BULB	30	61.1	64.2	69.3	74.8	80.3	83.9	84.9	85.3	81.8	76.3	69.4	62.2	74.5
	MEAN DRY BULB	95	60.9	62.3	68.9	74.2	79.6	82.6	84.1	84.9	81.1	75.9	67.8	61.8	73.7
	MEAN WET BULB	36	55.0	58.6	62.3	67.4	72.7	75.8	76.4	76.3	74.5	69.1	62.6	57.1	67.3
	MEAN DEW POINT	36	54.5	57.8	61.4	66.9	72.3	75.3	75.5	75.8	73.9	68.4	61.9	56.3	66.7
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.2	1.0	3.4	11.8	24.4	28.0	28.6	19.3	6.0	0.4	0.0	123.1
	MAXIMUM <= 32	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINIMUM <= 32	30	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.0	
MINIMUM <= 0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
H/C	NORMAL HEATING DEG. DAYS	30	180	104	43	8	0	0	0	0	0	4	50	165	554
	NORMAL COOLING DEG. DAYS	30	59	82	174	302	476	567	618	629	504	354	180	80	4025
RH	NORMAL (PERCENT)		80	79	76	76	78	76	73	75	77	77	78	79	77
	HOURL 00 LST	30	88	87	86	87	88	87	87	87	88	88	87	86	87
	HOURL 06 LST	30	89	89	88	89	91	91	92	92	91	91	89	88	90
	HOURL 12 LST	30	66	63	59	60	61	59	55	56	60	60	62	66	61
	HOURL 18 LST	30	74	70	68	68	71	67	63	64	69	71	74	76	70
S	PERCENT POSSIBLE SUNSHINE	55	41	48	53	56	63	72	79	76	68	65	51	41	59
W/O	MEAN NO. DAYS WITH: HEAVY FOG(VISBY <= 1/4 MI)	56	6.1	4.1	3.4	1.9	0.9	0.1	0.1	0.3	0.3	0.8	3.3	4.8	26.1
	THUNDERSTORMS	72	0.4	0.7	0.8	2.0	3.3	3.1	2.7	4.2	4.8	2.0	0.8	0.4	25.2
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)							3.2							
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH: CLEAR	1	4.0	4.0	4.0		7.0	12.0	3.0	6.0	7.0	6.0		5.0	
	PARTLY CLOUDY	1	2.0	2.0	4.0		12.0	7.0	1.0	4.0	4.0	2.0		2.0	
	CLOUDY	1	3.0	3.0	9.0			1.0		2.0	2.0	2.0		7.0	
PR	MEAN STATION PRESSURE(IN)	36	30.09	30.03	29.97	29.90	29.87	29.88	29.94	29.92	29.90	29.96	30.03	30.07	29.96
	MEAN SEA-LEVEL PRES. (IN)	36	30.11	30.05	29.99	29.91	29.89	29.90	29.96	29.94	29.92	29.98	30.05	30.09	29.98
WINDS	MEAN SPEED (MPH)	36	10.0	11.3	11.9	12.4	12.3	10.9	10.8	9.4	7.9	8.6	9.4	9.7	10.4
	PREVAIL.DIR(TENS OF DEGS)	44	17	16	15	16	15	15	15	15	15	15	16	34	15
	MAXIMUM 2-MINUTE: SPEED (MPH)	25	45	41	43	41	43	38	51	43	51	37	36	40	51
	DIR. (TENS OF DEGS)		17	16	17	13	32	05	26	18	30	16	19	15	26
	YEAR OF OCCURRENCE		2019	2008	2008	2006	2005	2010	2008	2014	1996	2015	2019	2006	JUL 2008
	MAXIMUM 3-SECOND SPEED (MPH)	25	55	51	52	54	56	48	68	54	69	60	47	51	69
	DIR. (TENS OF DEGS)		17	16	18	11	32	04	26	30	12	17	33	17	12
	YEAR OF OCCURRENCE		2019	2008	2008	2016	2005	2010	2008	1999	2010	2002	2006	2019	SEP 2010
PRECIPITATION	NORMAL (IN)	30	1.27	1.08	1.23	1.54	2.64	2.57	2.04	2.44	5.92	3.74	1.82	1.15	27.44
	MAXIMUM MONTHLY (IN)	80	5.11	10.25	5.94	10.35	9.72	13.06	13.24	9.56	20.18	17.12	7.69	9.45	20.18
	YEAR OF OCCURRENCE		1945	1958	1997	1991	2015	1942	2008	1975	1984	1958	1986	1940	SEP 1984
	MINIMUM MONTHLY (IN)	80	T	T	T	T	T	0.01	T	0.02	0.07	0.00	0.01	T	0.00
	YEAR OF OCCURRENCE		1956	2016	1986	2009	1978	1955	1993	1974	1959	2010	1949	1969	OCT 2010
	MAXIMUM IN 24 HOURS (IN)	80	3.00	4.98	5.38	9.37	4.56	8.18	6.68	5.48	12.19	6.67	4.08	5.69	12.19
	YEAR OF OCCURRENCE		1988	1958	2007	1991	1969	1942	2008	1980	1967	1996	1986	1940	SEP 1967
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	7.3	5.5	4.4	4.0	4.9	5.9	5.3	6.6	10.0	7.5	6.0	7.0	74.4
	PRECIPITATION >= 1.00	30	0.3	0.2	0.3	0.3	1.0	0.6	0.6	0.7	1.7	1.0	0.5	0.2	7.4
SNOWFALL	NORMAL (IN)	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MAXIMUM MONTHLY (IN)	63	T	T	T	0.0	0.0	0.0	0.0	T	0.0	0.0	T	T	T
	YEAR OF OCCURRENCE		1993	1973	1993					1992			1991	1966	MAR 1993
	MAXIMUM IN 24 HOURS (IN)	63	T	T	T	0.0	0.0	0.0	0.0	T	0.0	0.0	T	T	T
	YEAR OF OCCURRENCE		1993	1973	1993					1992			1991	1966	MAR 1993
	MAXIMUM SNOW DEPTH (IN)	44	T	T	0	0	42 0	0	0	0	0	0	0	T	T
	YEAR OF OCCURRENCE		1985	1963										1983	JAN 1985
	NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

PRECIPITATION (inches) 2019 BROWNSVILLE (KBRO)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1990	0.58	0.56	0.81	1.55	2.72	1.08	1.53	2.87	3.90	2.29	0.91	0.05	18.85
1991	0.47	2.50	0.02	10.35	2.97	1.93	2.36	0.89	5.57	3.33	0.15	1.18	31.72
1992	3.50	1.99	0.12	4.15	5.55	1.50	0.40	3.71	3.62	0.85	5.61	0.85	31.85
1993	1.79	2.86	1.68	0.34	3.64	6.72	T	0.04	1.93	4.69	1.25	2.29	27.23
1994	2.01	0.44	1.84	0.71	1.25	3.32	0.15	3.39	4.09	3.91	1.42	1.59	24.12
1995	0.64	0.57	0.64	0.13	0.17	5.82	0.07	8.25	2.12	8.82	1.83	0.98	30.04
1996	0.06	0.15	T	0.50	0.08	0.01	0.65	5.77	8.57	11.49	0.66	0.77	28.71
1997	0.61	0.42	5.94	4.78	2.06	1.47	T	1.80	4.77	13.03	0.87	0.46	36.21
1998	0.37	1.72	0.62	0.04	T	0.30	T	1.36	7.82	3.59	3.72	0.29	19.83
1999	0.26	1.49	3.01	0.14	3.59	2.30	1.86	2.61	3.99	0.69	2.77	0.32	23.03
2000	0.85	0.19	2.89	0.39	1.87	0.85	0.28	4.29	0.66	2.71	0.41	1.10	16.49
2001	0.48	1.43	0.36	1.10	0.49	2.21	1.81	1.80	3.25	0.36	2.42	1.02	16.73
2002	0.09	0.98	0.22	0.64	1.96	1.88	0.84	1.87	6.04	8.31	4.22	1.24	28.29
2003	0.69	0.55	0.56	0.41	0.19	3.24	2.58	2.74	15.13	6.90	0.44	0.31	33.74
2004	1.84	0.79	3.63	2.85	5.37	3.19	0.38	2.35	4.05	1.98	1.82	1.46	29.71
2005	0.57	0.78	0.24	0.03	1.17	0.06	3.32	0.77	2.70	1.43	1.84	1.50	14.41
2006	0.68	0.14	0.42	0.05	3.46	0.24	1.90	2.89	3.67	5.02	1.16	2.04	21.67
2007	1.84	0.90	5.50	0.56	1.91	5.23	4.73	3.16	5.32	1.02	0.77	0.11	31.05
2008	1.34	0.04	0.28	3.35	0.61	0.62	13.24	2.61	9.57	3.26	2.98	0.47	38.37
2009	0.11	0.47	0.11	T	4.52	0.49	0.24	0.60	9.43	3.12	1.46	5.64	26.19
2010	0.61	4.08	0.90	1.53	2.99	7.62	5.14	0.92	12.63	0.00	0.13	0.01	36.56
2011	2.42	0.06	0.07	0.00	0.08	8.88	0.71	0.22	2.14	1.25	0.55	1.55	17.93
2012	0.34	4.24	0.51	0.26	1.14	3.85	2.17	3.85	3.76	0.80	0.16	0.32	21.40
2013	1.47	0.01	0.28	3.10	0.74	0.85	2.13	1.47	11.88	1.63	1.93	3.52	29.01
2014	0.68	0.07	1.46	0.28	2.83	0.64	1.64	1.91	10.36	3.82	3.46	1.43	28.58
2015	3.56	0.76	4.74	1.73	9.72	0.76	2.36	3.03	3.84	13.68	2.54	0.16	46.88
2016	1.88	T	2.67	3.26	2.18	2.98	0.18	0.51	1.98	1.08	4.42	1.67	22.81
2017	0.18	1.36	1.84	0.63	1.85	3.49	2.31	1.38	4.64	3.25	0.79	1.15	22.87
2018	0.76	1.47	0.49	1.90	0.68	5.21	0.48	0.48	7.71	1.31	1.90	0.65	23.04
2019	1.60	0.30	2.22	0.41	1.15	4.38	2.56	1.07	4.58	3.38	0.45	0.74	22.84
POR= 96 YRS	1.28	1.23	1.02	1.53	2.29	2.85	1.85	2.35	5.20	3.33	1.63	1.21	25.77

WBAN : 12919

AVERAGE TEMPERATURE (°F) 2019 BROWNSVILLE (KBRO)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1990	65.1	67.0	70.2	75.5	81.0	85.4	84.5	85.4	81.3	74.9	70.8	61.8	75.2
1991	58.5	64.5	73.4	78.0	81.6	84.7	84.0	86.0	79.6	77.1	64.6	64.3	74.7
1992	58.0	65.5	70.3	72.8	76.8	84.1	85.4	84.3	82.0	76.4	66.4	64.7	73.9
1993	61.2	65.7	68.6	73.4	77.7	82.3	84.7	85.6	82.9	75.0	65.8	63.8	73.9
1994	62.6	63.6	68.1	74.1	79.9	84.1	85.7	83.1	79.7	76.3	73.9	65.7	74.7
1995	61.3	67.3	66.9	74.3	82.4	83.0	84.9	83.5	82.0	75.2	68.0	63.2	74.3
1996	60.8	63.7	65.2	72.1	82.7	84.7	86.3	84.7	81.6	76.0	69.5	64.1	74.3
1997	58.2	64.2	70.0	70.8	77.2	82.4	85.5	85.6	82.2	74.2	65.7	59.7	73.0
1998	65.3	64.5	67.9	72.1	81.5	87.3	87.1	86.5	82.9	76.8	72.2	62.0	75.5
1999	64.7	69.0	71.0	77.5	81.3	83.9	83.8	85.5	80.3	74.4	69.1	62.2	75.2
2000	66.1	70.4	74.4	75.7	82.5	84.3	85.7	84.0	82.7	74.8	68.6	57.2	75.5
2001	59.6	67.5	66.9	78.0	80.6	85.7	85.7	86.5	81.8	76.3	70.4	64.4	75.3
2002	63.8	59.7	69.5	79.1	81.6	84.5	84.7	86.4	82.6	78.3	66.2	63.0	75.0
2003	58.8	61.6	68.5	75.0	83.2	84.1	84.1	84.6	80.9	75.7	71.2	62.0	74.1
2004	62.7	62.2	72.4	74.7	79.3	84.4	86.3	86.3	81.9	80.4	71.8	62.4	75.4
2005	66.7	66.3	69.5	74.2	79.6	85.2	86.0	86.8	84.8	77.3	70.6	62.5	75.8
2006	65.1	64.4	74.0	79.8	81.8	83.2	85.0	86.4	82.4	76.8	70.7	62.3	76.0
2007	57.0	64.0	71.6	71.9	78.9	83.1	84.5	85.2	82.4	76.9	70.4	66.0	74.3
2008	61.4	68.9	70.2	75.6	80.5	85.1	82.6	85.2	80.0	74.6	69.1	63.4	74.7
2009	63.7	69.2	69.5	75.6	81.3	84.2	87.0	86.2	82.1	77.8	68.3	57.6	75.2
2010	60.6	59.1	66.2	75.3	82.4	85.6	84.9	87.1	82.7	76.7	70.0	65.1	74.6
2011	62.2	62.7	73.1	80.5	82.7	85.3	85.0	87.3	84.2	76.1	70.3	62.9	76.0
2012	66.4	66.2	72.6	79.1	82.8	86.2	85.5	86.6	83.4	78.3	72.4	67.5	77.3
2013	61.5	68.7	69.3	73.4	79.6	85.5	85.2	85.9	82.7	78.6	66.9	60.3	74.8
2014	57.9	62.4	65.9	74.8	77.2	84.6	84.8	86.6	82.4	78.9	64.7	65.9	73.8
2015	55.7	61.1	66.6	77.1	81.2	84.0	84.6	84.9	81.9	78.1	73.6	67.2	74.7
2016	58.9	65.2	72.2	75.5	80.3	83.6	87.2	86.8	85.3	80.2	73.3	67.6	76.3
2017	66.3	73.3	74.2	78.6	82.2	85.1	84.1	86.7	82.5	76.6	73.9	62.5	77.2
2018	58.5	70.8	74.7	74.9	83.2	87.0	87.5	87.8	84.9	77.0	65.7	64.0	76.3
2019	62.8	67.9	69.0	75.9	84.1	87.2	87.2	89.3	85.1	77.5	68.0	65.2	76.6
POR= 95 YRS	60.9	62.3	68.9	74.2	79.6	82.6	84.1	84.9	81.1	75.9	67.8	61.8	73.7

HEATING DEGREE DAYS (base 65°F) 2019 BROWNSVILLE (KBRO)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1990-91	0	0	0	3	26	194	217	69	5	0	0	0	514
1991-92	0	0	1	0	121	134	223	63	26	10	0	0	578
1992-93	0	0	0	0	82	93	152	58	48	1	0	0	434
1993-94	0	0	0	36	110	134	130	115	44	7	2	0	578
1994-95	0	0	0	1	4	89	173	43	90	4	0	0	404
1995-96	0	0	0	0	44	175	177	158	122	23	0	0	699
1996-97	0	0	0	1	44	135	287	90	19	28	0	0	604
1997-98	0	0	0	6	83	196	75	53	56	3	0	0	472
1998-99	0	0	0	0	7	193	111	43	9	3	0	0	366
1999-00	0	0	0	13	31	133	96	27	1	2	0	0	303
2000-01	0	0	0	54	66	262	199	77	38	0	0	0	696
2001-02	0	0	0	0	46	116	143	179	56	0	0	0	540
2002-03	0	0	0	0	63	119	206	153	28	9	0	0	578
2003-04	0	0	0	8	44	142	142	129	1	6	0	0	472
2004-05	0	0	0	0	14	156	76	80	19	2	0	0	347
2005-06	0	0	0	0	28	141	86	105	23	0	0	0	383
2006-07	0	0	0	0	20	144	278	99	33	44	0	0	618
2007-08	0	0	0	0	57	86	170	37	33	0	0	0	383
2008-09	0	0	0	2	40	143	112	36	62	7	0	0	402
2009-10	0	0	0	0	19	252	180	173	48	0	0	0	672
2010-11	0	0	0	0	31	99	126	200	11	0	0	0	467
2011-12	0	0	0	1	38	143	67	81	22	0	0	0	352
2012-13	0	0	0	2	1	77	176	37	24	11	1	0	329
2013-14	0	0	0	0	108	217	233	166	90	10	0	0	824
2014-15	0	0	0	0	113	72	291	147	67	0	0	0	690
2015-16	0	0	0	0	22	60	205	73	13	1	0	0	374
2016-17	0	0	0	0	8	90	92	9	2	0	0	0	201
2017-18	0	0	0	7	9	176	236	54	0	3	0	0	485
2018-19	0	0	0	17	116	101	121	62	83	12	0	0	512
2019-	0	0	0	13	74	80							

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COOLING DEGREE DAYS (base 65°F) 2019 BROWNSVILLE (KBRO)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1990	105	107	194	324	503	619	612	641	494	318	209	100	4226
1991	23	62	273	395	522	599	599	657	446	383	117	120	4196
1992	13	81	198	249	375	579	640	603	518	361	129	89	3835
1993	44	82	166	260	401	522	620	647	543	349	142	103	3879
1994	61	80	149	289	471	581	646	568	446	360	278	114	4043
1995	66	115	158	292	549	551	626	582	519	324	143	128	4053
1996	54	129	134	240	553	596	668	621	507	349	187	110	4148
1997	84	74	178	209	388	530	647	643	523	297	111	40	3724
1998	88	44	151	223	518	673	692	674	545	372	229	107	4316
1999	110	159	200	383	513	573	588	642	465	312	159	58	4162
2000	137	189	300	330	549	585	649	597	535	363	179	27	4440
2001	38	153	106	399	487	630	644	675	511	356	216	103	4318
2002	115	35	203	429	518	590	618	672	537	420	109	64	4310
2003	21	65	143	317	572	582	597	612	485	347	236	55	4032
2004	75	56	236	300	451	588	668	667	513	486	225	82	4347
2005	138	122	166	284	460	614	657	682	600	390	203	69	4385
2006	95	94	308	453	525	553	626	626	529	370	196	69	4444
2007	37	79	244	260	438	548	609	636	531	376	227	127	4112
2008	65	153	204	326	488	606	554	635	457	305	168	98	4059
2009	79	161	208	332	514	582	687	664	517	400	124	30	4298
2010	51	12	91	315	545	628	625	695	538	372	187	107	4166
2011	45	145	267	472	555	614	627	696	586	349	205	85	4646
2012	117	123	265	432	558	642	640	676	559	421	227	161	4821
2013	74	147	166	272	463	623	632	656	537	430	173	77	4250
2014	21	99	123	311	388	597	624	677	528	441	111	109	4029
2015	13	44	124	373	508	573	617	624	515	414	282	134	4221
2016	21	87	243	325	484	565	697	683	616	481	265	176	4643
2017	141	246	294	416	540	613	598	679	532	374	284	107	4824
2018	43	222	307	306	570	669	709	715	604	396	145	79	4765
2019	58	149	213	349	600	674	696	759	611	409	170	91	4779

SNOWFALL (inches) 2019 BROWNSVILLE (KBRO)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1980-81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981-82	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982-83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983-84	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984-85	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1985-86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986-87	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987-88	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988-89	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989-90	0.0	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	T
1990-91	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991-92	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T
1992-93	0.0	T	0.0	0.0	0.0	0.0	T	0.0	T	0.0	0.0	0.0	T
1993-94	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994-95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995-96	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996-97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997-98	0.0	0.0	0.0	0.0	0.0	T	0.0	0.0	0.0	0.0	0.0	0.0	T
1998-99	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999-00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000-01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001-02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002-03	0.0	0.0	0.0	0.0	0.0	0.0							
2003-04													
2004-05													
2005-06													
2006-07													
2007-08													
2008-09													
2009-10													
POR= 79 YRS	0.0	T	0.0	0.0	T	T	T	0.0	T	0.0	0.0	0.0	T

WBAN : 12919

REFERENCE NOTES :

PAGE 1:
THE TEMPERATURE GRAPH SHOWS NORMAL MAXIMUM AND NORMAL MINIMUM DAILY TEMPERATURES (SOLID CURVES) AND THE ACTUAL DAILY HIGH AND LOW TEMPERATURES (VERTICAL BARS).

PAGE 2 AND 3:

H/C INDICATES HEATING AND COOLING DEGREE DAYS.

RH INDICATES RELATIVE HUMIDITY

W/O INDICATES WEATHER AND OBSTRUCTIONS

S INDICATES SUNSHINE.

PR INDICATES PRESSURE.

CLOUDINESS ON PAGE 3 IS THE SUM OF THE CEILOMETER AND SATELLITE DATA NOT TO EXCEED EIGHT EIGHTHS(OKTAS).

GENERAL:

T INDICATES TRACE PRECIPITATION, AN AMOUNT GREATER THAN ZERO BUT LESS THAN THE LOWEST REPORTABLE VALUE.

+ INDICATES THE VALUE ALSO OCCURS ON EARLIER DATES.

BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

ASOS INDICATES AUTOMATED SURFACE OBSERVING SYSTEM.

PM INDICATES THE LAST DAY OF THE PREVIOUS MONTH.

POR (PERIOD OF RECORD) BEGINS WITH THE JANUARY DATA MONTH AND IS THE NUMBER OF YEARS USED TO COMPUTE THE MEAN. INDIVIDUAL MONTHS WITHIN THE POR MAY BE MISSING.

WHEN THE POR FOR A NORMAL IS LESS THAN 30 YEARS,

THE NORMAL IS PROVISIONAL AND IS BASED ON THE NUMBER OF YEARS INDICATED.

0.* OR * INDICATES THE VALUE OR MEAN-DAYS-WITH IS BETWEEN 0.00 AND 0.05.

CLOUDINESS FOR ASOS STATIONS DIFFERS FROM THE NON-ASOS OBSERVATION TAKEN BY A HUMAN OBSERVER. ASOS STATION CLOUDINESS IS BASED ON TIME-AVERAGED CEILOMETER DATA FOR CLOUDS AT OR BELOW 12,000 FEET

CLEAR INDICATES 0 - 2 OKTAS, PARTLY CLOUDY INDICATES 3 - 6 OKTAS, AND CLOUDY INDICATES 7 OR 8 OKTAS.

GENERAL CONTINUED:

WIND DIRECTION IS RECORDED IN TENS OF DEGREES (2 DIGITS) CLOCKWISE FROM TRUE NORTH. "00" INDICATES CALM. "36" INDICATES TRUE NORTH.

RESULTANT WIND IS THE VECTOR AVERAGE OF THE SPEED AND DIRECTION.

AVERAGE TEMPERATURE IS THE SUM OF THE MEAN DAILY MAXIMUM AND MINIMUM TEMPERATURE DIVIDED BY 2.

SNOWFALL DATA COMPRISE ALL FORMS OF FROZEN

PRECIPITATION, INCLUDING HAIL.

A HEATING (COOLING) DEGREE DAY IS THE DIFFERENCE BETWEEN THE AVERAGE DAILY TEMPERATURE AND 65 F.

DRY BULB IS THE TEMPERATURE OF THE AMBIENT AIR.

DEW POINT IS THE TEMPERATURE TO WHICH THE AIR MUST BE COOLED TO ACHIEVE 100 PERCENT RELATIVE HUMIDITY.

WET BULB IS THE TEMPERATURE THE AIR WOULD HAVE IF THE MOISTURE CONTENT WAS INCREASED TO 100 PERCENT RELATIVE HUMIDITY.

ON JULY 1, 1996, THE NATIONAL WEATHER SERVICE BEGAN USING THE "METAR" OBSERVATION CODE THAT WAS ALREADY EMPLOYED BY MOST OTHER NATIONS OF THE WORLD. THE MOST NOTICEABLE DIFFERENCE IN THIS ANNUAL PUBLICATION WILL BE THE CHANGE IN UNITS FROM TENTHS TO EIGHTHS(OKTAS) FOR REPORTING THE AMOUNT OF SKY COVER.

STATION HISTORY STOPPED WITH THE 2009 ANNUAL. IF YOU NEED STATION HISTORY INFORMATION GO TO "Historical Observing Metadata

Repository", URL IS:

<http://www.ncdc.noaa.gov/homr/>

SNOWFALL STOPPED MONTH & YEAR INDICATED ABOVE. NO FURTHER YEARS INCLUDED UNLESS RESTARTED.

NOTE:

The "Period of Record:(POR)" for all "averages" is based on "Summary of the Day First Order Station" and "Cooperative Summary of the Day" archives.

2019

BROWNSVILLE

TEXAS (KBRO)

Brownsville is located at the southern tip of Texas. It is the largest city in the four county area referred to as the Lower Rio Grande Valley or just the Valley.

The Gulf of Mexico, located about 18 miles east, is the dominant influence on local weather. Prevailing southeast breezes off the Gulf provide a humid but generally mild climate. Winds are frequently strong and gusty in the spring.

Brownsville weather is generally favorable for outdoor activities and the Valley is a popular tourist area, especially for Winter Texans who come to enjoy the mild winters. High temperatures range mostly in the 70s and 80s from October through April, with lows in the 50s and 60s during the same period. For the remainder of the year highs are frequently in the 90s with lows in the 70s.

Temperature extremes are rare but do occur. Temperatures in the 90s have occurred in every month of the year, with 100 degree readings noted as early as March and as late as September. Temperatures of 100 degrees or more are associated with west winds bringing hot dry air out of Mexico. Very hot temperatures are often moderated by a cooling sea breeze from the Gulf during the afternoon hours.

Located about 150 miles north of the tropics, cold weather in Brownsville is infrequent and of short duration. Some winters pass without a single day with freezing temperatures. This climate permits

year around gardening and cultivation of citrus and other cold sensitive tropical and sub-tropical plants. Damaging cold comes from frigid air masses, called northers or arctic outbreaks, plunging south from Canada or the Arctic. The worst of these can drop temperatures well below freezing for several hours, and a few have produced readings in the teens. Fortunately such events are very rare since they are disastrous to the local economy.

Rainfall is not well distributed. Heaviest rains occur in May through June and mid August through mid October. Extended periods of cool rainy weather, called overrunning, can occur in winter. Torrential rains of 10 to 20 inches or more may accompany tropical storms or hurricanes that occasionally move over the area in summer or fall. Rainy spells may be followed by long dry periods. Irrigation is required to ensure production of crops such as cotton, grains, and vegetables. Snow and freezing rain or drizzle are so rare that years may pass between occurrences.

Brownsville is blessed by having little severe weather. Damaging hail or winds from heavy thunderstorms are generally limited to the Spring season and many years may elapse between occurrences. Tornadoes are even more rare. Tropical storms and hurricanes from the Gulf are a threat each summer and fall, but again, damaging storms are quite rare.

Station History

BROWNSVILLE, TX

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1969-01-01	1972-01-01	25° 55'	-97° 28'	33		COOP, UPPERAIR, WXSVC
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1972-01-01	1981-12-31	25° 55'	-97° 28'	19		COOP, UPPERAIR, WXSVC
RIO GRANDE VALLEY AP	1928-10-01	1930-08-02	25° 55'	-97° 28'			AIRWAYS
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1940-08-01	1946-08-01	25° 55'	-97° 28'			AIRWAYS, UPPERAIR
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1946-08-01	1969-01-01	25° 55'	-97° 28'	33		AIRWAYS, COOP, UPPERAIR
BROWNSVILLE S PADRE ISLAND INTL AP	2003-12-29	2017-10-01	25° 54'	-97° 25'	24		AIRWAYS, ASOS, COOP, UPPERAIR
BROWNSVILLE MUNICIPAL AP	1930-08-02	1938-11-16	25° 55'	-97° 28'			AIRWAYS
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1938-11-16	1940-08-01	25° 55'	-97° 28'			AIRWAYS
BROWNSVILLE S PADRE ISLAND INTL AP	1994-05-01	1995-03-01	25° 54'	-97° 25'	24	.5 MI W	ASOS, COOP, UPPERAIR
BROWNSVILLE S PADRE ISLAND INTL AP	1995-03-01	2003-12-29	25° 54'	-97° 25'	24		ASOS, COOP, UPPERAIR
BROWNSVILLE S PADRE ISLAND INTL AP	2017-10-01	Present	25° 54'	-97° 25'	24		AIRWAYS, ASOS, COOP, PLCD, UPPERAIR
BROWNSVILLE RIO GRANDE VALLEY INTL AP	1981-12-31	1994-05-01	25° 55'	-97° 28'	19		COOP, UPPERAIR
BROWNSVILLE/INT.	1929-01-01	2015-12-31	25° 55'	-97° 25'	23.3		UPPERAIR, BALLOON

Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
PRECIP	1988-04-26	1994-05-01	HOURLY	2400	UNIV	RCRD	
TEMP	1994-05-01	2007-04-06	DAILY	2400	HYGR		
PRECIP	1928-10-01	1963-09-01	DAILY	2400	UNIV	RCRD	
TEMP	1963-09-01	1988-04-26	DAILY	2400			
TEMP	1988-04-26	1994-05-01	DAILY	2400	HYGR		
PRECIP	2007-04-06	Present	DAILY	2400	TB	RCRD	
TEMP	2007-04-06	Present	DAILY	2400	HYGR		
PRECIP	2007-04-06	Present	HOURLY	2400	TB	RCRD	
TEMP	1928-10-01	1963-09-01	DAILY	2400			
WIND	2007-04-06	Present	HOURLY	UNKN	ANEMSONIC		
PRECIP	1963-09-01	1988-04-26	HOURLY	2400	UNIV	RCRD	
PRECIP	1963-09-01	1988-04-26	DAILY	2400	UNIV	RCRD	
PRECIP	1994-05-01	2007-04-06	DAILY	2400	TB	RCRD	
PRECIP	1988-04-26	1994-05-01	DAILY	2400	UNIV	RCRD	
WIND	1994-05-01	2007-04-06	HOURLY	UNKN	ANEMCUP		
PRECIP	1994-05-01	2007-04-06	HOURLY	2400	TB	RCRD	

* For explanation of codes and abbreviations see Station Metadata link below.

Other Station Information can be found at:

ASOS Implementation by NWS: <http://www.nws.noaa.gov/ops2/Surface/asosimplementation.htm>

Station Metadata website: <http://www.ncdc.noaa.gov/homr>

INQUIRES/COMMENTS CALL: (828) 271-4800, option 2
 Fax Number : (828) 271-4876
 TDD : (828) 271-4010
 Email : ncdc.orders@noaa.gov

NOAA/National Centers for Environmental Information
 Attn: User Engagement & Services Branch
 151 Patton Avenue
 Asheville, NC 28801-5001

INTRODUCTION TO REM/RATE SOFTWARE PROGRAM

INTRODUCTION TO REM/RATE™ SOFTWARE PROGRAM

1. REM/Rate™ Software Design Objective

REM/Rate – Residential Energy Analysis and Rating Software Program is a sophisticated, residential energy analysis, code compliance and rating software program. REM/Rate calculates heating, cooling, hot water, lighting, and appliance energy loads, consumption and costs for new and existing single and multi-family homes.

REM/Rate operates in Windows and has many unique features, including a simplified input procedure, extensive component libraries, automated energy efficient improvement analysis, duct conduction and leakage analysis, latent and sensible cooling analysis, lighting and appliance audit, and active and passive solar analysis.

A home energy rating is calculated based on the proposed Department of Energy (DOE) Home Energy Rating System (HERS) guidelines (10 CFR 437) as modified by the RESNET/NASEO (Residential Energy Service Network/National Association of State Energy Officials) HERS Technical Committee. REM/Rate also creates value added information including energy appraisal addendum, energy code compliance (Model Energy Code (MEC) and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)), improvement analysis (existing homes), design optimization (new homes), heating and cooling equipment sizing and U.S. Environmental Protection Agency (EPA) Energy Star Home analysis.

2. Use of REM/Rate in Utility Allowance Development

REM/Rate utilizes an Engineering approach to calculate the consumption allowance for various types of new and existing homes. The REM/Rate software program is recognized and approved by EPA, DOE and HUD.

The Nelrod Company is accredited and licensed by HERS/RESNET and a certified and licensed REM/Rate provider and user. We have successfully conducted energy home rating and energy audits using this software for over 31,550 reports. The information from our past experience and these reports is used to develop models for the most common building types and bedroom sizes, which in turn are utilized in developing average monthly utility allowances.

3. Basic Procedures

The data needed for this program is collected either from the building/site plans provided and/or from a site visit. Building type models are developed for the most common building types (Single-Family Detached House, Semi-Detached/Duplex, Row/Townhouse, Multi-Family Walk-Up, and Manufactured Homes) and bedroom sizes. The program calculates heating, cooling, hot water, lighting and appliances

energy load, consumption and cost based on home's design and construction features as well as climate and energy cost data.

The calculations are conducted following the Residential Energy Services Network (RESNET) Home Energy Rating System (HERS) technical guidelines, developed in cooperation with, US DOE, US Department of Veterans Affairs (USVA), HUD, and the National Association of State Energy Officials (NASEO) as the rating system used to determine energy usage in new and existing construction. The guidelines were established as the only national standard for determining energy savings based on construction types and local (community-wide) geographical locations. It estimates the annual energy quantity a home will require and the cost of that energy based on local utility rates. The guidelines make assumptions about the size and lifestyle of the family who will occupy the home. These assumptions are based on nationally accepted standards developed by the US DOE, American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) and US EPA. Such assumptions include occupancy rates of 2 persons for the first bedroom and one additional person for each additional bedroom; thermostat setting of 68° Fahrenheit for heating and 78° Fahrenheit for cooling, which is the recommended setting for an energy conserving household. To determine water heater energy usage, tap water temperatures are adjusted for local geographical locations and 120° thermostat settings are used, which is considered energy conservative. In addition, architectural components are considered such as square footages, number of stories, insulation R-values, wall materials, mechanical equipment types and efficiencies.

The REM/Rate software utilizes default standards based on national trends. (See details following this introduction.) If there are no local surveys available regarding residential lifestyles, a residential rental market study can be conducted to gather data on the most common household amenities, such as, dishwashers, clothes washers and dryers, microwaves, and size of refrigerators.

Additionally, the Agency can provide architectural characteristics concerning common foundation types, exterior siding, and other structure features for their area. This information will be used to further adjust the building type models.

4. Input Values and Determination

REM/Rate provides two levels of inputs: simplified and detailed. Simplified inputs use general design characteristics and built-in algorithms to determine the results. We use detailed inputs which provide the user greater control over calculational values and development of common building type models.

The various input parameters are as follows:

- Location – List of US and Canadian locations;
- Energy costs – create or modify various utility rates based on the existing market;
- Building Component data – Foundation type, Opaque wall constructional details, window/skylights conduction and solar gain values, type of ceilings and doors, heating equipment, cooling equipment, water heating equipment, various types of lights and appliances used.

These values are determined either from verified conditions/site visits or from the building plans. A Certified IECC (International Energy Conservation Code) Inspector/HERS/RESNET (Home Energy Rating Systems/Residential Energy Services Network) Rater inputs characteristics from building plans and/or from documentation gathered from an on-site inspection of the physical, structural and mechanical details. We use the criteria from our past experience to develop models for common building types and bedroom sizes.

Climate data is available for cities and towns throughout North America. This data is updated periodically with new versions of the REM/Rate software program.

Extensive utility libraries can be created and maintained for specific utility provider rates and charges and are available to apply to consumption data to determine local utility allowances.

5. Output Values, Interpretation and Use for Utility Allowances

Fifty-six preformatted reports are available for viewing on screen or printing. Reports include energy use, energy cost, design loads, rating, quick report, improvement analysis, code compliance, and economic analysis of energy upgrades.

Reports are generated from the building type models in the REM/Rate software program and analyzed for consumption usage totals by energy end-use categories. (Fuel Summary and Lights & Appliance Summary.)

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REM/RATE SOFTWARE DEFAULT AUDIT

REM/Rate Software Default Audit

Lighting and Appliance Algorithms

REM/Rate Software uses the energy consumption of basic home appliances for the Default Loads. The appliances for the **Default Loads** are:

Lighting (permanent and non-permanent)

Plug Loads

Refrigerator/Freezer

Clothes Washer

Clothes Dryer

Oven/Range

The consumption in MMBtu is dependent on what the days of the heating and cooling seasons are.

Number of Occupants based on HUD's occupancy standards, and HUD's Keating Memo.

Lighting (Watt h / Day) = $[HR_c + (Area/HR_{area}) + (HR_{occ} \times Occupants)] \times Watts / Fixture$

Where:

HR_c	constant number of fixture (or bulb) hours
HR_{area}	number of square feet per fixture (or bulb) hours
HR_{occ}	number of fixture (or bulb) hours per occupant
Area	conditioned area
Occupants	number of occupants in the structure

Permanently Installed Lighting:

	Heating Season	Cooling Season
HR_c	8	7
HR_{area}	500	800
HR_{occ}	2	1
Watts/Fixture Incandescent	100	100
Watts/Fixture Fluorescent	30	30

Non-Permanently Installed Lighting:

	Heating Season	Cooling Season
HR_c	14	10
HR_{area}	350	600
HR_{occ}	2.5	1
Watts/Fixture Incandescent	70	70
Watts/Fixture Fluorescent	25	25

Appliance Load

Lighting: The lighting usage is described in terms of fixture-hours and bulb-hours, (e.g. three fixture hours would be present if one fixture is on for 3 hours, or 3 fixtures are on for one hour). The lighting usage can then be determined by multiplying the number of lamp hours by the wattage per lamp, which would be determined by the percentage of fluorescent lamps.

Three terms exist in the determination of the number of fixture hours: a constant, a ratio by area, and a ratio by number of occupants (e.g. bedrooms). HR_c fixture hours/day are assumed as a base load. Added to this is one fixture hour/day for every HR_{area} square foot of conditioned area, and HR_{occ} fixture hours/day for each occupant (four non-permanently installed lights, substitute bulb hours in place of fixture hours.)

100 watts/fixture is assumed for the average permanently installed incandescent fixture, and 30 watts/fixture for the average permanently installed fluorescent fixture. The actual wattage assumed is ratioed by the percentage of fluorescent fixtures. If no information is input, a ratio of 10% fluorescent fixtures is assumed.

70 watts/bulb is assumed for the average non-permanently installed incandescent bulb, and 25 watts/bulb for the average non-permanently installed fluorescent bulb. Again, the actual wattage is dependent upon the percentage of fluorescent bulbs, and a value of 10% is used if no information is input on non-permanently installed lighting.

Refrigerator: Vary refrigerators' consumption by year, type and size, based on the data provided by VEIC. The load due to year shall be interpolated, and the load due to size shall stay in the batch mode, (e.g. the program will pick which data to use by type and size, and then interpolate the data for the year).

Range/Oven:

Electric: 1.5 kwh/day (550 kwh/yr)

Gas: 12,000 Btu/day (4.4 MMBtu/yr)

Clothes Washer:

30 kwh/yr/person

Clothes Dryer:

Electric: $300 \text{ kwh/yr/person} = 2 \text{ people for } 1^{\text{st}} \text{ bedroom} + 1 \text{ for each additional} = 3.5$
persons $\times 25 \text{ kwh} = 87.50 \text{ kwh}$

Gas 1.5 MMBtu/yr/person + 35 kwh (Electric)/yr/person

Plug Loads: 1.25 kwh/day + 1.75 kwh/day/person

Detailed Audit

REM/Rate also allows the user to enter the details of the Lights and Appliances by choosing the Perform Detailed Audit ratio button. By selecting this option, the user can enter the exact internal loads of the residential building.

The following table describes a detailed audit performed on the REM example building:

Name	Type	Location	Qty	Fuel	Use	Efficiency
Ceiling Fan	Miscellaneous	Conditioned Area	1	Electricity	220.0 kwh/ Year	Standard
Dishwasher	Dishwasher	Conditioned Area	1	Electricity	290.0 kwh/ Year	Standard
Clothes Dryer	Clothes Dryer	Conditioned Area	1	Electricity	880.0 kwh/ Year	Standard
Lights	Light Fixture(s)	Conditioned Area	1	Electricity	940.0 kwh/ Year	Standard
Microwave	Microwave	Conditioned Area	1	Electricity	190.0 kwh/ Year	Standard
Plug Loads	Plug Load(s)	Conditioned Area	1	Electricity	500.0 kwh/ Year	Standard
Range/Oven	Range/Oven	Conditioned Area	1	Electricity	450.0 kwh/ Year	Standard
Refrigerator	Refrigerator	Conditioned Area	1	Electricity	1150.0 kwh/ Year	Standard
Television	Miscellaneous	Conditioned Area	1	Electricity	720.0 kwh/ Year	Standard
Washer	Clothes Washer	Conditioned Area	1	Electricity	100.0 kwh/ Year	Standard
Washer	Clothes Washer	Conditioned Area	1	Water	5.0 gallons/ Week	Standard
Shower	Shower/Bath	Conditioned Area	1	Water	10.0 gallons/ Day	Standard

Internal Gains in (Rating) Load:

The internal gains will include all of the heat from the refrigerator, the oven/range, the clothes washer, and the plug loads. Heat from the dryer is assumed to be vented out of the conditioned space.

Domestic Hot Water (DHW)

The assumption currently used for DHW is 30 gallons + 10 gallons/occupant, and will not be changed with the presence or absence of dish or clothes washers. Reasons for this include: the 30 gallons + 10 gallons/occupant average includes the averaged use of dishwashers and clothes washers. People will use some water to wash dishes if they do not have a dishwasher, but it is not clear whether the amount of water they use could approach the amount used by a dishwasher. A clothes washer is assumed to exist, as 75 percent of all households contain a clothes washer. Therefore, no adjustment is needed.

REM/Rate Internal Gains Data

Daily internal gains (Btu/day) are assumed to be:

	Heating	Cooling
Lighting	2,100/occ	1,200/occ
Appliance	3,000/occ + 15,000	3,000/occ + 15,000
Occupant	4,800/occ	4,800/occ
Total (Btu/day)	9,900/occ + 15,000	9,900/occ + 15,000
(Btu/hr)	413/occ + 625	375/occ + 625

If the DHW type is Heat Pump, the internal gains are further adjusted:

	Heating	Cooling
Heat Pump DHW	7,000/occ	8,000/occ

The number of occupants is assumed to be equal to the number of bedrooms in the home.

The REM method assumes that the gains are constant over the day and thus half occur during the daytime, coincident with the solar gains, and half at night when no solar gains are present. The internal gains during these two time periods are treated separately when the heating and cooling loads are calculated.