

DEVELOPMENT CHARACTERISTICS

Cheryl Lord

From: No Reply
Sent: Wednesday, June 24, 2020 8:43 AM
To: fhughes@hacf.us
Subject: ResidentLife Quote Request

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Quote Request

ResidentLife Utility Allowance Quote Request

Contact Person's Name: Faniqua Hughes
 Title: Director of Operations
 Agency Name: Housing Authority of the City of Freeport
 HACode: IL029
 (Required for Public Housing)
 (See HUD's HA Profiles Website)
 Fiscal Year End: Mar. 31
 Address: 1052 W. Galena Ave
 City: Freeport
 State: Illinois
 Zip Code: 61032
 Phone Number: (815) 232-4171 x1018
 Fax Number: (815) 599-1388
 Email Address: fhughes@hacf.us
 Website: www.freeporthousing.org
 Agency Facebook Page:
 Study Types: Public Housing, Units: 256
 Other (specify)

Complete for Public Housing

Development Name	Development Code	Year Built	Building Type	Total Units	Bedroom Sizes (check all that apply)						Resident-Paid Utilities*** (See Legend)				
					0	1	2	3	4	5	Electric	Natural Gas	Water	Sewer	Tras
Parkside	AMP 11	1957	Row House/Townhouse	71	Yes	Yes	Yes	Yes	Yes	Yes	I	I	C	C	C
Westview	AMP 12	1960	Row House/Townhouse	196	Yes	Yes	Yes	Yes	Yes	Yes	I	I	C	C	C

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
ComEd	Electric	(800) 334-7661	www.comed.com	Resident

Utility Provider Name	Utility Type	Phone Number	Website	Paid By
Nicor	Natural Gas	(888) 642-6748	www.nicorgas.com	Resident
City of Freeport Water and Sewer	Electric		www.cityoffreeport.org	Agency

Comments or Questions:

We are looking for accurate way to get a utility allowance schedule that is not as time consuming. I am interested in knowing the cost, how much time the process takes, and how often would we need to do this in order to stay in compliance.

CUSTOMIZATION FOR BASE REM/RATE MODELS

Housing Agency:

Housing Authority of the City of Freeport

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.:

Parkside AMP 11

Building: Year Built: 1957 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: 0BR/EFF 1BR 2BR 3BR 4BR 5BR 6BR

1 Foundation Type: Concrete Slab Pier-Beam (Crawl Space) Basement

2 Window Type: Single Pane Double Pane Low-E/Vinyl Other: Thermo Pane
U-Factor: _____ SHGC: _____ (Solar Heat Gain Coefficient)

3 # of Stories in Unit: one two Building has multiple stories

4 Exterior Veneer/Cladding: Siding Brick Stucco Other: Brick Veneer

HVAC

5a Heating Fuel: Electric Natural Gas Other: _____

5b Is Heating Individually Metered? Yes No

5c Heating Type: Electric Baseboard Central Boiler (Radiant) Individual Boiler

Energy Efficiencies: Heat Pump Forced Air Furnace w/ ducts/Wall unit (80 AFUE)
Heat Pump Efficiency Rating: SEER: _____ HSPF: _____

Solar Panels Installed (High Efficiency) Gas Furnace (90 AFUE)
(additional information is needed)

5d Heating Equipment Location: Conditioned Space Unconditioned Space (attic/garage)

5e Air Conditioning: Yes No Type: Window Unit Central Tonage: _____

6 Air Ducts: Yes No

If Yes, Location: Conditioned Space Unconditioned Space (attic)

7a Water Heater: Electric (30 gal) Natural Gas (30 gal) Oil

40-50 gallon Elec Tank .90 EF Gas Tank .58 EF Solar Water Heating
(additional information is needed)

Elec Tank .95 EF Gas Tank .62 EF

Elec Tankless Gas Tankless .80 EF or higher

7b Water Heater Type: Individual units Central Boiler

7c Water Htr Location: Conditioned Space Unconditioned Space (attic/garage)

8 Stove/Range: Electric Natural Gas

9 Energy Efficiencies:

Insulation: Ceiling (R-20)(min.) Ceiling (R-38) Wall (R-13)

Ceiling (R-30) Ceiling (R-49) Wall (R-19)

Low Flow Water: Shower, Faucets, Toilets Lighting: 100% CFL 100% LED

10 GeoThermal (HVAC and DHW) COP Rating: _____

Notes/Comments: AMP 11 includes Parkside & Lincoln Village

PS 65 Units & 1 Office 1 Community Center

LV 6 Units

Housing Agency:

Housing Authority of the City of Freeport

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.:

Parkside AMP 11

Building: Year Built: _____

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

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2 Window Type: Single Pane Double Pane Low-E/Vinyl Other: Thermo Pane
U-Factor: _____ SHGC: _____ (Solar Heat Gain Coefficient)

3 # of Stories in Unit: one two Building has multiple stories

4 Exterior Veneer/Cladding: Siding Brick Stucco Other: _____

HVAC

5a Heating Fuel: Electric Natural Gas Other: _____

5b Is Heating Individually Metered? Yes No

5c Heating Type: Electric Baseboard Central Boiler (Radiant) Individual Boiler
Energy Efficiencies: Heat Pump Forced Air Furnace w/ ducts/Wall unit (80 AFUE)
Heat Pump Efficiency Rating: SEER: _____ HSPF: _____
 Solar Panels Installed (additional information is needed) (High Efficiency) Gas Furnace (90 AFUE)

5d Heating Equipment Location: Conditioned Space Unconditioned Space (attic/garage)

5e Air Conditioning: Yes No Type: Window Unit Central Tonage: _____

6 Air Ducts: Yes No
If Yes, Location: Conditioned Space Unconditioned Space (attic)

7a Water Heater: Electric (30 gal) Natural Gas (30 gal) Oil
40-50 gallon Elec Tank .90 EF Gas Tank .58 EF Solar Water Heating (additional information is needed)
 Elec Tank .95 EF Gas Tank .62 EF
 Elec Tankless Gas Tankless .80 EF or higher

7b Water Heater Type: Individual units Central Boiler

7c Water Htr Location: Conditioned Space Unconditioned Space (attic/garage)

8 Stove/Range: Electric Natural Gas

9 Energy Efficiencies:

Insulation: Ceiling (R-20)(min.) Ceiling (R-38) Wall (R-13)
 Ceiling (R-30) Ceiling (R-49) Wall (R-19)

Low Flow Water: Shower, Faucets, Toilets Lighting: 100% CFL 100% LED

10 GeoThermal (HVAC and DHW) COP Rating: _____

Notes/Comments: AMP 11 includes Parkside & Lincoln Village

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LV 6 Units

Housing Agency:

Housing Authority of the City of Freeport

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.:

Westview AMP 12

Building: Year Built: 1960

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 checked="" type="checkbox"/> Basement Only 5 Ur Units @ Willow
2	Window Type:	<input type="checkbox"/> Single Pane	<input type="checkbox"/> Double Pane Low-E/Vinyl	<input checked="" type="checkbox"/> Other: Thermo Pane
	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 checked="" type="checkbox"/> Other: Brick Veneer	

HVAC

5a	Heating Fuel:	<input type="checkbox"/> Electric	<input checked="" 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 checked="" type="checkbox"/> Forced Air Furnace w/ ducts/Wall unit (80 AFUE)	
		Heat Pump Efficiency Rating: SEER: _____ HSPF: _____		
		<input type="checkbox"/> Solar Panels Installed (additional information is needed)	<input checked="" type="checkbox"/> (High Efficiency) Gas Furnace (90 AFUE)	
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 checked="" 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 type="checkbox"/> Electric (30 gal) 40-50 gallon	<input checked="" type="checkbox"/> Natural Gas (30 gal)	<input type="checkbox"/> Oil
		<input type="checkbox"/> Elec Tank .90 EF	<input checked="" type="checkbox"/> Gas Tank .58 EF	<input type="checkbox"/> Solar Water Heating (additional information is needed)
		<input type="checkbox"/> Elec Tank .95 EF	<input type="checkbox"/> Gas Tank .62 EF	
		<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 type="checkbox"/> Electric	<input checked="" type="checkbox"/> Natural Gas
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9	Energy Efficiencies:		
	Insulation:	<input type="checkbox"/> Ceiling (R-20)(min.)	<input type="checkbox"/> Ceiling (R-38)
		<input type="checkbox"/> Ceiling (R-30)	<input checked="" type="checkbox"/> Ceiling (R-49)
		<input type="checkbox"/> Wall (R-13)	<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: _____
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Notes/Comments: AMP 12 includes Westview, Gilmore, Willow, & Douglas Village
 WV 84 Units & 1 Office 1 Community Center DV 26 Units & 1 Community Center Only Develop in Amp
 GL 32 Units 12 w/ Central air

WL 40 units & 1 Community Center

Housing Agency:

Housing Authority of the City of Freeport

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.:

Westview AMP 12

Building: Year Built: _____ 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: Concrete Slab Pier-Beam (Crawl Space) Basement 5 Units Willow

2 Window Type: Single Pane Double Pane Low-E/Vinyl Other: Thermo Pane
U-Factor: _____ SHGC: _____ (Solar Heat Gain Coefficient)

3 # of Stories in Unit: one two Building has multiple stories

4 Exterior Veneer/Cladding: Siding Brick Stucco Other: _____

HVAC

5a Heating Fuel: Electric Natural Gas Other: _____

5b Is Heating Individually Metered? Yes No

5c Heating Type: Electric Baseboard Central Boiler (Radiant) Individual Boiler

Energy Efficiencies: Heat Pump Forced Air Furnace w/ ducts/Wall unit (80 AFUE)

Heat Pump Efficiency Rating: SEER: _____ HSPF: _____

Solar Panels Installed (High Efficiency) Gas Furnace (90 AFUE)
(additional information is needed)

5d Heating Equipment Location:

Conditioned Space Unconditioned Space (attic/garage)

5e Air Conditioning: Yes No Type: Window Unit Central Tonnage: _____

6 Air Ducts: Yes No

If Yes, Location: Conditioned Space Unconditioned Space (attic)

7a Water Heater: Electric (30 gal) Natural Gas (30 gal) Oil

40-50 gallon Elec Tank .90 EF Gas Tank .58 EF Solar Water Heating
(additional information is needed)

Elec Tank .95 EF Gas Tank .62 EF

Elec Tankless Gas Tankless .80 EF or higher

7b Water Heater Type: Individual units Central Boiler

7c Water Htr Location: Conditioned Space Unconditioned Space (attic/garage)

8 Stove/Range: Electric Natural Gas

9 Energy Efficiencies:

Insulation: Ceiling (R-20)(min.) Ceiling (R-38) Wall (R-13)

Ceiling (R-30) Ceiling (R-49) Wall (R-19)

Low Flow Water: Shower, Faucets, Toilets Lighting: 100% CFL 100% LED

10 GeoThermal (HVAC and DHW) COP Rating: _____

Notes/Comments:

AMP 12 includes Westview, Gilmore, Willow, & Douglas Village

WV 84 Units & 1 Office 1 Community Center DV 26 Units & 1 Community Center

GL 32 Units

Only Develop in Amp 12 with Central Air

WL 40 Units & 1 Community Center

DEVELOPMENT REPORTS



Current Study

Type: **Low-Rent Utility Study - [New]**
 Date: **September 22, 2020**
 Agency: **Housing Authority of the City of Freeport**

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ResidentLife Utility Allowance® Calculator

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Utility Study

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- [Proposed Allowances](#)
- [Compared Allowances](#)

Low-Rent Study

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Section 8 Study

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

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?

What is the development's extension number?

What is the development's building type?

What type of residents occupy the development?

Are water saving devices used?

Do the units have air conditioning?

How old is the development?

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

Utilities

What utility is used for space heating?

What utility is used for domestic hot water?

What utility is used for cooking stove?

Do the Residents pay for natural gas?

Do the Residents pay for electricity?

Do the Residents pay for water or sewer?

Do the Residents pay for trash pickup?

Unit Details

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

Energy Improvements (Natural Gas) - [HIDE](#)

Space Heating

- Gas Furnace (48k/94 AFUE)

Water Heating

- Gas Tank (0.62 EF)

- Gas Tankless (0.69 EF)
- Gas Tankless (0.80 EF)

Insulation

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

Windows

- Double Pane Vinyl

Lighting

- 100% CFL

Energy Improvements (Electric) - SHOW

Save Delete Reset

End-Use Consumptions

	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
Space Heating (Therms)	32	32	39	49	55	59	
Domestic Hot Water (Therms)	11	11	13	15	16	17	
Lights & Appliances (kWh)	168	168	209	256	300	346	
Cooking Stove (Therms)	5	5	7	7	8	9	
Water & Sewer (Gallons)	1550	3100	4650	7750	9300	12400	

End-Use Consumption Calculations - SHOW

Adjusted Consumption Totals

	0 BR	1 BR	2 BR	3 BR	4 BR	5 BR	6 BR
Electricity (kWh)	168	168	209	256	300	346	
Natural Gas Winter (Therms)	47	47	58	70	78	83	
Natural Gas Summer (Therms)	16	16	20	22	24	26	

Consumption Total Adjustment Calculations - SHOW

Select a Development / AMP

Available Developments:

Parkside and Westview IL-(EE Equip: H)

Add Development Edit Development

CURRENTLY ADOPTED UTILITY ALLOWANCES

Freeport Housing Authority		NICOR		COMED				
Utility Allowances		AVG PER		AVG PER				
As of 8/1/18 per Board Approval		THERM=.39		KWH=.04928				
								<u>DIFFERENCE</u>
			<u>CURRENT</u>					FROM 2015 UTILITY ALLOWANCES
Development	# of BR	Gas	Elec	Total		GAS	ELEC	TOTAL
29-1 Parkside	1	\$ 16.00	\$ 13.00	\$ 29.00		\$ 22.00	\$ 19.00	\$ 41.00
	2	\$ 17.00	\$ 14.00	\$ 31.00		\$ 18.00	\$ 20.00	\$ 38.00
	3	\$ 18.00	\$ 16.00	\$ 34.00		\$ 15.00	\$ 16.00	\$ 32.00
	4	\$ 18.00	\$ 22.00	\$ 40.00		\$ 14.00	\$ 15.00	\$ 29.00
29-2 Westview	1	\$ 18.00	\$ 13.00	\$ 31.00		\$ 14.00	\$ 17.00	\$ 31.00
	2	\$ 18.00	\$ 17.00	\$ 35.00		\$ 23.00	\$ 17.00	\$ 40.00
	3	\$ 20.00	\$ 18.00	\$ 38.00		\$ 25.00	\$ 21.00	\$ 46.00
	4	\$ 20.00	\$ 20.00	\$ 40.00		\$ 32.00	\$ 29.00	\$ 61.00
29-3A Douglas Village	0	\$ 11.00	\$ 8.00	\$ 19.00		\$ 14.00	\$ 21.00	\$ 35.00
	1	\$ 12.00	\$ 11.00	\$ 23.00		\$ 18.00	\$ 18.00	\$ 36.00
	2	\$ 16.00	\$ 11.00	\$ 27.00		\$ 21.00	\$ 26.00	\$ 47.00
29-3B Gilmore	2	\$ 18.00	\$ 15.00	\$ 33.00		\$ 29.00	\$ 16.00	\$ 45.00
	3	\$ 20.00	\$ 17.00	\$ 37.00		\$ 35.00	\$ 25.00	\$ 60.00
	4	\$ 20.00	\$ 18.00	\$ 38.00		\$ 32.00	\$ 22.00	\$ 54.00
	5	\$ 12.00	\$ 34.00	\$ 46.00		\$ 61.00	\$ 34.00	\$ 95.00
29-3C Lincoln Village	0	\$ 11.00	\$ 10.00	\$ 21.00		\$ 19.00	\$ 17.00	\$ 36.00
	1	\$ 8.00	\$ 12.00	\$ 20.00		\$ 20.00	\$ 15.00	\$ 35.00
29-3D Parkside	2	\$ 18.00	\$ 15.00	\$ 33.00		\$ 21.00	\$ 35.00	\$ 56.00
	3	\$ 16.00	\$ 16.00	\$ 32.00		\$ 27.00	\$ 26.00	\$ 53.00
	4	\$ 21.00	\$ 18.00	\$ 39.00		\$ 27.00	\$ 34.00	\$ 61.00
	5	\$ 31.00	\$ 31.00	\$ 62.00		\$ 20.00	\$ 9.00	\$ 29.00
29-5 Parkside	3	\$ 18.00	\$ 26.00	\$ 44.00		\$ 34.00	\$ 21.00	\$ 55.00
	5	\$ 22.00	\$ 36.00	\$ 58.00		\$ 31.00	\$ 35.00	\$ 66.00
29-7 Willow	2	\$ 17.00	\$ 14.00	\$ 31.00		\$ 28.00	\$ 17.00	\$ 45.00
	3	\$ 18.00	\$ 19.00	\$ 37.00		\$ 42.00	\$ 15.00	\$ 57.00
	4	\$ 26.00	\$ 20.00	\$ 46.00		\$ 51.00	\$ 39.00	\$ 90.00
	5	\$ 20.00	\$ 19.00	\$ 39.00		\$ 41.00	\$ 47.00	\$ 88.00

**LOCAL CLIMATOLOGICAL DATA
ANNUAL CLIMATIC DATA SUMMARY**

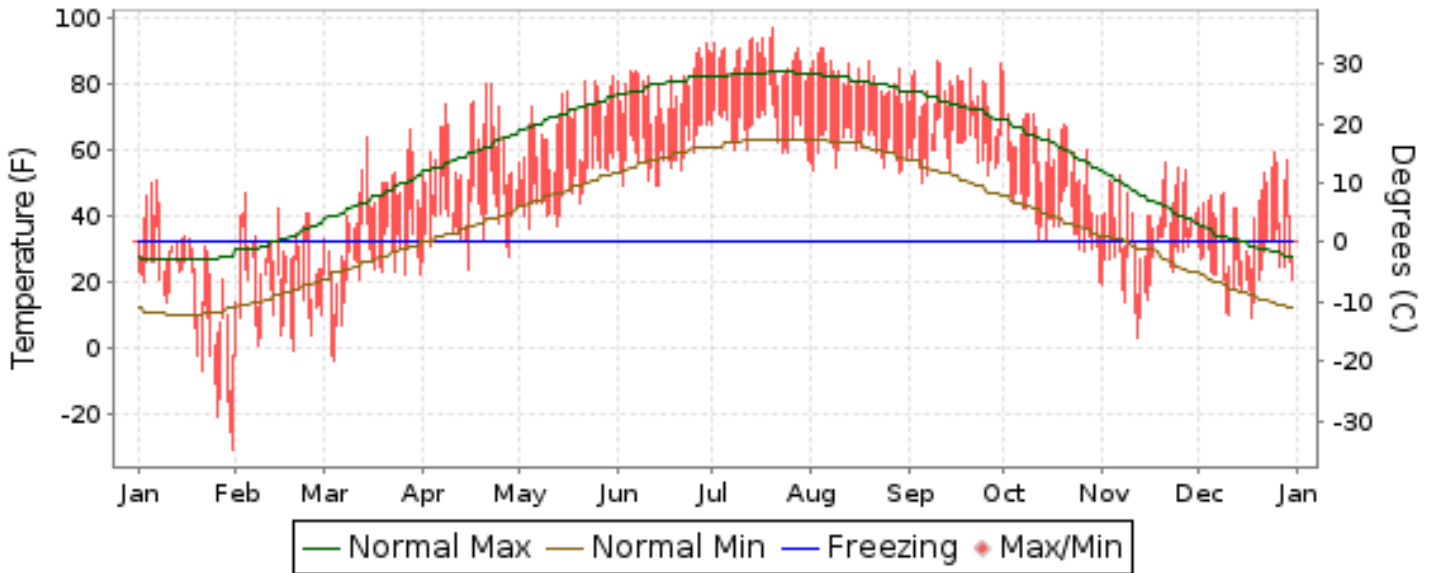


2019 LOCAL CLIMATOLOGICAL DATA ANNUAL SUMMARY WITH COMPARATIVE DATA

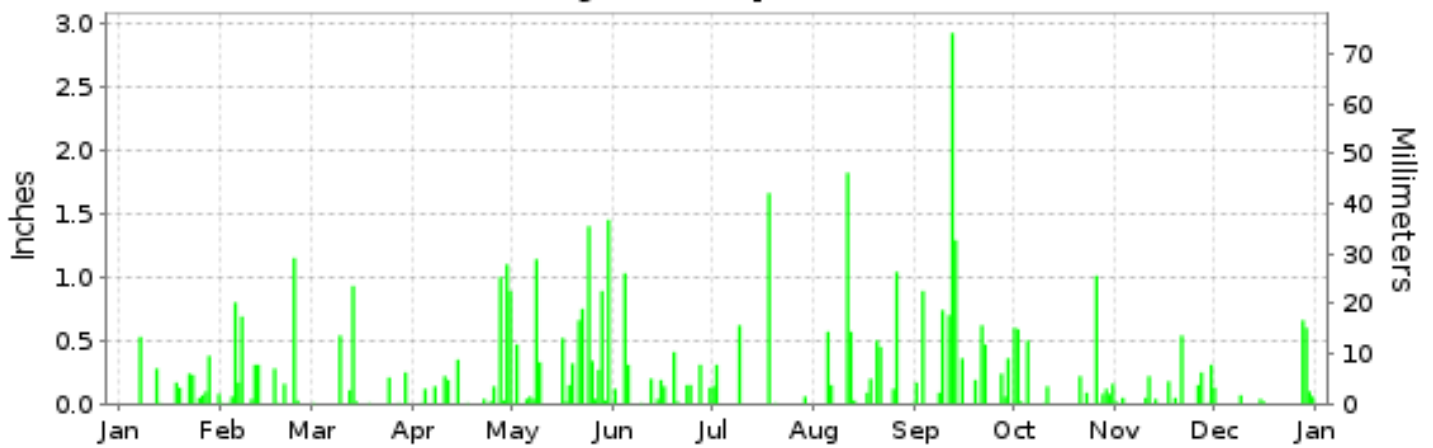
ISSN 0198-1900

ROCKFORD, ILLINOIS (KRFD)

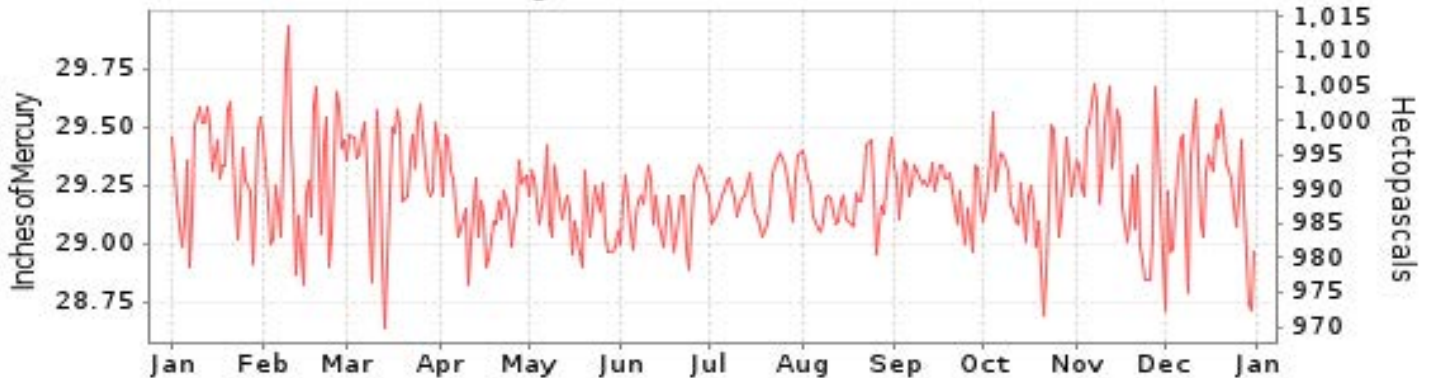
Daily Max/Min Temperature



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.

NATIONAL
OCEANIC AND
ATMOSPHERIC ADMINISTRATION

NATIONAL
ENVIRONMENTAL SATELLITE, DATA
AND INFORMATION SERVICE

NATIONAL CENTERS for
ENVIRONMENTAL INFORMATION (NCEI)
ASHEVILLE, NORTH CAROLINA

Mary S. Wohlgenant
DIRECTOR
NCEI

METEOROLOGICAL DATA FOR 2019

ROCKFORD (KRFD)

LATITUDE: 42° 11'N LONGITUDE: 89° 5'W ELEVATION (FT): GRND: 730 BARO: 731 TIME ZONE: CENTRAL (UTC -6) WBAN: 94822

ELEMENT		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	MEAN DAILY MAXIMUM	25.4	29.8	42.8	59.7	68.3	79.7	87.9	82.0	76.8	59.3	41.0	41.2	57.8	
	HIGHEST DAILY MAXIMUM	51	47	66	80	82	92	97	91	87	84	56	59	97	
	DATE OF OCCURRENCE	07	04	28	22+	31	29	20	05+	10	01	21	25	JUL 20	
	MEAN DAILY MINIMUM	10.7	14.3	24.6	38.8	48.1	59.0	67.1	60.9	60.2	40.5	25.6	24.0	39.5	
	LOWEST DAILY MINIMUM	-31	-2	-4	24	36	49	57	53	50	20	3	9	-31	
	DATE OF OCCURRENCE	31	01	04	15	04	14+	31	29	05	31	12	18	JAN 31	
	AVERAGE DRY BULB	18.1	22.1	33.7	49.3	58.2	69.4	77.5	71.5	68.5	49.9	33.3	32.6	48.7	
	MEAN WET BULB	17.1	21.4	29.9	43.4	53.4	62.8	69.5	64.9	64.6		31.0	30.7		
	MEAN DEW POINT	12.4	17.0	22.6	36.5	49.1	58.7	65.5	61.1	62.2		26.6	26.6		
	NUMBER OF DAYS WITH:														
	MAXIMUM >= 90°	0	0	0	0	0	3	12	2	0	0	0	0	0	17
MAXIMUM <= 32°	22	19	6	0	0	0	0	0	0	0	6	7	0	60	
MINIMUM <= 32°	30	27	24	8	0	0	0	0	0	6	22	28	0	145	
MINIMUM <= 0°	9	2	2	0	0	0	0	0	0	0	0	0	0	13	
H/C	HEATING DEGREE DAYS	1449	1197	962	468	226	18	0	1	20	474	940	997	6752	
	COOLING DEGREE DAYS	0	0	0	2	23	156	395	207	132	12	0	0	927	
RH	MEAN (PERCENT)	76	78	65	66	73	72	70	73	82	75	77	78	74	
	HOUR 00 LST	77	79	73	73	81	82	82	86	89	85	82	84	81	
	HOUR 06 LST	79	81	79	78	83	84	86	91	93	86	84	84	84	
	HOUR 12 LST	72	75	56	57	65	60	57	56	73	63	68	69	64	
	HOUR 18 LST	75	76	56	58	62	62	56	61	75	70	73	77	67	
W/O	NUMBER OF DAYS WITH:														
	HEAVY FOG(VISBY <= 1/4 MI)	2	2	0	3	1	1	0	2	2	0	1	1	15	
	THUNDERSTORMS	0	2	3	5	10	9	8	6	12	1	1	0	57	
PR	MEAN STATION PRESS. (IN.)	29.32	29.29	29.34	29.15	29.14	29.15	29.21	29.20	29.24	29.17	29.28	29.21	29.23	
	MEAN SEA-LEVEL PRESS. (IN.)	30.16	30.13	30.16	29.96	29.94	29.93	29.99	29.99	30.03	29.99	30.10	30.06	30.04	
WINDS	RESULTANT SPEED (MPH)	2.0	1.9	3.0	0.6	1.0	0.6	1.3	0.6	2.5		1.7	3.8		
	RES. DIR. (TENS OF DEGS.)	29	29	27	09	11	08	22	27	18		25	23		
	MEAN SPEED (MPH)	9.8	10.5	10.2	10.6	8.2	7.7	7.3	6.1	7.8	9.1	8.3	8.9	8.7	
	PREVAIL.DIR.(TENS OF DEGS.)	28	27	29	07	06	07	19	27	17	20	19	18	18	
	MAXIMUM 2-MINUTE WIND														
	SPEED (MPH)	36	41	40	31	32	45	37	32	41	32	41	31	45	
	DIR. (TENS OF DEGS.)	29	26	18	02	10	01	36	29	18	21	29	26	01	
	DATE OF OCCURRENCE	08	24	14	19	22	30	20	18	03	22	27	30	JUN 30	
	MAXIMUM 3-SECOND WIND:														
	SPEED (MPH)	49	57	52	44	48	63	49	46	53	51	59	46	63	
DIR. (TENS OF DEGS.)	29	27	22	10	27	02	34	29	18	22	29	24	02		
DATE OF OCCURRENCE	08	24	14	11	19	30	20	18	03	22	27	30	JUN 30		
PRECIPITATION	WATER EQUIVALENT:														
	TOTAL (IN.)	2.27	4.03	2.09	4.26	8.93	3.21	2.80	5.55	9.10	3.63	1.87	1.68	49.42	
	GREATEST 24-HOUR (IN.)	0.53	1.18	1.04	1.13	1.47	1.34	1.66	1.82	2.92	1.02	0.54	0.90	2.92	
	DATE OF OCCURRENCE	07	23-24	12-13	28-29	08-09	04-05	18	11	12	26-27	21	28-29	SEP 12	
	NUMBER OF DAYS WITH:														
PRECIPITATION 0.01	12	14	9	14	20	14	6	12	14	14	12	8	149		
PRECIPITATION 0.10	8	8	5	9	13	11	4	9	12	8	6	4	97		
PRECIPITATION 1.00	0	1	0	2	3	1	1	2	2	1	0	0	13		
SNOWFALL	SNOW,ICE PELLETS,HAIL														
	TOTAL (IN.)	24.9	9.6	0.1	6.6	T	0.0	0.0	0.0	0.0	4.2	4.6	2.4	52.4	
	GREATEST 24-HOUR (IN.)	4.2	3.5	0.1	3.7	T	0.0	0.0	0.0	0.0	3.1	3.2	1.3	4.2	
	DATE OF OCCURRENCE	23	17	01	27	19					31	11	31	JAN 23	
	MAXIMUM SNOW DEPTH (IN.)	17	17	0	4	0	0	0	0	0	2	4	2	17	
	DATE OF OCCURRENCE	30+	01		28						31	14	31	FEB 01	
NUMBER OF DAYS WITH:															
SNOWFALL >= 1.0	9	4	0	2	0	0	0	0	0	1	1	1	18		

NORMALS, MEANS, AND EXTREMES ROCKFORD (KRFD)

LATITUDE: 42° 11'N **LONGITUDE:** 89° 5'W **ELEVATION (FT):** GRND: 730 BARO: 731 **TIME ZONE:** CENTRAL (UTC -6) **WBAN: 94822**

ELEMENT		POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	29.5	34.2	46.9	60.7	71.8	81.1	84.5	82.4	75.4	62.7	47.6	33.2	59.2	
	MEAN DAILY MAXIMUM	69	28.0	32.5	44.6	59.1	71.1	80.2	84.0	81.9	74.8	62.6	46.5	33.1	58.2	
	HIGHEST DAILY MAXIMUM	69	63	70	85	91	99	101	105	104	102	90	77	69	105	
	YEAR OF OCCURRENCE		2008	2017	1986	2002	2012	1988	2012	1988	1953	2010	2016	2012	JUL 2012	
	MEAN OF EXTREME MAXS.	69	48.0	51.4	69.4	80.8	87.5	92.6	93.8	92.4	89.5	81.7	66.8	53.1	75.6	
	NORMAL DAILY MINIMUM	30	13.5	17.7	27.5	38.1	48.4	58.5	63.0	61.3	52.4	40.7	30.3	17.7	39.1	
	MEAN DAILY MINIMUM	69	11.9	16.0	26.4	37.5	48.2	58.0	62.8	60.9	52.3	40.9	29.2	17.9	38.5	
	LOWEST DAILY MINIMUM	69	-31	-24	-11	5	24	37	43	41	27	15	-10	-24	-31	
	YEAR OF OCCURRENCE		2019	1996	2014	1982	1966	2003	1967	1986	1984	1952	1977	1983	JAN 2019	
	MEAN OF EXTREME MINS.	69	-11.2	-5.6	7.2	22.0	33.4	45.2	51.4	49.5	36.9	25.6	12.3	-4.2	21.9	
	NORMAL DRY BULB	30	21.5	25.9	37.2	49.4	60.1	69.8	73.8	71.9	63.9	51.7	38.9	25.4	49.1	
	MEAN DRY BULB	69	19.9	24.3	35.5	48.3	59.6	69.2	73.4	71.4	63.6	51.7	37.9	25.5	48.4	
	MEAN WET BULB	36	18.2	21.1	30.5	40.0	51.2	60.9	65.1	63.9	56.4	44.5	33.0	23.1	42.3	
	MEAN DEW POINT	36	17.6	20.5	29.5	38.8	50.0	59.8	64.4	63.3	55.5	43.4	32.4	22.4	41.5	
	NORMAL NO. DAYS WITH: MAXIMUM >= 90	30	0.0	0.0	0.0	0.0	0.6	3.4	5.7	4.0	1.1	0.1	0.0	0.0	14.9	
	MAXIMUM <= 32	30	17.3	10.7	3.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	2.3	12.6	46.0	
MINIMUM <= 32	30	29.0	25.0	21.8	7.5	0.5	0.0	0.0	0.0	0.3	5.1	16.8	27.4	133.4		
MINIMUM <= 0	30	5.5	2.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	11.5		
H/C	NORMAL HEATING DEG. DAYS	30	1348	1093	862	476	198	31	3	11	117	422	782	1226	6569	
	NORMAL COOLING DEG. DAYS	30	0	0	0	8	47	175	274	223	84	9	0	0	820	
RH	NORMAL (PERCENT)		78	76	71	66	66	68	72	76	74	72	77	80	73	
	hour 00 LST	30	81	81	78	74	76	79	84	88	86	82	81	82	81	
	hour 06 LST	30	82	83	83	80	81	82	87	91	91	87	84	84	85	
	hour 12 LST	30	72	68	62	55	54	55	58	60	57	57	67	73	62	
	hour 18 LST	30	77	73	65	55	55	56	60	64	65	65	73	78	66	
S	PERCENT POSSIBLE SUNSHINE															
W/O	MEAN NO. DAYS WITH: HEAVY FOG(VISBY <= 1/4 MI)	56	2.3	2.2	2.3	0.9	0.9	0.6	1.0	1.6	1.5	1.4	1.9	3.0	19.6	
	THUNDERSTORMS	64	0.2	0.5	2.1	4.1	6.0	8.1	7.5	6.5	4.6	2.3	1.1	0.3	43.3	
CLOUDINESS	MEAN: SUNRISE-SUNSET (OKTAS)															
	MIDNIGHT-MIDNIGHT (OKTAS)															
	MEAN NO. DAYS WITH: CLEAR															
	PARTLY CLOUDY CLOUDY															
PR	MEAN STATION PRESSURE(IN)	36	29.27	29.28	29.20	29.17	29.17	29.17	29.21	29.21	29.26	29.24	29.26	29.27	29.23	
	MEAN SEA-LEVEL PRES. (IN)	36	30.13	30.11	30.07	29.97	29.97	29.95	29.99	30.02	30.05	30.05	30.07	30.10	30.04	
WINDS	MEAN SPEED (MPH)	36	10.0	10.1	10.7	11.1	9.6	8.2	7.3	6.8	7.5	9.0	10.0	9.7	9.2	
	PREVAIL.DIR(TENS OF DEGS)	45	31	31	31	07	19	19	19	19	19	19	19	19	19	
	MAXIMUM 2-MINUTE: SPEED (MPH)	24	40	49	44	47	45	55	52	57	46	44	45	39	57	
	DIR. (TENS OF DEGS)		29	22	30	23	27	31	02	29	30	23	24	29	29	
	YEAR OF OCCURRENCE		2014	1999	2004	1997	2011	2011	2015	1998	2011	2010	1998	2004	AUG 1998	
	MAXIMUM 3-SECOND SPEED (MPH)	24	52	68	67	64	63	69	66	74	58	61	59	56	74	
	DIR. (TENS OF DEGS)		28	22	19	26	19	31	33	28	30	34	29	26	28	
YEAR OF OCCURRENCE		2017	1999	2009	1997	2008	2011	2015	1998	2011	2018	2019	2017	AUG 1998		
PRECIPITATION	NORMAL (IN)	30	1.37	1.41	2.32	3.35	4.02	4.65	3.95	4.59	3.35	2.67	2.58	1.98	36.24	
	MAXIMUM MONTHLY (IN)	69	4.66	4.03	5.82	9.92	11.75	14.23	11.81	13.98	10.68	8.32	5.55	5.04	14.23	
	YEAR OF OCCURRENCE		1960	2019	2009	1973	1996	2018	1952	2007	1961	1969	2015	1971	JUN 2018	
	MINIMUM MONTHLY (IN)	69	0.18	0.04	.43	0.99	0.48	0.46	0.75	0.48	0.05	0.01	0.38	0.37	0.01	
	YEAR OF OCCURRENCE		1961	1969	2005	1989	1992	1988	2001	2003	1979	1952	1976	1976	OCT 1952	
	MAXIMUM IN 24 HOURS (IN)	69	2.89	1.73	2.50	5.55	4.77	6.07	5.32	6.42	5.56	5.22	3.20	2.50	6.42	
	YEAR OF OCCURRENCE		1960	1966	1976	1973	1996	2002	2010	1987	1961	1954	1961	2003	AUG 1987	
	NORMAL NO. DAYS WITH: PRECIPITATION >= 0.01	30	9.4	8.2	10.5	11.3	12.2	10.4	9.4	9.7	8.3	9.4	10.2	10.2	119.2	
PRECIPITATION >= 1.00	30	0.1	0.2	0.5	0.8	1.2	1.3	0.9	1.2	0.8	0.5	0.5	0.2	8.2		
SNOWFALL	NORMAL (IN)	30	10.2	7.7	4.8	0.9	0.0	0.0	0.0	0.0	0.0	0.1	1.7	11.3	36.7	
	MAXIMUM MONTHLY (IN)	67	26.1	30.2	22.7	7.7	1.0	T	T	T	T	4.2	15.8	30.1	30.2	
	YEAR OF OCCURRENCE		1979	1994	1964	1982	1966	1996	1996	2008	2014	2016	2019	2018	2000	FEB 1994
	MAXIMUM IN 24 HOURS (IN)	67	9.9	10.9	10.4	6.7	0.2	T	T	T	T	3.1	11.7	11.4	11.7	
	YEAR OF OCCURRENCE		1979	2011	1972	1970	1990	1996	1994	2014	2016	2019	2018	1987	NOV 2018	
	MAXIMUM SNOW DEPTH (IN)	57	17	19	15	4	0	0	0	0	0	2	11	13	19	
	YEAR OF OCCURRENCE		2019	2011	2013	2019						2019	2018	2008	FEB 2011	
NORMAL NO. DAYS WITH: SNOWFALL >= 1.0	30	3.3	2.3	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.1	11.0		

PRECIPITATION (inches) 2019 ROCKFORD (KRFD)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1990	1.83	1.23	2.65	2.83	5.10	9.24	4.93	6.73	0.85	3.31	3.64	2.45	44.79
1991	1.12	0.45	4.77	2.15	2.72	3.29	0.79	1.69	4.59	4.77	4.24	1.82	32.40
1992	1.11	1.19	2.02	3.65	0.48	1.18	5.12	2.44	5.44	0.66	4.75	3.36	31.40
1993	2.45	0.87	3.86	6.11	3.05	11.85	3.72	3.07	3.72	0.74	1.77	1.23	42.44
1994	1.00	3.04	1.15	2.66	1.41	6.04	2.84	6.28	4.06	1.11	4.42	1.26	35.27
1995	1.76	0.15	1.49	4.56	6.30	3.89	2.61	3.13	2.01	3.67	3.23	0.49	33.29
1996	1.40	0.49	0.50	2.90	11.75	4.95	9.72	2.70	1.62	3.56	.96	2.14	42.69
1997	1.13	2.83	1.28	1.90	5.85	4.66	1.69	3.40	1.79	1.44	1.22	0.84	28.03
1998	2.16	1.64	3.43	4.51	3.57	6.27	3.68	4.12	2.61	4.59	2.32	0.89	39.79
1999	3.11	1.17	1.14	7.77	3.36	5.74	3.41	3.19	5.29	0.96	0.71	1.94	37.79
2000	1.41	2.05	1.05	3.66	6.62	8.01	4.54	3.70	7.92	0.87	2.01	1.93	43.77
2001	2.28	3.05	1.25	3.21	3.98	2.11	0.75	4.22	9.19	4.00	2.04	0.93	37.01
2002	0.69	2.02	1.80	3.85	3.02	7.45	1.75	6.99	2.68	2.05	0.46	0.78	33.54
2003	0.34	0.16	1.45	2.33	4.20	1.98	4.30	0.48	2.02	1.31	3.60	3.20	25.37
2004	0.46	0.79	4.06	1.79	8.21	4.49	3.65	6.89	0.25	2.56	3.03	0.65	36.83
2005	3.29	1.51	0.43	1.71	1.78	2.45	1.45	5.10	1.86	0.24	2.81	1.00	23.63
2006	2.97	0.66	4.05	4.30	3.72	3.32	3.64	3.55	2.91	3.52	2.69	2.52	37.85
2007	0.81	1.43	3.25	2.73	1.25	4.07	2.43	13.98	2.04	1.44	0.40	3.27	37.10
2008	1.14	3.15	2.42	5.42	3.12	6.27	7.35	1.91	6.36	1.68	1.39	4.01	44.22
2009	0.81	2.22	5.82	4.61	3.46	7.36	2.60	7.19	1.69	5.94	1.44	3.55	46.69
2010	0.85	0.66	1.41	2.89	5.82	6.13	9.40	1.96	1.89	3.02	1.33	1.73	37.09
2011	0.88	1.90	3.41	3.40	3.94	3.44	4.60	4.47	5.33	1.58	4.03	2.06	39.04
2012	1.23	1.31	2.09	4.13	1.62	0.66	2.68	2.38	1.74	2.42	0.60	2.49	23.35
2013	3.09	2.98	2.29	7.94	3.14	7.72	1.92	2.92	1.61	3.18	2.09	1.69	40.57
2014	1.98	1.76	1.03	2.87	2.33	8.06	2.46	5.76	2.00	2.69	1.63	0.93	33.50
2015	1.07	0.85	1.30	3.12	4.85	4.64	3.50	5.20	3.28	2.02	5.55	4.65	40.03
2016	0.88	0.65	4.01	2.90	3.12	2.19	7.87	4.30	2.97	1.72	2.67	1.88	35.16
2017	2.25	1.78	2.79	7.13	4.90	7.49	7.43	3.02	0.51	5.85	1.03	0.49	44.67
2018	1.34	3.61	1.22	1.16	4.68	14.23	2.38	5.31	5.57	5.39	2.06	2.66	49.61
2019	2.27	4.03	2.09	4.26	8.93	3.21	2.80	5.55	9.10	3.63	1.87	1.68	49.42
POR= 69 YRS	1.43	1.40	2.43	3.81	3.92	4.76	4.19	4.17	3.53	2.84	2.43	1.96	36.87

WBAN : 94822

AVERAGE TEMPERATURE (°F) 2019 ROCKFORD (KRFD)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1990	30.1	28.2	39.9	48.0	55.7	69.7	72.0	71.4	65.4	50.0	41.8	23.7	49.7
1991	17.0	28.4	39.0	51.7	65.5	73.0	74.2	73.8	63.2	51.3	33.5	28.2	49.9
1992	26.7	32.2	37.6	45.9	59.3	67.5	69.1	65.6	61.3	49.5	36.4	25.8	48.1
1993	23.5	22.5	33.2	45.5	60.8	67.3	73.7	72.8	58.4	48.9	36.8	27.5	47.6
1994	12.6	17.2	36.4	50.7	59.8	71.6	71.1	67.8	64.6	52.9	41.2	30.3	48.0
1995	20.1	24.2	38.1	44.8	57.9	72.2	74.7	77.1	60.4	51.4	30.0	23.3	47.9
1996	18.5	23.0	29.8	45.2	55.5	68.8	69.1	71.2	62.4	50.9	30.3	24.2	45.7
1997	16.6	26.5	37.2	44.2	53.5	69.1	72.2	68.5	63.1	52.1	34.4	27.7	47.1
1998	26.2	36.6	37.8	48.9	64.2	67.9	71.8	72.4	66.6	53.2	41.7	31.9	51.6
1999	18.5	32.5	34.6	49.7	61.7	69.9	76.8	68.7	61.3	50.7	43.2	26.8	49.5
2000	21.6	31.1	43.0	47.7	61.5	66.7	71.1	71.6	63.5	54.9	35.8	12.6	48.4
2001	21.1	22.4	33.4	53.5	61.1	67.6	75.2	72.8	61.1	50.5	47.6	31.8	49.8
2002	30.0	31.1	33.0	48.7	54.8	70.7	76.8	72.6	66.0	48.0	35.5	28.8	49.7
2003	19.2	21.7	35.1	48.4	57.3	66.7	71.9	74.3	62.9	51.2	39.4	30.0	48.2
2004	18.5	25.8	40.6	50.5	60.6	67.6	70.3	66.0	65.3	52.4	41.5	26.4	48.8
2005	21.4	30.5	34.2	52.6	56.9	74.3	74.2	72.6	68.4	53.7	40.6	20.0	50.0
2006	33.5	26.5	37.0	52.7	59.7	67.6	75.2	72.3	60.8	47.8	41.4	31.3	50.5
2007	25.8	15.9	42.5	47.3	64.9	70.8	73.2	74.6	67.0	58.5	38.3	25.1	50.3
2008	21.0	20.2	33.8	50.0	57.2	70.5	73.2	71.3	65.7	51.9	38.8	19.5	47.8
2009	13.8	26.2	38.9	48.6	59.1	68.4	67.0	68.1	63.9	47.2	43.7	23.6	47.4
2010	18.3	24.2	41.3	54.8	61.6	70.4	75.4	74.6	64.7	55.4	41.6	20.4	50.2
2011	19.9	24.7	37.4	48.9	59.7	70.3	79.0	72.6	61.5	53.8	41.6	32.6	50.2
2012	27.5	30.5	52.4	50.0	65.2	72.9	80.8	71.8	63.0	50.5	39.2	33.4	53.1
2013	24.3	23.6	29.5	46.8	62.0	69.3	72.6	72.1	66.5	51.7	35.3	19.4	47.8
2014	12.0	12.4	29.6	48.5	61.0	70.9	69.1	72.2	62.6	51.3	31.9	30.5	46.0
2015	20.8	12.1	34.6	51.0	61.5	69.3	72.4	71.1	69.0	54.1	43.3	37.7	49.7
2016	22.9	29.7	42.9	49.3	60.9	71.7	74.9	74.5	69.3	56.7	45.8	23.8	51.9
2017	27.5	36.8	38.8	53.2	58.5	71.5	74.0	69.3	66.5	55.5	37.3	24.6	51.1
2018	21.0	24.4	36.0	40.4	66.1	71.2	72.8	72.7	66.5	49.6	32.4	30.8	48.7
2019	18.1	22.1	33.7	49.3	58.2	69.4	77.5	71.5	68.5	49.9	33.3	32.6	48.7
POR= 69 YRS	19.9	24.3	35.5	48.3	59.6	69.2	73.4	71.4	63.6	51.7	37.9	25.5	48.4

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HEATING DEGREE DAYS (base 65°F) 2019 ROCKFORD (KRFD)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1990-91	2	5	115	475	690	1273	1483	1018	798	402	146	6	6413
1991-92	0	1	172	421	940	1134	1181	945	843	567	220	38	6462
1992-93	12	55	165	476	849	1207	1282	1183	977	581	167	71	7025
1993-94	0	4	212	498	836	1156	1622	1334	880	445	200	22	7209
1994-95	4	34	93	376	706	1070	1388	1139	827	600	220	16	6473
1995-96	6	0	181	418	1043	1285	1432	1213	1081	589	326	38	7612
1996-97	6	0	134	431	1032	1259	1494	1071	857	617	350	22	7273
1997-98	5	13	98	437	913	1147	1194	788	846	474	86	73	6074
1998-99	0	0	51	361	693	1021	1435	904	935	449	139	34	6022
1999-00	0	5	160	435	644	1178	1341	977	672	514	157	56	6139
2000-01	0	0	143	316	867	1620	1356	1186	971	345	174	70	7048
2001-02	4	0	157	443	519	1023	1080	945	984	517	336	21	6029
2002-03	0	0	69	526	876	1118	1411	1207	923	501	237	57	6925
2003-04	0	2	139	419	761	1076	1438	1127	749	443	179	41	6374
2004-05	7	54	60	388	697	1193	1344	961	950	369	258	6	6287
2005-06	1	0	45	379	727	1389	970	1074	862	364	231	32	6074
2006-07	0	0	148	539	700	1038	1207	1368	698	529	82	13	6322
2007-08	0	4	69	252	796	1230	1358	1292	959	444	249	1	6654
2008-09	0	0	60	408	778	1405	1580	1080	799	486	189	43	6828
2009-10	27	30	65	543	630	1278	1443	1138	728	309	185	4	6380
2010-11	0	0	70	307	693	1377	1391	1123	849	483	231	12	6536
2011-12	0	0	166	356	698	1000	1157	997	420	446	99	14	5353
2012-13	0	2	144	447	766	972	1254	1152	1092	547	168	34	6578
2013-14	9	2	71	419	882	1405	1637	1467	1092	487	198	11	7680
2014-15	10	0	131	421	985	1063	1362	1474	936	414	161	16	6973
2015-16	5	5	44	333	644	840	1300	1015	679	471	199	6	5541
2016-17	0	0	24	273	572	1270	1153	782	802	354	222	11	5463
2017-18	0	7	75	308	824	1245	1353	1129	891	728	73	4	6637
2018-19	0	0	83	492	970	1053	1449	1197	962	468	226	18	6918
2019-	0	1	20	474	940	997							

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COOLING DEGREE DAYS (base 65°F) 2019 ROCKFORD (KRFD)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1990	0	0	3	32	3	173	225	210	132	13	0	0	791
1991	0	0	0	8	169	254	292	281	126	4	0	0	1134
1992	0	0	0	0	51	119	148	79	62	3	0	0	462
1993	0	0	0	0	42	148	280	253	18	5	0	0	746
1994	0	0	0	23	45	224	200	127	86	5	0	0	710
1995	0	0	0	0	4	240	313	382	51	4	0	0	994
1996	0	0	0	0	37	158	141	196	65	0	0	0	597
1997	0	0	0	0	2	155	236	130	46	42	0	0	611
1998	0	0	8	0	72	166	217	234	105	1	0	0	803
1999	0	0	0	0	47	188	371	129	55	0	0	0	790
2000	0	0	0	0	55	115	195	215	103	7	0	0	690
2001	0	0	0	7	59	156	326	247	45	0	0	0	840
2002	0	0	0	34	28	198	375	243	105	7	0	0	990
2003	0	0	0	7	4	116	222	298	83	2	0	0	732
2004	0	0	0	14	49	124	180	96	77	4	0	0	544
2005	0	0	0	5	14	292	294	241	152	36	0	0	1034
2006	0	0	0	4	72	116	324	232	30	14	0	0	792
2007	0	0	9	3	89	197	264	305	136	56	0	0	1059
2008	0	0	0	2	13	174	262	202	88	10	0	0	751
2009	0	0	0	0	14	153	93	134	39	0	0	0	433
2010	0	0	0	10	87	171	332	306	69	16	0	0	991
2011	0	0	0	7	72	178	440	242	66	14	0	0	1019
2012	0	0	36	2	113	255	500	223	92	6	0	0	1227
2013	0	0	0	9	83	169	256	232	125	16	0	0	890
2014	0	0	0	0	83	195	147	231	70	3	0	0	729
2015	0	0	0	0	60	152	241	200	170	2	0	0	825
2016	0	0	0	7	78	216	314	302	160	22	4	0	1103
2017	0	0	0	8	28	212	289	147	127	17	0	0	828
2018	0	0	0	0	115	197	249	246	137	23	0	0	967
2019	0	0	0	2	23	156	395	207	132	12	0	0	927

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SNOWFALL (inches) 2019 ROCKFORD (KRFD)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1991-92	0.0	0.0	0.0	T	0.7	13.0	6.0	1.0	9.7	0.2	0.0	0.0	30.6
1992-93	T	0.0	0.0	0.4	1.7	11.1	13.1	9.9	13.1	1.8	0.0	0.0	51.1
1993-94	0.0	0.0	0.0	T	0.7	4.9	14.8	30.2	0.4	0.5	0.0	0.0	51.5
1994-95	T	0.0	0.0	0.0	T	12.0	17.4	0.5	2.5	T	0.0	0.0	32.4
1995-96	0.0	0.0	0.0		8.2	6.3	6.8	2.4	2.9	T	0.0	T	
1996-97	0.0	0.0	0.0										
1997-98													
1998-99					T	0.4	14.3	0.8	10.4	T	0.0	0.0	
1999-00	0.0	0.0	0.0	0.0	0.0	5.0	14.4	11.8	1.2	1.2	0.0	T	33.6
2000-01	0.0	T	0.0	0.0	0.4	30.1	1.8	3.8	3.1	0.2	0.0	0.0	39.4
2001-02	0.0	0.0	0.0	T	0.0	0.5	10.4	2.3	12.5	1.3	T	T	27.0
2002-03	0.0	0.0	0.0	T	2.7	1.8	4.1	2.1	7.0	0.6	0.0	0.0	18.3
2003-04	0.0	0.0	0.0	T	T	1.3	7.3	6.5	2.1	T	0.0	0.0	17.2
2004-05	0.0	0.0	0.0	0.0	5.3	0.9	18.9	3.5	3.2	T	T	T	31.8
2005-06	0.0	0.0	0.0	0.0	1.2	12.1	5.1	1.7	6.2	0.3	0.0	0.0	26.6
2006-07	0.0	0.0	T	T	0.1	10.8	7.5	14.9	1.3	2.9	0.0	0.0	37.5
2007-08	0.0	0.0	0.0	0.0	1.0	21.7	17.6	25.8	6.8	T	0.0	0.0	72.9
2008-09	T	0.0	0.0	T	5.2	28.9	12.6	7.8	1.9	0.2	0.0	0.0	56.6
2009-10	0.0	0.0	0.0	T	0.5	25.3	7.0	16.6	1.3	T	0.0	0.0	50.7
2010-11	0.0	0.0	0.0	0.0	T	19.2	12.1	20.2	0.1	T	T	0.0	51.6
2011-12	0.0	0.0	0.0	0.0	T	1.7	12.4	7.2	3.0	T	0.0	0.0	24.3
2012-13	0.0	0.0	0.0	0.0	T	2.1	2.7	21.8	13.9	T	0.0	0.0	40.5
2013-	0.0	0.0	0.0	T	1.0	17.7							
2013-14	0.0	0.0	0.0	T	1.0	17.7	15.3	13.5	9.1	0.3	T	0.0	56.9
2014-15	0.0	T	0.0	0.1	3.5	0.1	9.5	14.7	7.6	T	T	0.0	35.5
2015-16	0.0	0.0	0.0	0.0	8.8	5.2	3.7	3.5	2.4	0.4	0.0	0.0	24.0
2016-17	0.0	0.0	T	0.0	T	16.1	0.7	0.2	5.1	T	T	0.0	22.1
2017-18	0.0	0.0	0.0	T	0.2	4.7	6.0	17.4	2.4	4.1	T	0.0	34.8
2018-19	0.0	0.0	0.0	T	15.8	0.8	24.9	9.6	0.1	6.6	T	0.0	57.8
2019-	0.0	0.0	0.0	4.2	4.6	2.4							
POR= 67 YRS	T	T	T	0.2	2.6	9.4	9.2	7.9	5.8	1.1	T	T	36.2

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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 ROCKFORD ILLINOIS (KRFD)

The climate of Rockford is characterized by hot summers and cold winters.

When winter northeasterly winds blow across Lake Michigan, cloudiness often is increased in the Rockford area, and temperatures are somewhat higher than those westward around the Mississippi River. Conversely, in summer, the cooling effect of Lake Michigan sometimes is felt as far westward as Rockford.

While 34 percent of the precipitation occurs in the three summer months of June to August, and 64 percent in the six months, April to September, no month averages less than 4 percent of the annual total.

Though summers may be described as hot, seldom does oppressive heat prevail for extended periods. In general, the summers are pleasant.

Winters are cold. Snow cover is adequate for diversified winter sports, and usually is continuous from late December through February.

Based on the 1951-1980 period, the average first occurrence of 32 degrees Fahrenheit in the fall is October 11 and the average last occurrence in the spring is April 29.

Station History

ROCKFORD, IL

NAME	Begin Date	End Date	Latitude	Longitude	Elevation Feet	Relocation	Platform
ROCKFORD CAA AP	1950-12-01	1950-12-19	42° 12'	-89° 6'	724		AIRWAYS, COOP
ROCKFORD GREATER ROCKFORD AP	1987-11-06	1988-02-26	42° 12'	-89° 6'	724	32 FT E	COOP, WXSVC
ROCKFORD GREATER ROCKFORD AP	1950-12-19	1973-01-01	42° 12'	-89° 6'	724		AIRWAYS, COOP
ROCKFORD GREATER ROCKFORD AP	1988-02-26	1995-07-01	42° 12'	-89° 6'	724		COOP, WXSVC
ROCKFORD GREATER ROCKFORD AP	1995-07-01	1997-07-01	42° 11'	-89° 5'	733		ASOS, COOP, WXSVC
ROCKFORD GREATER ROCKFORD AP	1997-07-01	2004-01-01	42° 11'	-89° 5'	733	.7 MI W	ASOS, COOP, WXSVC
GREATER ROCKFORD AP	1950-09-01	1950-12-01	42° 12'	-89° 6'	725		AIRWAYS
ROCKFORD GREATER ROCKFORD AP	1973-01-01	1987-11-06	42° 12'	-89° 6'	724		COOP, WXSVC
ROCKFORD GREATER ROCKFORD AP	2004-01-01	2017-10-01	42° 11'	-89° 5'	730		ASOS, COOP, WXSVC
ROCKFORD GREATER ROCKFORD AP	2017-10-01	Present	42° 11'	-89° 5'	730		ASOS, COOP, PLCD, WXSVC

Element History

Element	Begin Date	End Date	Frequency	Time Of Observation	Equipment *	Equipment * Modifications	Equipment Exposure
TEMP	1950-09-01	1963-08-01	DAILY	2400			
PRECIP	1986-09-18	1995-07-01	DAILY	2400	UNIV	RCRD	
PRECIP	1997-07-15	2004-01-01	DAILY	0800	SRG		
PRECIP	1950-09-01	1963-08-01	DAILY	2400	UNIV	RCRD	
TEMP	1963-08-01	1986-09-18	DAILY	2400			
MAX/MINTEM	1997-07-15	2004-01-01	DAILY	0800	PALMER		
WIND	1997-07-15	2004-01-01	HOURLY	UNKN	ANEMCUP		
PRECIP	2004-01-01	2007-05-22	HOURLY	2400	AHTB	RCRD;HTD	
PRECIP	1995-07-01	1997-07-01	DAILY	2400	UNIV	RCRD	
TEMP	1997-07-15	2004-01-01	DAILY	0800	MXMN		
PRECIP	1997-07-15	2004-01-01	HOURLY	0800	UNIV	RCRD	
WIND	2007-05-22	2013-01-01	HOURLY	UNKN	ANEMSONIC		
PRECIP	2013-01-01	Present	DAILY	2400	FPCPNX	SHLD	
WIND	2013-01-01	Present	HOURLY	UNKN	ANEMSONIC		
SNOWDPTH	2013-01-01	Present	DAILY	2400	SNOWSTICK		
TEMP	1997-07-01	1997-07-15	DAILY	0800	MXMN		
WIND	2004-01-01	2007-05-22	HOURLY	UNKN	ANEMCUP		
TEMP	2004-01-01	2007-05-22	DAILY	2400	ATEMP		
TEMP	1986-09-18	1995-07-01	DAILY	2400	MXMN		
PRECIP	1995-07-01	1997-07-01	HOURLY	2400	UNIV	RCRD	
WIND	1995-07-01	1997-07-01	HOURLY	UNKN	ANEMCUP		
WIND	1997-07-01	1997-07-15	HOURLY	UNKN	ANEMCUP		
MAX/MINTEM	1997-07-15	2004-01-01	DAILY	0800	PALMER		
PRECIP	1963-08-01	1986-09-18	DAILY	2400	UNIV	RCRD	
PRECIP	1997-07-01	1997-07-15	DAILY	0800	SRG		
PRECIP	2007-05-22	2013-01-01	DAILY	2400	FPCPNX		
PRECIP	2013-01-01	Present	HOURLY	2400	AWPAG	SHLD;RCRD;HTD	
TEMP	1995-07-01	1997-07-01	DAILY	2400	MXMN		
PRECIP	2004-01-01	2007-05-22	DAILY	2400	FPCPNX		
SNOWDPTH	2007-05-22	2013-01-01	DAILY	2400	SNOWSTICK		
PRECIP	2007-05-22	2013-01-01	HOURLY	2400	AHTB	RCRD;HTD	
PRECIP	1963-08-01	1986-09-18	HOURLY	2400			
PRECIP	1986-09-18	1995-07-01	HOURLY	2400			
PRECIP	1997-07-01	1997-07-15	HOURLY	0800	UNIV	RCRD	
SNOWDPTH	2004-01-01	2007-05-22	DAILY	2400	SNOWSTICK		
TEMP	2007-05-22	2013-01-01	DAILY	2400	ATEMP		
TEMP	2013-01-01	Present	DAILY	2400	ATEMP		

* 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

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Email : ncdc.orders@noaa.gov

NOAA/National Centers for Environmental Information

Attn: User Engagement & Services Branch

151 Patton Avenue

Asheville, NC 28801-5001

Visit our Web Site for other weather data: www.ncdc.noaa.gov

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.

$$\text{Lighting (Watt h / Day)} = [\text{HR}_c + (\text{Area}/\text{HR}_{\text{area}}) + (\text{HR}_{\text{occ}} \times \text{Occupants})] \times \text{Watts / Fixture}$$

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.

**PUBLIC HOUSING HUD REGULATIONS 24 CFR 965. SUBPART E
RESIDENT ALLOWANCES FOR UTILITIES**

TITLE 24--HOUSING AND URBAN DEVELOPMENT

CHAPTER IX OFFICE OF ASSISTANT SECRETARY FOR PUBLIC AND INDIAN HOUSING, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

PART 965: PHA-OWNED OR LEASED PROJECTS GENERAL PROVISIONS

Subpart E--Resident Allowances for Utilities

Source: 61 FR 7971, Feb. 29, 1996, unless otherwise noted.

Sec. 965.501 Applicability.

(a) This subpart E applies to public housing, including the Turnkey III Homeownership Opportunities program. This subpart E also applies to units assisted under sections 10(c) and 23 of the U. S. Housing Act of 1937 (42 U.S.C. 1437 et seq.) as in effect before amendment by the Housing and Community Development Act of 1974 (12 U.S.C. 1706e) and to which 24 CFR part 900 is not applicable. This subpart E does not apply to Indian housing projects (see 24 CFR part 950).

(b) In rental units for which utilities are furnished by the PHA but there are no check-meters to measure the actual utilities consumption of the individual units, residents shall be subject to charges for consumption by resident-owned major appliances, or for optional functions of PHA-furnished equipment, in accordance with Sec. 965.502(e) and 965.506(b), but no utility allowance will be established.

Sec. 965.502 Establishment of utility allowances by PHAs.

(a) PHAs shall establish allowances for PHA-furnished utilities for all check-metered utilities and allowances for resident-purchased utilities for all utilities purchased directly by residents from the utilities suppliers.

(b) The PHA shall maintain a record that documents the basis on which allowances and scheduled surcharges, and revisions thereof, are established and revised. Such record shall be available for inspection by residents.

(c) The PHA shall give notice to all residents of proposed allowances, scheduled surcharges, and revisions thereof. Such notice shall be given, in the manner provided in the lease or homebuyer agreement, not less than 60 days before the proposed effective date of the allowances or scheduled surcharges or revisions; shall describe with reasonable particularity the basis for determination of the allowances, scheduled surcharges, or revisions, including a statement of the specific items of equipment and function whose utility consumption requirements were included in determining the amounts of the allowances or scheduled surcharges; shall notify residents of the place where the PHA's record maintained in accordance with paragraph (b) of this section is available for inspection; and shall provide all residents an opportunity to submit written comments during a period expiring not less than 30 days before the proposed effective date of the allowances or scheduled surcharges or revisions. Such written comments shall be retained by the PHA and shall be available for inspection by residents.

(d) Schedules of allowances and scheduled surcharges shall not be subject to approval by HUD before becoming effective, but will be reviewed in the course of audits or reviews of PHA operations.

(e) The PHA's determinations of allowances, scheduled surcharges, and revisions thereof shall be final and valid unless found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.

Sec. 965.503 Categories for establishment of allowances.

Separate allowances shall be established for each utility and for each category of dwelling units determined by the PHA to be reasonably comparable as to factors affecting utility usage.

Sec. 965.504 Period for which allowances are established.

(a) PHA-furnished utilities. Allowances will normally be established on a quarterly basis; however, residents may be surcharged on a monthly basis. The allowances established may provide for seasonal variations.

(b) Resident-purchased utilities. Monthly allowances shall be established. The allowances established may provide for seasonal variations.

Sec. 965.505 Standards for allowances for utilities.

(a) The objective of a PHA in designing methods of establishing utility allowances for each dwelling unit category and unit size shall be to approximate a reasonable consumption of utilities by an energy-conservative household of modest circumstances consistent with the requirements of a safe, sanitary, and healthful living environment.

(b) Allowances for both PHA-furnished and resident-purchased utilities shall be designed to include such reasonable consumption for major equipment or for utility functions furnished by the PHA for all residents (e.g., heating furnace, hot water heater), for essential equipment whether or not furnished by the PHA (e.g., range and refrigerator), and for minor items of equipment (such as toasters and radios) furnished by residents.

(c) The complexity and elaborateness of the methods chosen by the PHA, in its discretion, to achieve the foregoing objective will depend upon the nature of the housing stock, data available to the PHA and the extent of the administrative resources reasonably available to the PHA to be devoted to the collection of such data, the formulation of methods of calculation, and actual calculation and monitoring of the allowances.

(d) In establishing allowances, the PHA shall take into account relevant factors affecting consumption requirements, including:

(1) The equipment and functions intended to be covered by the allowance for which the utility will be used. For instance, natural gas may be used for cooking, heating domestic water, or space heating, or any combination of the three;

(2) The climatic location of the housing projects;

(3) The size of the dwelling units and the number of occupants per dwelling unit;

- (4) Type of construction and design of the housing project;
 - (5) The energy efficiency of PHA-supplied appliances and equipment;
 - (6) The utility consumption requirements of appliances and equipment whose reasonable consumption is intended to be covered by the total resident payment;
 - (7) The physical condition, including insulation and weatherization, of the housing project;
 - (8) Temperature levels intended to be maintained in the unit during the day and at night, and in cold and warm weather; and
 - (9) Temperature of domestic hot water.
- (e) If a PHA installs air conditioning, it shall provide, to the maximum extent economically feasible, systems that give residents the option of choosing to use air conditioning in their units. The design of systems that offer each resident the option to choose air conditioning shall include retail meters or check-meters, and residents shall pay for the energy used in its operation. For systems that offer residents the option to choose air conditioning, the PHA shall not include air conditioning in the utility allowances. For systems that offer residents the option to choose air conditioning but cannot be check-metered, residents are to be surcharged in accordance with Sec. 965.506. If an air conditioning system does not provide for resident option, residents are not to be charged, and these systems should be avoided whenever possible.

Sec. 965.506 Surcharges for excess consumption of PHA-furnished utilities.

(a) For dwelling units subject to allowances for PHA-furnished utilities where check-meters have been installed, the PHA shall establish surcharges for utility consumption in excess of the allowances. Surcharges may be computed on a straight per unit of purchase basis (e.g., cents per kilowatt hour of electricity) or for stated blocks of excess consumption, and shall be based on the PHA's average utility rate. The basis for calculating such surcharges shall be described in the PHA's schedule of allowances. Changes in the dollar amounts of surcharges based directly on changes in the PHA's average utility rate shall not be subject to the advance notice requirements of this section.

(b) For dwelling units served by PHA-furnished utilities where Check-meters have not been installed, the PHA shall establish schedules of surcharges indicating additional dollar amounts residents will be required to pay by reason of estimated utility consumption attributable to resident-owned major appliances or to optional functions of PHA-furnished equipment. Such surcharge schedules shall state the resident-owned equipment (or functions of PHA-furnished equipment) for which surcharges shall be made and the amounts of such charges, which shall be based on the cost to the PHA of the utility consumption estimated to be attributable to reasonable usage of such equipment.

Sec. 965.507 Review and revision of allowances.

(a) Annual review. The PHA shall review at least annually the basis on which utility allowances have been established and, if reasonably required in order to continue

adherence to the standards stated in Sec. 965.505, shall establish revised allowances. The review shall include all changes in circumstances (including completion of modernization and/or other energy conservation measures implemented by the PHA) indicating probability of a significant change in reasonable consumption requirements and changes in utility rates.

(b) Revision as a result of rate changes. The PHA may revise its allowances for resident-purchased utilities between annual reviews if there is a rate change (including fuel adjustments) and shall be required to do so if such change, by itself or together with prior rate changes not adjusted for, results in a change of 10 percent or more from the rates on which such allowances were based. Adjustments to resident payments as a result of such changes shall be retroactive to the first day of the month following the month in which the last rate change taken into account in such revision became effective. Such rate changes shall not be subject to the 60 day notice requirement of Sec. 965.502(c).

Sec. 965.508 Individual relief.

Requests for relief from surcharges for excess consumption of PHA-purchased utilities, or from payment of utility supplier billings in excess of the allowances for resident-purchased utilities, may be granted by the PHA on reasonable grounds, such as special needs of elderly, ill or disabled residents, or special factors affecting utility usage not within the control of the resident, as the PHA shall deem appropriate. The PHA's criteria for granting such relief, and procedures for requesting such relief, shall be adopted at the time the PHA adopts the methods and procedures for determining utility allowances. Notice of the availability of such procedures (including identification of the PHA representative with whom initial contact may be made by residents), and the PHA's criteria for granting such relief, shall be included in each notice to residents given in accordance with Sec. 965.502(c) and in the information given to new residents upon admission.

SAMPLE NOTICE
HOUSING AUTHORITY OF THE CITY OF _____
NOTICE OF PROPOSED UTILITLY ALLOWANCES

DATE: _____

TO: ALL PUBLIC HOUSING RESIDENTS

The PHA has completed its annual review of the Public Housing Utility Allowances and encourages residents to review the proposed utility allowances and support documentation. Residents may also provide written comments.

Pursuant to regulation 24 CFR 965.502, the Housing Authority of the City of _____ hereby provides 60 days' notice to the public housing residents of the proposed utility allowances.

DATES AVAILABLE FOR REVIEW: _____ TO _____

The PHA records and documents that provide the basis for the proposed utility allowances are available for review and comment during the dates listed above and at the following location:

NOTE to PHA: Dates reflected above should be 30 days from date of notice. Below choose a location and provide address and time available for review.

- PHA's main administrative office (**provide address**)
- PHA development site management office (**provide address**)
- Other: (**provide address**)

Changes were made due to:

- ANNUAL UPDATE (**for Resident-paid utilities directly to utility companies**)
- NEW SCHEDULED SURCHARGES (**for Check-metered utilities surcharged for excess usage of PHA-paid utilities**)
- REVISIONS TO: (**UTILITY ALLOWANCES OR SCHEDULED SURCHARGES**)

Basis of determination:

NOTE to PHA: specific items of equipment and function whose utility consumption requirements were included in determining the amount of the allowances is stated in the review documents

The PHA will gather all comments and review them at the close of the comment period. The PHA will respond to comments within _____ days of the close of the comment period. Such written comments will be retained by the PHA and shall be available for inspection by residents.

PROPOSED EFFECTIVE DATE OF IMPLEMENTATION: _____

***Requests for relief from surcharges for excess consumption, payment of supplier billings in excess of the allowances for resident purchased utilities, may be granted by the PHA on reasonable grounds, such as special needs for the elderly, ill or disabled residents, or special factors, on a case by case basis. Such relief may be initiated by the verbal or written making of such request as an accommodation.**

INSTRUCTIONS FOR RESIDENT NOTICE OF PROPOSED UTILITY ALLOWANCES

Dear Housing Agency:

Attached is a Sample Notice for the 60-Day Notice of Proposed Utility Allowances with 30-Day Comment Period (required in HUD regulations 24 CFR 965.502),

Please adapt this sample notice to your needs and copy onto your Agency's letterhead. Be sure to remove all red and blue written print (these are notes to the Agency for explanation and completion of this form). Check boxes have also been provided to give the Agency choices to fit their needs.

Note: be sure to check your policies and Lease Agreement/homebuyer agreement for compliance regarding providing notification.

Review documents should be kept in a central location.

The PHA should get Board approval before setting an effective date of implementation.

Special Note: HUD regulations do not say that the PHA has to change the proposed utility allowances due to a resident's comment, but that "The PHA's determinations of allowances, scheduled surcharges, and revisions thereof shall be final and valid unless found to be arbitrary, capricious, an abuse of discretion or otherwise not in accordance with the law."