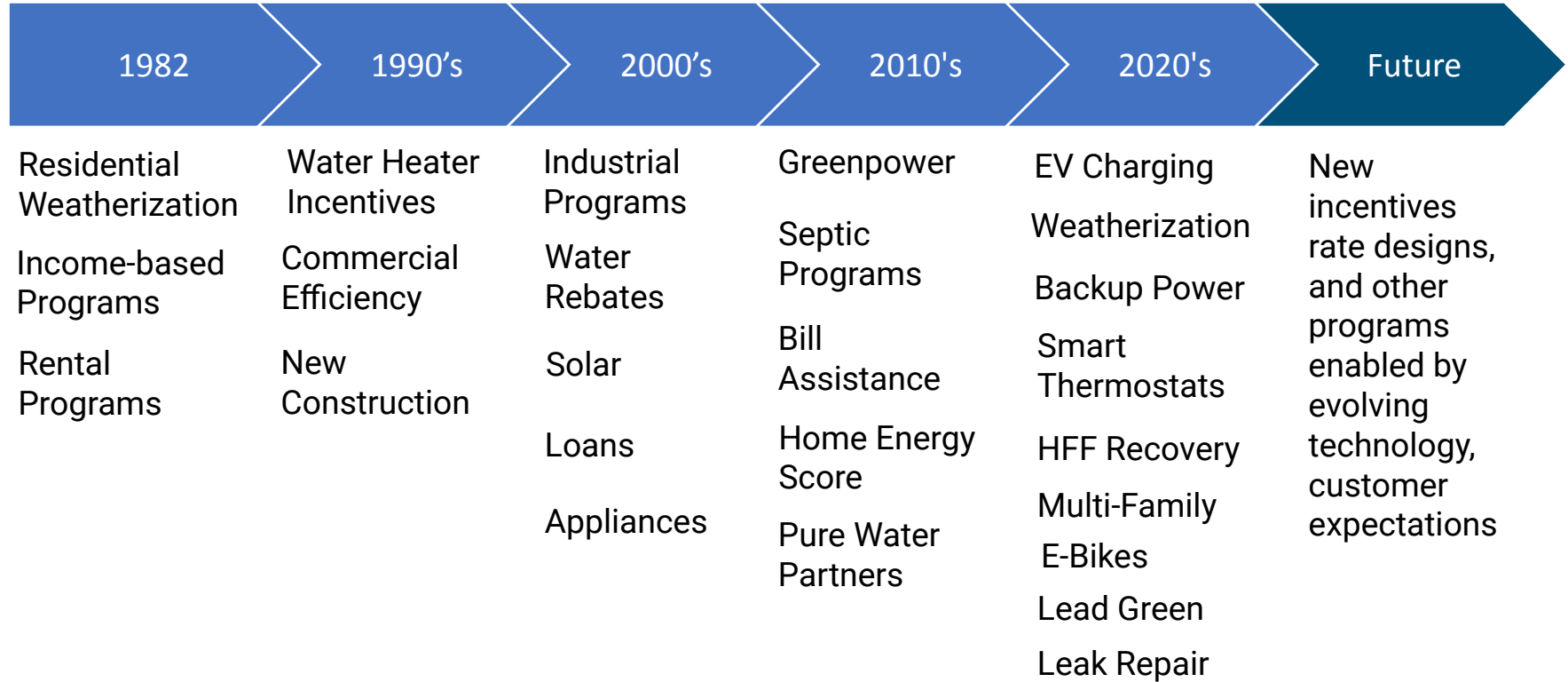


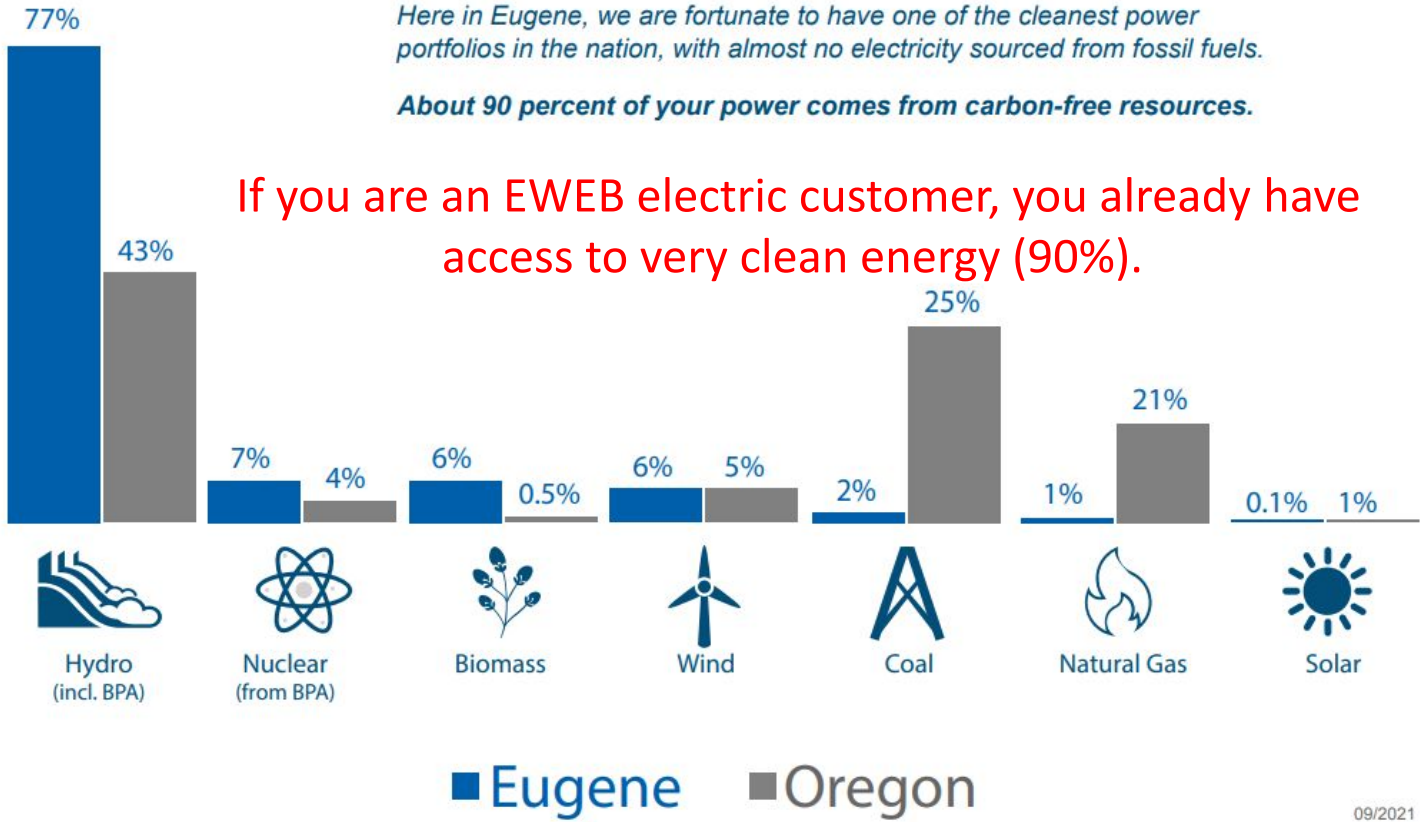
Energy Education and EWEB Program Offerings

Electrification, Energy Efficiency and Photovoltaic
May 18, 2023

Juan J Serpa Muñoz
Business Line Manager
Eugene Water & Electric
Board

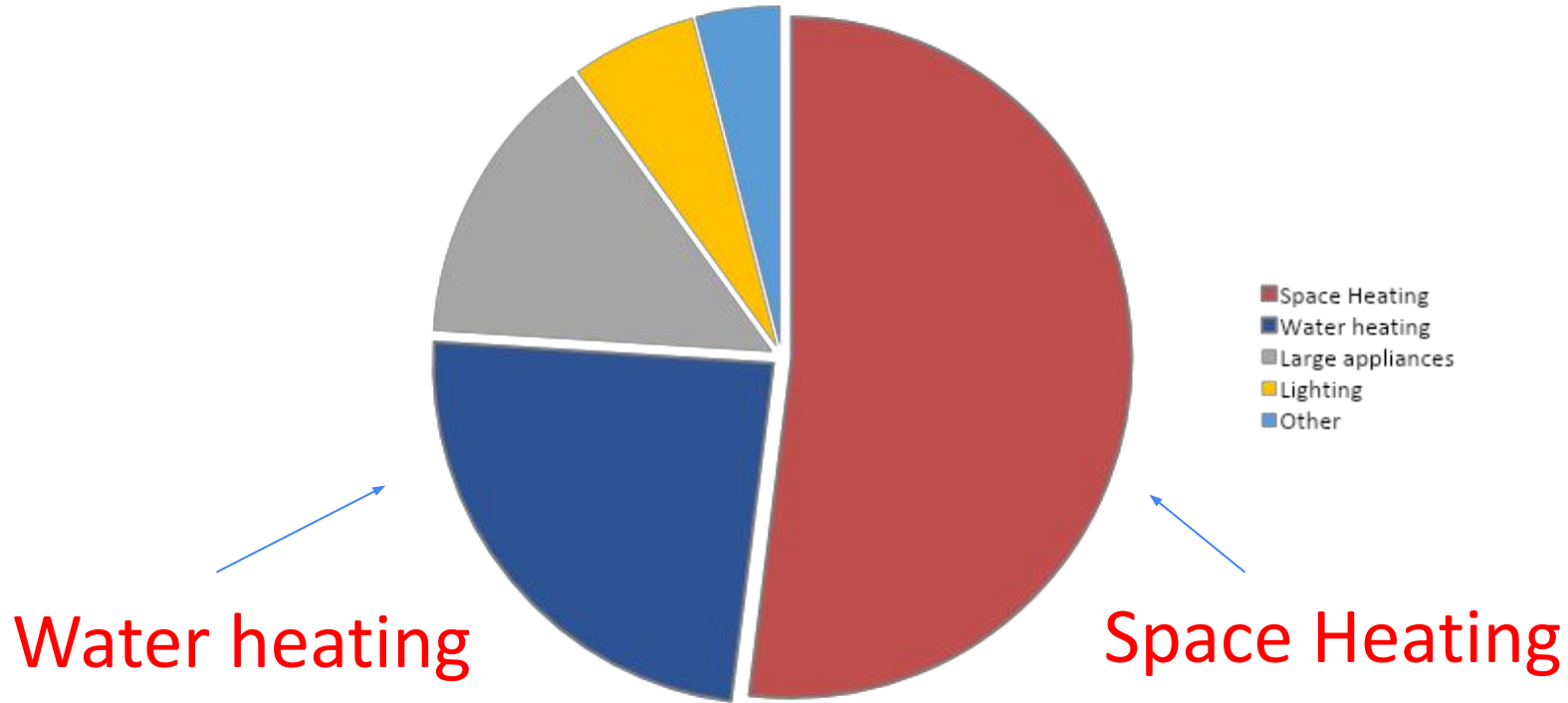
40+ Years of EWEB Customer Programs





09/2021

Heating uses the most energy



$$\text{Energy} = \text{kWh} = \$$$

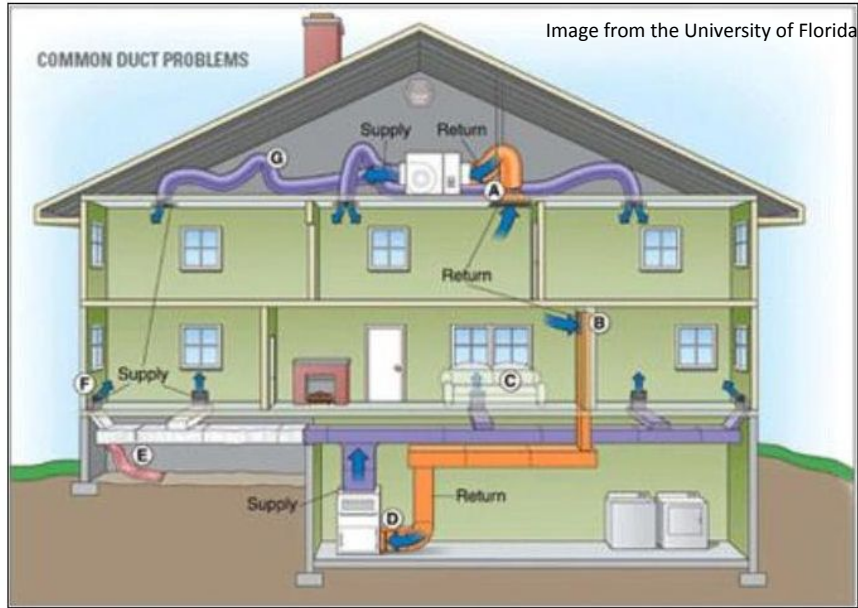
k = 1,000 , W = watts, h = hour

$$1,000\text{W/hr} = 1 \text{ kWh} \approx 10 \text{ cents}$$

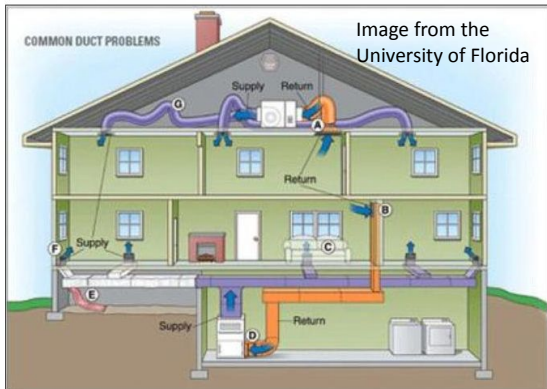
Electronic	Wattage	Hours Used
Incandescent Light Bulb	100	1
LED Light Bulb	13	1
Play Station 5	200	1
Laptop	60	1
Space Heater	1,500	1
Water Heater	4,500	1
Heat Pump Water Heater (HP Mode)	500	1

$1,000\text{W/hr} = 1 \text{ kWh} \approx 10 \text{ cents}$

Heating Efficiency and Delivery



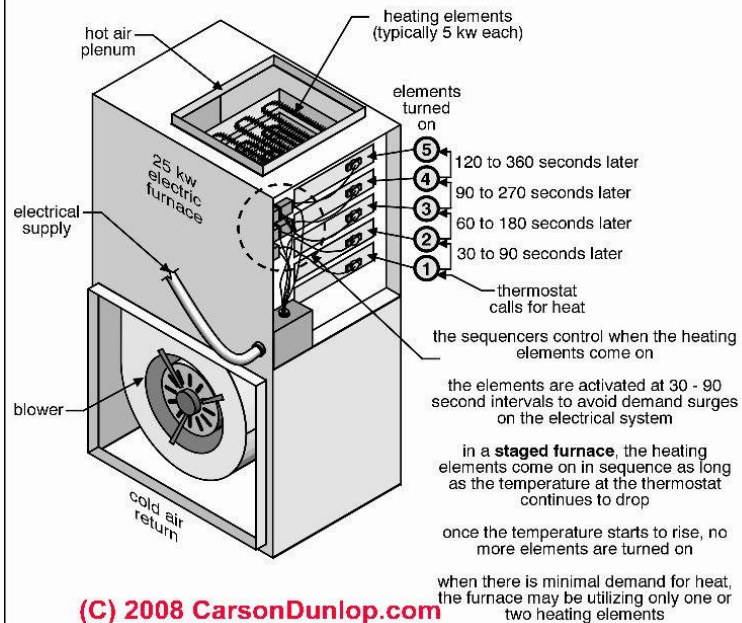
Energy Education – Heating Systems



Electric Furnace

5,000W/heating element, $\approx 50\text{c/hr}$

Sequencers

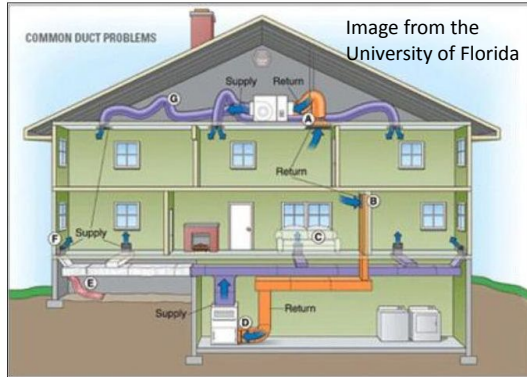


(C) 2008 CarsonDunlop.com

Heat Pump (Air Source)

≈ 3,200W, 32c/hr

Don't forget about the back up furnace





Ductless Heat Pump

≈ 3,200W, 32c/hr *But it is variable speed

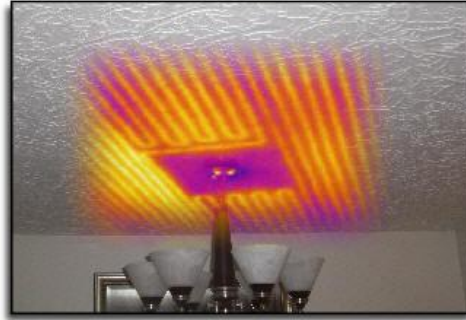


- Mounts high on a wall, so it's unobtrusive
- Small, sleek and neutral
- Small 3" opening allows connection of refrigerant and drain lines, plus power and control wiring



Wall Heat

≈ 1,500W – 3,000W, 15c/hr – 30c/hr



Ceiling Heat

≈ 2,000W/brm, 20c/hr

≈ 4,000W/lr-kt, 40c/hr



Baseboard Heat

≈ 2,50W/ft, 2.5c/hr

Portable Space Heaters $\approx 1,500\text{W}$, 15c/hr



Your insulation matters! Your heating system matters!

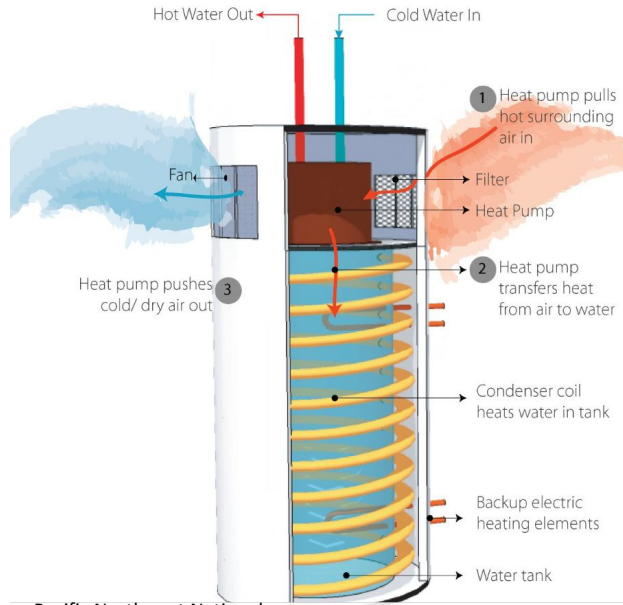


...your windows not so much.

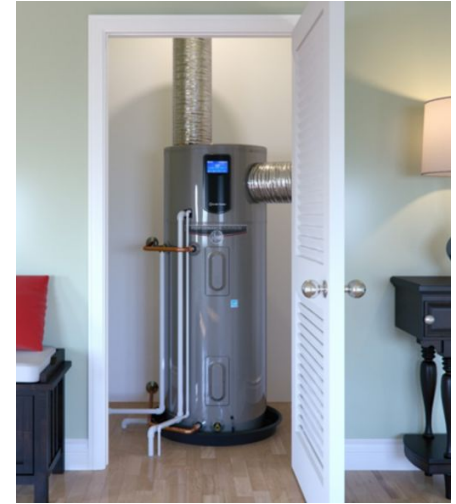
- Average attic insulation – R38
- Average wall insulation – R11
- Newer windows – U-value 0.22 or R4.5

Energy Education – Heat Pump Water Heater

- Standard water heater draws **4,500 W**
- Heat pump water heater draws **500 W** (HP mode)



Pacific Northwest National
Laboratory




EWEB's Energy Efficiency Income-Based Program Offerings




Ducted heat pump program

High-efficiency heat pumps are ideal for our mild Pacific Northwest climate.




Ductless heat pump program

An energy efficient ductless heat pump is cheaper to install and operate than any other heating system.



Insulation, Air Sealing and Windows Program

We offer rebates to help you upgrade your home's existing shell with energy-efficient products. Improve your insulation and you can conserve heating and save money over time.



Heat pump water heater program

We promote energy efficiency by offering you a streamlined and cost-effective way to replace your home's existing water heater with an energy-efficient heat pump water heater.

EWEB's Energy Efficiency Income-Based Program Offerings

PRODUCT	REBATE	ZERO INTEREST LOAN
Ductless Heat Pump	Owner Occupied: \$3,800 Rental: \$1,000	Up to \$6,000, plus \$2,000 per additional head installed (maximum 5 total heads)
Insulation	100 percent of eligible program costs	NA
Windows	Owner Occupied: \$20/sq ft of glass Rental: \$10/sq ft of glass	Up to \$4,000
Heat Pump Water Heater	Owner Occupied: \$1,700 Rental: \$1,000	Up to \$2,500
Water Leak Repair Assistance	100 percent of eligible costs	NA

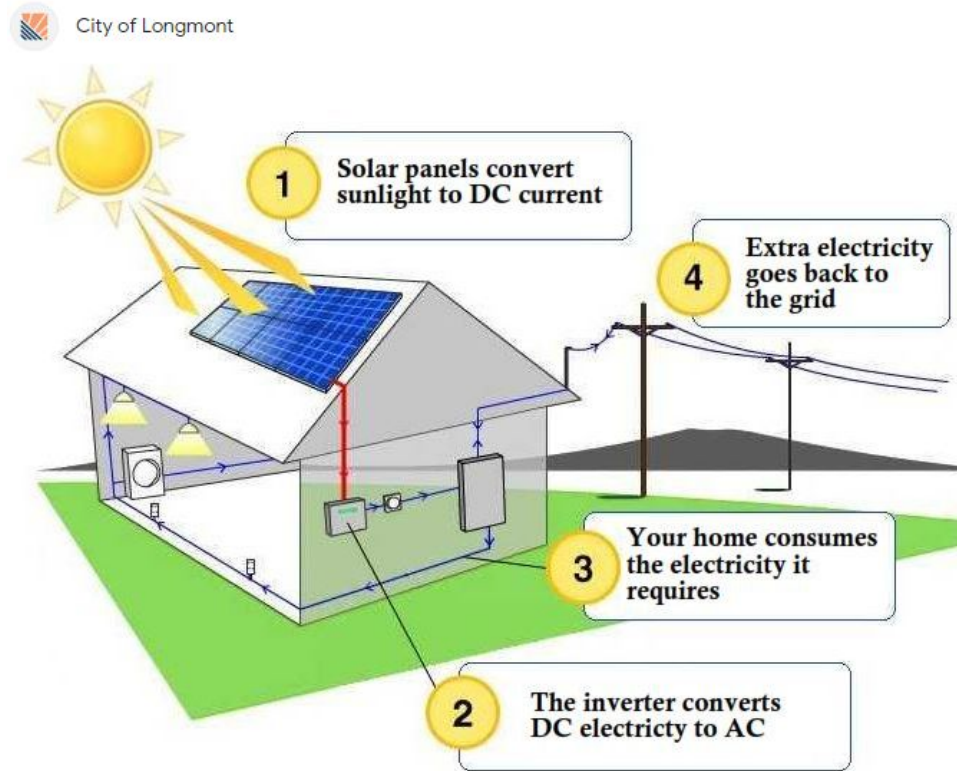
To learn about eligibility and other program requirements, follow links above to individual product pages, or contact us at ems.answers@eweb.org or 541-685-7088.

Maximum of \$8,000 in total rebates for income-based programs per premises

EWEB's Energy Efficiency Income-Based Income Qualification

HOUSEHOLD SIZE	ANNUAL INCOME	MONTHLY INCOME
1	\$31,266	\$2,606
2	\$40,886	\$3,407
3	\$50,506	\$4,209
4	\$60,126	\$5,011
5	\$70,280	\$5,857
6	\$80,560	\$6,713
7	\$90,840	\$7,570
8	\$101,120	\$8,247
9	\$111,400	\$9,283
10	\$121,680	\$10,140
11	\$131,960	\$10,997
12	\$142,240	\$11,853
Each additional member	\$5,140	\$428

How Net Metering Works



EWEB's Solar Program Offerings and Considerations



Residential Solar PV Program

Produce clean, renewable energy from the sun

EWEB's Program

- \$0.40/AC output watt, with a maximum incentive of \$2,500

Considerations

- Cost per AC watt can be \approx \$4.15
- A 1 kW (1,000 watts) system could cost \approx \$4,150, generating about 1,000 kWh per year
- You would pay \approx \$100 for that energy to EWEB
- With tax credits (if you have the tax liability) and state rebates (if available), a potential payback can be over 25 years

EWEB's Electrification Offerings

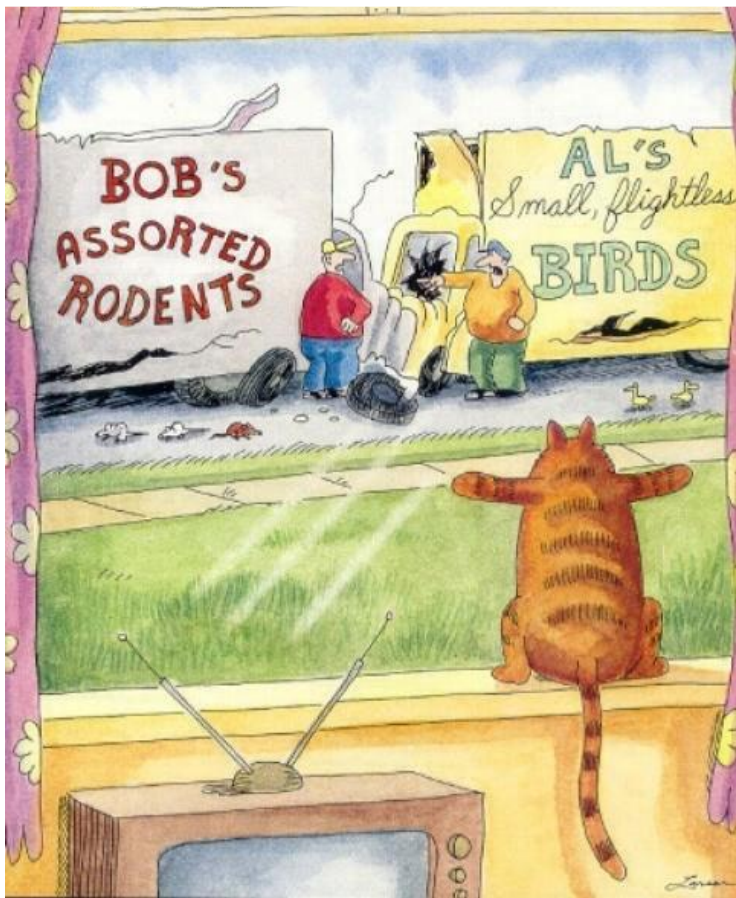


Choosing Clean Energy

With EWEB's 90 percent renewable power, choosing clean energy over fossil fuels is a lot easier than you might realize.

[Learn more](#)

- **Income based incentives are not available**
- Ducted Heat Pump
 - \$1,000 rebate or \$15,000 loan
- Ductless Heat Pump
 - \$800 rebate or loan (\$6,000 plus \$2,000 per additional head, up to \$14,000)
- Heat Pump Water Heater
 - \$800 rebate or \$2,500 loan

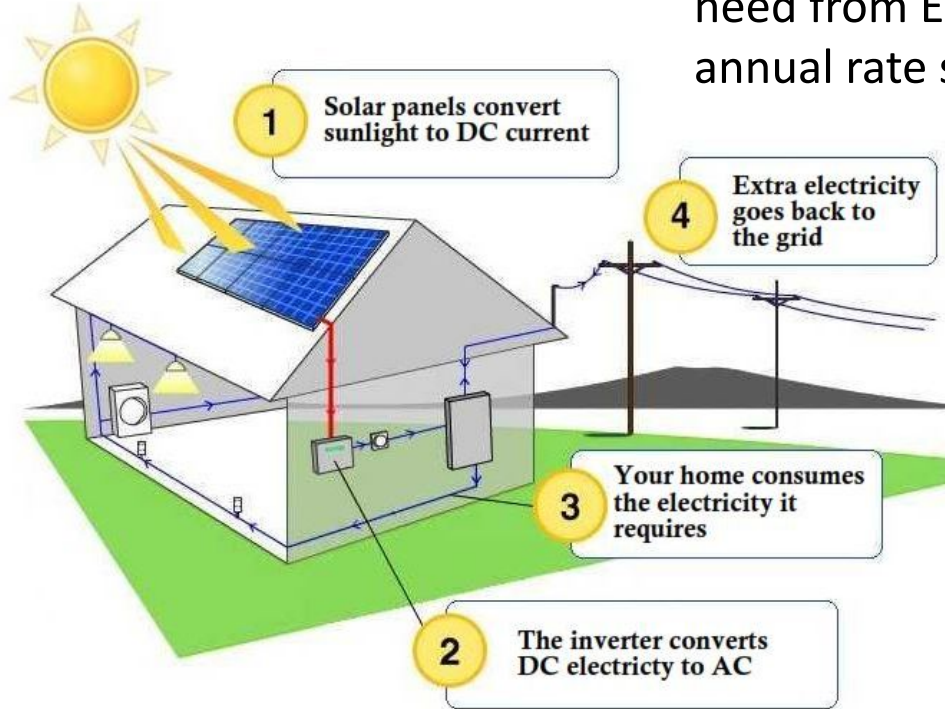
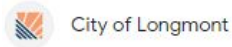


The Far Side – Gary Larson

Thank you!

- Get your energy efficiency veggies done before your solar dessert
- What are the goals you are trying to accomplish with solar?
- Understand how net metering works
- Understand the actual financial values and costs
- Understand EWEB's true-up policy
- Get multiple bids
- Beware of pushy salespeople
- Do not sign a contract without clearly understanding all the above

Renewables – Solar Net Metering and EWEB Policy



The excess energy generated over and above what you need from EWEB will be credited monthly at the current annual rate schedule

Year	EWEB NM Rate / kWh
2014	\$0.0375
2015	\$0.0416
2016	\$0.0311
2017	\$0.0276
2018	\$0.0255
2019	\$0.0255
2020	\$0.0297
2021	\$0.0360
2022	\$0.0693
2023	\$0.0693

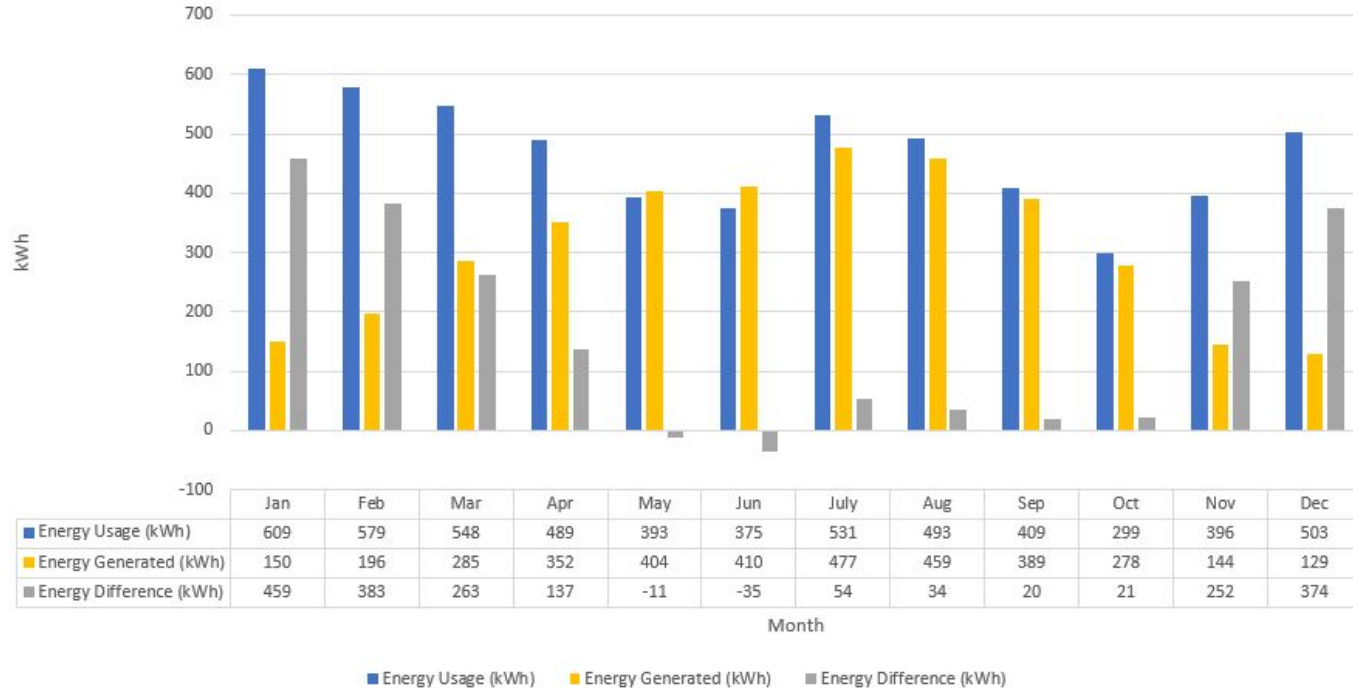
2023 Res Retail Rate	\$0.0972
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Renewables – System Sizing

Consumption and Generation Values - Inputs and Calculations						
Month	Energy Usage (kWh)	Energy Generated (kWh)	Energy Difference (kWh)	Energy Generated - Retail Rate Offset Value	Energy Generated - Sold at NM Rate Value	Total Energy Generated Value
Jan	609	150	459	\$14.22	\$0.00	\$14.22
Feb	579	196	383	\$18.58	\$0.00	\$18.58
Mar	548	285	263	\$27.02	\$0.00	\$27.02
Apr	489	352	137	\$33.37	\$0.00	\$33.37
May	393	404	-11	\$37.26	\$0.76	\$38.02
Jun	375	410	-35	\$35.55	\$2.43	\$37.98
July	531	477	54	\$45.22	\$0.00	\$45.22
Aug	493	459	34	\$43.51	\$0.00	\$43.51
Sep	409	389	20	\$36.88	\$0.00	\$36.88
Oct	299	278	21	\$26.35	\$0.00	\$26.35
Nov	396	144	252	\$13.65	\$0.00	\$13.65
Dec	503	129	374	\$12.23	\$0.00	\$12.23
Total	5,624	3,673	Total	\$343.84	\$3.19	\$347.03
Gen % of Needed E		65%				

- 3.6 kW System
- 65% yearly energy use

Residential NM - kWh and kWhG



Renewables – System Sizing

Consumption and Generation Values - Inputs and Calculations						
Month	Energy Usage (kWh)	Energy Generated (kWh)	Energy Difference (kWh)	Energy Generated - Retail Rate Offset Value	Energy Generated - Sold at NM Rate Value	Total Energy Generated Value
Jan	609	229	380	\$21.71	\$0.00	\$21.71
Feb	579	299	280	\$28.35	\$0.00	\$28.35
Mar	548	435	113	\$41.24	\$0.00	\$41.24
Apr	489	538	-49	\$46.36	\$3.40	\$49.76
May	393	617	-224	\$37.26	\$15.52	\$52.78
Jun	375	626	-251	\$35.55	\$17.39	\$52.94
July	531	729	-198	\$50.34	\$13.72	\$64.06
Aug	493	701	-208	\$46.74	\$14.41	\$61.15
Sep	409	594	-185	\$38.77	\$12.82	\$51.59
Oct	299	425	-126	\$28.35	\$8.73	\$37.08
Nov	396	220	176	\$20.86	\$0.00	\$20.86
Dec	503	196	307	\$18.58	\$0.00	\$18.58
Total	5,624	5,609	Total	\$414.11	\$85.99	\$500.10
Gen % of Needed E		100%				

- 5.5 kW System
- 100% yearly energy use



Questions?