



**EXPLORING WIND TURBINE AND SOLAR PANEL FOR A  
BETTER ENVIRONMENT**

**By: Adam Choudhry**

# WHO AM I?



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Affiliations: NSBP (National Society of Black Physicists),  
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Research: Renewable Energy on both solar panels and  
wind turbines, and looking forward to BNL (Brookhaven  
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# PROBLEMS IN THE ENVIRONMENT

The electricity and natural gas usage in both summer and winter can affect the environment.

The amount of greenhouse gas (orange color) shows it is more than renewable energy (solar panel, wind turbine and biomass) causes causes toxic environment the atmosphere.

Using the amount of electricity or natural gas can make a lot of us pay a lot of bills, and that's when renewable energy comes in (solar panels and wind turbines).

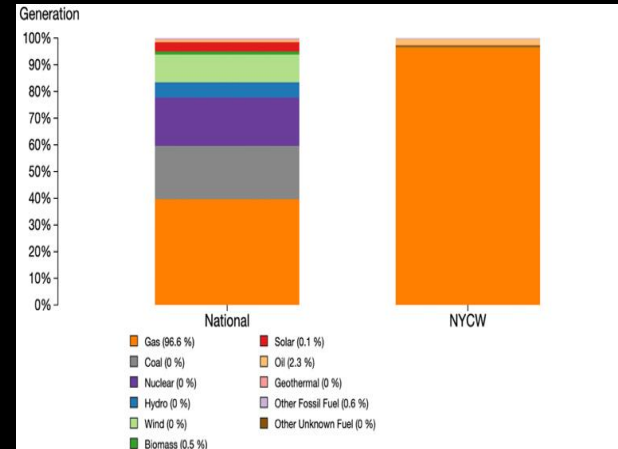
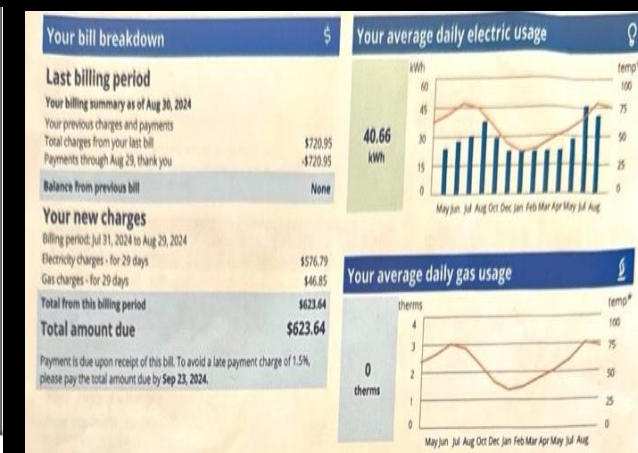


Table 1. Electricity Resource Fuel Use in My Region

Resource Fuel:	Renewable [R] or Nonrenewable [NR]	My eGRID Subregion Average %:	National Average %:
Biomass	R	0.5	95
Coal	NR	0.0	20
Gas (Natural Gas)	NR	96.6	40
Geothermal	R	2.3	2
Hydroelectric	R	0.0	4
Nuclear	NR	0.0	27
Oil	NR	2.3	2
Other Fossil Fuel	NR	0.6	0
Other Unknown	NR	0.0	0
Solar	R	0.1	6
Wind	R	0.0	9

RESIDENTIAL NATURAL GAS	
Each CCF contains 1,001 therms	25.0 Therms
<b>Local Distribution Service</b>	
Daily Fixed Charge (30 days at \$0.55890)	16.77
Distribution Charge (25.0 Therms at \$0.08980)	2.25
Gas Supply Acquisition Service (25.0 Therms at \$0.02530)	0.63
<b>Gas Supply Service</b>	
Natural Gas Cost (25.0 Therms at \$0.71120)	17.78
<b>Tax</b>	
WI Sales Tax (5% of 37.43)	1.87
WI County Sales Tax (0.5% of 37.43)	0.19
<b>Total Gas Service Charges</b>	<b>\$39.49</b>



# RENEWABLE ENERGY PROGRESS

Renewable energy is important for the planet because it gives more advantages to keep the environment better.

It is important to keep Earth better and not increase the amount of waste that causes pollution to the environment.

Renewable energy can help us learn in networking with others, and bring attention for the audience that installing solar panel and wind turbine helps reduce the amount of electricity bills to spend.

Based on the results we took we realized that we could install solar panels and wind turbine to have power, good for healthy environment and reduce the cost of electricity bills.

It is encouraging of installing solar panels and wind turbine because it helps decrease the number of toxic wastes (CO<sub>2</sub>/greenhouse gases) in the environment.



<b><u>Vertical and in Sunlight</u></b>	<b>593.0 W/m<sup>2</sup></b>
<b><u>Normal and in sunlight</u></b>	<b>1017.0 W/m<sup>2</sup></b>
<b><u>Horizontal and in sunlight</u></b>	<b>830.1 W/m<sup>2</sup></b>
<b><u>Reflected and in sunlight off of a light surface</u></b>	<b>333.5 W/m<sup>2</sup></b>
<b><u>Reflected and in sunlight off of a dark surface</u></b>	<b>80.0 W/m<sup>2</sup></b>
<b><u>Vertical and in the shade</u></b>	<b>54.0 W/m<sup>2</sup></b>

**Big Solar Panel**

Face down	Irradiance (W/m <sup>2</sup> )	Current (mA)	EP (Electrical Potential in Volts)
Face Down 180°	3.83	9.06	11.88
150°	5.20	24.53	14.30
120°	10.0	42.75	15.40
Vertical 90°	35.4	195	17.69
60°	73.0	415.0	77.3
30°	69.0	468.6	415.4
Face up 0°/180°	81.3	505.2	186.0

**Small Solar Panel**

Face down	Irradiance (W/m <sup>2</sup> )	Current (mA)	EP (Electrical Potential in Volts)
Face Down 180°	3.7	6.78	15.83
150°	6.2	8.68	16.2
120°	6.0	8.72	16.3
Vertical 90°	9.6	11.24	171.2
60°	65.2	64.7	208.8
30°	85.0	49.2	212.4
Face up 0°/180°	69.3	76.0	200.4



# QUESTIONS?

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If you have any question(s), come and check  
out my poster!