

# 2022 – 2023 Energy Education Workshop - Pre/ Post Assessment - Solar

Your answers in this assessment are used to shape NEED curriculum and training.

Please answer to the best of your ability. Completely fill in the circle next to your selected answer.

Location: \_\_\_\_\_ Date: \_\_\_\_\_

- (A) Pre
- (B) Post

Answer Selection: Correct = ● Incorrect = ✕ ✓ ⊖

## Is this your first NEED workshop?

- (A) Yes
- (B) No

1. Which sector of the economy consumes the most energy?

- (A) transportation
- (B) industry
- (C) residential/commercial
- (D) electric power

2. Most of the energy consumed in the U.S. is stored in which form of energy?

- (A) kinetic
- (B) thermal
- (C) chemical
- (D) mechanical

3. In which form do all energy flows begin?

- (A) electrical
- (B) chemical
- (C) radiant
- (D) nuclear

4. Which of the following is not a primary source of energy?

- (A) petroleum
- (B) natural gas
- (C) electricity
- (D) all of the above

5. Which energy source is used to generate the largest percentage of **electricity** in the U.S.?

- (A) hydropower
- (B) petroleum
- (C) coal
- (D) natural gas

6. What is the national average cost of a residential kWh of electricity?

- (A) 8 – 10 cents
- (B) 12 – 14 cents
- (C) 15 – 17 cents
- (D) 18 – 20 cents

7. When considering **total energy** consumption (including transportation, industry, and electricity), which of the **renewable** energy sources provides the U.S. with the greatest amount of energy?

- (A) biomass
- (B) hydropower
- (C) wind
- (D) solar

8. When considering **total energy** consumption (including transportation, industry, and electricity), which of the **nonrenewable** energy sources provides us with the greatest amount of energy?

- (A) petroleum
- (B) natural gas
- (C) coal
- (D) nuclear

9. **Nonrenewable** sources of energy make up what percentage of U.S. energy consumption?

- (A) less than 60%
- (B) 60 – 70%
- (C) 70 – 80%
- (D) 80 – 90%

10. What are the top five sources of energy used in the United States?

- (A) uranium, wind, natural gas, hydropower, biomass
- (B) petroleum, natural gas, coal, uranium, biomass
- (C) coal, petroleum, uranium, hydropower, solar
- (D) solar, coal, petroleum, geothermal, natural gas

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11. What do coal, natural gas, nuclear, and some solar power plants have in common?

- (A) all utilize cooling towers
- (B) all burn a fuel to drive the turbine generator
- (C) all emit CO<sub>2</sub>
- (D) all use thermal energy to drive the turbine generator

12. Which country provides the largest portion of imported oil to the U.S.?

- (A) Egypt
- (B) Saudi Arabia
- (C) Venezuela
- (D) Canada

13. Which **renewable** energy source generates the largest percentage of **electricity** in the U.S.?

- (A) wind
- (B) solar
- (C) hydropower
- (D) biomass

14. Which of the following is **not** a greenhouse gas?

- (A) H<sub>2</sub>O (water vapor)
- (B) CO<sub>2</sub> (carbon dioxide)
- (C) CH<sub>4</sub> (methane)
- (D) N<sub>2</sub> (nitrogen)

15. When considering most thermal power plants, how efficient is the system, or, roughly how much energy will reach the consumer as electricity?

- (A) one-third (1/3)
- (B) one-fourth (1/4)
- (C) one-half (1/2)
- (D) three-fourths (3/4)

16. *Opinion*: I will take energy into consideration when I make my daily decisions.

- (A) always
- (B) most of the time
- (D) some of the time
- (E) never

17. What energy transformation takes place in a photovoltaic (PV) cell?

- (A) radiant into electrical
- (B) chemical into light
- (C) chemical into motion
- (D) radiant into chemical into electrical

18. The highly purified silicon wafers used in making PV cells are most often “doped” with:

- (A) carbon and arsenic
- (B) phosphorus and boron
- (C) chlorine and bismuth
- (D) they consist of only the highly purified silicon

19. What energy transformations take place in a concentrating solar power (CSP) system?

- (A) electricity into motion into radiant
- (B) electricity into thermal into radiant
- (C) radiant into chemical into electrical
- (D) radiant into thermal into motion into electricity

20. What is the name of the device that changes DC current to AC current in a residential PV system?

- (A) arrestor
- (B) inverter
- (C) transformer
- (D) circuit breaker

21. Conversion efficiency of a PV panel is

- (A) 1 - 2%
- (B) 5 - 10%
- (C) 20 - 30%
- (D) above 50%