

Power Surge Video Worksheet

Name _____ Per: _____

Watch this video on EdPuzzle.

1. What is Sir Richard Branson's personal dilemma?
2. How much of the U.S.'s electricity is provided by coal? _____
3. Where did coal originate? _____
4. What is the wedge theory?
5. How many technologies are available today capable of solving 1/7 of the problem? _____
6. Name the 4 categories of technologies capable of solving the problem
 - a. _____
 - b. _____
 - c. _____
 - d. _____
7. What is Lackner's idea?
8. What % of the demand for Energy do fossil fuels feed? _____
9. What is happening in In Salah, Algeria?
10. How many tons of carbon does the average family output per year in energy consumption?
11. Why don't we use more solar power?
12. What is Secretary Chu's goal by 2035?
13. What fraction of total Energy use is transportation? _____
14. What makes biofuels such a viable option compared to others?

15. How many years will it take to recover the costs of the upgrades at the National Archives?

16. If we replaced all 30 mpg cars with _____mpg cars, that would be one wedge.

17. How many coal power plants would we have to replace with nuclear power plants to equal one wedge in the wedge game? _____

18. How many new nuclear power plants have been built in the U.S. since 1970? _____

19. How many new nuclear power plants are planned to be built in China over the next 30 years?

20. 1 Nuclear Power Plant = _____ wind turbines = _____ square miles of solar panels

21. Which “wedge(s)” and how many of each would you use?

Green: Efficiency Increases

Blue: Cleaning the combustion process of coal

Red: Harnessing the Sun’s energy (wind, solar, etc.) *Yellow: Nuclear Power*

22. Do you believe that technology can save us from climate change? Are things as bad as they seem? Or are we far gone from effectively reducing our carbon emissions?

Power Surge Answers

1. What is Sir Richard Branson's personal dilemma? His dilemma is that he is concerned about the environment and climate change, but he has made his fortune with an airline industry that contributes to the greenhouse gases!
2. How much of the U.S.'s electricity is provided by coal? 50%
3. Where did coal originate? Plants
4. What is the wedge theory? That we have a 7 billion ton carbon output problem that can be solved...if we break it down into seven 1 billion ton answers, we can freeze the carbon output instead of allowing it to continue to rise.
5. How many technologies are available today capable of solving 1/7 of the problem? 15
6. Name the 4 categories of technologies capable of solving the problem
 - a. Efficiencies
 - b. Nuclear
 - c. Carbon Capture
 - d. Sun (solar, wind)
7. Name the Earth Challenge judge sitting next to Branson: Al Gore
8. What is Lackner's idea? To use carbon capture materials to "scrub" the air of excess carbon
9. What % of the demand for Energy do fossil fuels feed? 85%
10. What is happening in In Salah, Algeria? They are scrubbing off the CO₂ and then pumping it back underground.
11. How many tons of carbon does the average family output per year in energy consumption? 14 tons of C (50 tons of CO₂)
12. Why don't we use more solar power? Too Expensive
13. What is Secretary Chu's goal by 2035? Double our Clean Energy resources
14. What fraction of total Energy use is transportation? 1/3

15. What makes biofuels such a viable option compared to others? We can use the fossil fuel infrastructure
16. How much \$ does the National Archives save each year in energy costs since their retrofit?
\$1.2 million
17. How many years will it take to recover the costs of the upgrades at the National Archives?
Only 5 years!
18. If we replaced all 30 mpg cars with __60__mpg cars, that would be one wedge in the wedge game.
19. How many coal power plants would we have to replace with nuclear power plants to equal one wedge in the wedge game? 800
20. How many new nuclear power plants have been built in the U.S. since 1970? Zero
21. How many new nuclear power plants are planned to be built in China over the next 30 years?
400 new nuclear power plants
22. 1 Nuclear Power Plant = __3000__ wind turbines = __50__ square miles of solar panels