


Figure 1. Examples of the Technology Description Sheets provided to participants on 8.5"x11" paper. All sheets adopted the same format and reported on the same set of attributes.


Advanced Nuclear Plants

How it Works: Nuclear plants use uranium that has been slightly processed or enriched. In a nuclear plant, the uranium is heated to produce steam. The steam is used as fuel in a type of engine, called a "turbine". This turbine runs a generator to make electricity. Advanced nuclear plants are safer than existing ones because they have an "accident resistant" design that prevents accidents from occurring.



Wind Power


How it Works: Modern wind machines are much like the windmills of old. They have blades that catch the wind and turn a shaft. This shaft is connected to a generator that produces electricity.



Advanced Coal Plants

Option 2: CO₂ Capture

How it Works: In "Advanced Coal" plants, a special chemical is added to the coal before it is burned. This chemical captures the carbon dioxide as it is released. A pipeline is then used to transport the captured carbon dioxide to a storage site (about 2,500 feet underground) where it is trapped permanently. A diagram to the right shows the process.




Traditional Coal Plants

Option 1: CO₂ is released into air

How it Works: Traditional coal plants burn coal to make steam. The steam is used as fuel in a type of engine, called a "turbine". This turbine runs a generator to make electricity.

When coal is burned, CO₂ is released by the plant. In **Option 1**, this CO₂ escapes into the air because no equipment is added to capture the CO₂.



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MORE INFORMATION (ABOUT TRADITIONAL COAL PLANTS)	
Cost *	Traditional coal plants make cheaper electricity than advanced coal plants. Yet, it is more expensive to add CO ₂ capture equipment to traditional coal plants. *
CO₂ released *	Traditional coal plants release CO ₂ to the air. *
Other Pollution/Waste *	<ul style="list-style-type: none"> While these plants are much cleaner than in the past, they still release CO₂, nitrogen oxides, sulfur dioxide, mercury and particulates to the air. These pollutants can cause people to have many different health problems. * Traditional coal plants produce a lot of ash that contain hazardous chemicals. Some ash can be recycled, for example, to make concrete. The leftover solid waste is usually put in a landfill near the plant. Traditional coal plants use a lot of water to cool the plant's equipment. The water comes from wells, lakes, rivers or oceans. Some of it will evaporate after use. The rest is returned to its source. Since it is hot, the water may disturb plants and animals living in the water source.
Availability	Experts say that the U.S. has enough coal to meet its needs for at least 100 years.
Reliability	Coal can provide steady and dependable electricity.
Limits of use	Traditional coal plants release a lot of CO ₂ . They cannot make all of the electricity that is needed in PA if we want to reduce CO ₂ . Other types of plants must also be built.
Noise	These plants are about as loud as average street traffic.
Land use and ecology	Coal mining near the surface disturbs the land, plants and animals. It also disrupts and pollutes streams. Underground mining can cause acidic water to leak into streams. If the mine collapses, it can also cause the ground to sink or shift.
Safety	These plants are quite safe for operators. Coal mining is dangerous for the miners.
Lifespan	The lifetime of any plant is uncertain. But, a new traditional coal plant built today would likely make electricity for at least 50 years.
Current Use	There are more than 1,000 of these plants working in the U.S. today.

* More cost and pollution information is available in "Cost Comparison" and "Pollution Comparison" sheets in Envelope #3.

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Option 2: CO₂

Option 1: CO₂ is released into air

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