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APES pd. 1

**First energy** nuclear engineers and workers recently visited Blackhawk high school in hopes of further educating them on nuclear energy as well as providing them with a hands on learning experience. The session commenced with a presentation about the power plants nearby and their histories. The no longer operating plant known as SAPS was owned by First Energy and was the first commercial power plant in the country. SAPS was located in Shippingport, and some of its former workers still are employed at first energy today. The current plants are predicted to operate until around 2047. There are 100 nuclear facilities in the US at the moment, its energy accounting for about 20% of the United States' electricity, and is increasing globally.

After the brief introduction of the plant itself, presenters aimed to disarm any misconceptions their audience may have. The Simpsons' negative depiction of nuclear energy was brought up and disproved. The only nuclear accident in the US occurred in midtown Pennsylvania and no one was injured or killed. Workers at the Midtown plant did not know that a part of the reactor was open and allowing water to escape. In comparisons to the infamous Chernobyl incident, First Energy workers assured Blackhawk students that safety is their number one concern and that the Midtown accident was harmless, but still accounted for. Safety was then discussed, nuclear energy described as a green option. The nuclear regulatory commission sets nationwide rules for plants, keeping it a green energy form. It emits far less carbon than fossil fuels, its waste is stored securely on sight, and one of the only byproducts is water. A downside to nuclear energy was discussed as well, the fact that it uses only 3% of its fuel was brought to light. Workers/presenters addressed their dismay on the ban of recycling nuclear fuel; as France does efficiently. Back to the benefits, the fuel is not carbon based nor does it have emissions that could contribute to acid rain. Lastly, of the entire facility, about 90% of its space is used for containing energy and protecting the people.

Next came the process discussion. Students learned the process of nuclear fission (splitting atoms to obtain energy) as well as what happens to that energy and how it is transported to a usable form. First Energy reps passed actual pieces of the plants main turbine. The presentation walked through the steps that are not always immediately associated with nuclear energy, as fission is. To be brief, water is a main factor in the process, it is heated and the steam produced then goes through a turbine (the mechanism whose pieces were passed around the room). After the turbine, energy from that enters a generator, finalizing its process and is now able to be used as electricity. Cooling is also a factor incorporated in the process, and unfortunately it causes a 60% loss of energy.

The hands on activity commenced, the aim was to create a spinning turbine out of tools such as popsicle sticks, straws, tape, paperclips, paper, and a balloon. The longest spinning and sturdiest creation would win. Teams were given 30 minutes, and the end result was a win for one team, including two stellar students Aubrey O'Leary and Raina Mckoen.

We sat down with one of the First Energy employees and asked a few questions. When asked if he enjoys presenting at Blackhawk, his response was positive. He liked that it was beneficial to the students as well as the employees, sharing the knowledge and opportunities to the younger generation as well as taking input from them on bettering the presentation experience. When asked how he feels about his overall experience with First Energy, the response was again positive. Our interviewee was thankful that he can make his job feel like more than just work. He also finds his job to be ethically rewarding as he sees his company working toward cleaner energy. This ties into the environmental aspect of nuclear energy, which was discussed as well. He couldn't think of anything negative about, and was excited about slowly replacing fossil fuels and moving towards a cleaner, less polluting energy form with a company that has a great environmental record. Our First Energy rep was concerned about the environment, especially since he told us some of his favorite activities were hunting and fishing, outdoorsy things. Lastly, when I asked the Penn State alumni what his personal definition of a hipster was? "San Diego California."