[Music]

Lauren Lopez: We're proud of safely and efficiently supplying electricity to our customers. More than forty percent of that electricity is generated from our nuclear power stations, which are rated among the best anywhere.

(employee sands in front of large control panels and does safety checks on the nuclear systems while other employees walk the power plant and discuss daily tasks)

Lauren Lopez: Dominion's nuclear generation program is focused on safety, security, operational excellence, and continuous improvement. As we grow to meet the energy demands of our customers, we continue to lead our industry in many aspects of nuclear operation.

Lauren Lopez: Dominion operates to nuclear power stations in Virginia and like all nuclear units, they emit no green house gasses. As you will also see, they operate safely and responsibly in close proximety to nature.

(aeriel view of the surry power station shows two domed structures and multiple buildings dedicated to running the power station, as well as the water reseviors used for cooling with the james river in the background)

Lauren Lopez: The Surry power station, located in Surry County, covers 840 acres on a point of land called gravel neck that juts into the James River. Just to the north is the Hog Island state wildlife management area. These protected wetlands are home to hundreds of varieties of plants and animals and a favorite destination of bird watchers and other naturalists.

(the north anna power station is seen across lake anna where people are also fishing from boats, swimming and having fun on the shoreline)

Lauren Lopez: The North Anna power station sits on a thousand acres in Louisa County. Dominion created beautiful Lake Anna, the thirteen thousand acre lake, to serve as a cooling water resevior for the station. Today Lake Anna is a popular recreational site known for great fishing, swimming, and boating. The lake's two hundred miles of shoreline are dotted with summer homes, marinas, campgrounds, and a large state park.

Lauren Lopez: Let me briefly explain how nuclear energy is generated. See this? (holds up a small black pellet shaped similarly to an hour glass) This is what enriched uranium, the fuel that powers the nuclear reactors, looks like. It's about the size of the tip of my finger. There's a lot of energy packed into one of these tiny pellets. One nuclear fuel pellet, just like this one, contains the same energy provided by almost a ton of coal or three fifty gallon drums of oil or seventeen thousand cubic feet of natural gas. Seal alot of these pellets in a strong metal tube and you have a nuclear fuel rod. (employees assemble the fuel rods into groups) Bundle the rods together and you have what is called a nuclear fuel assembly. (employees inspect the assemblies which are multi-tiered cubes) Insert over a hundred assemblies into the core of a nuclear reactor and you get a miracle of nature and science, nuclear energy.

Lauren Lopez: The process begins with fission, or splitting, of uranium atoms in the reactor vessel, creating immense amounts of heat. The super heated water is pumped to steam generators which transfers the heat to a second water system creating steam that is used to turn turbine generators and produce electricity. A nearby water source is used to cool the steam back to water and then the process is repeated.

(outside of surry power station overlooking the cooling resevior)

Lauren Lopez: About every eighteen months the reactor is shut down to remove the nuclear fuel assemblies that have depleted their energy. The outgoing assemblies, now called used nuclear fuel, emit some heat and are highly radioactive. (workers lower a nuclear rod assembly into a large concrete pool and then into a round white containment unit) To cool it, the used nuclear fuel is placed in a specially designed steel and concrete pool of water located in a building seperate from the reactor. Water also acts as a buffer against the release of radiation. In this way, used nuclear fuel can be safely isolated from the environment.

Eventually the used nuclear fuel assemblies will be moved to dry storage on-site. Dry storage involves loading an extremely robust steel container with 32 fuel assemblies underwater in the storage pool and sealing it for safe long-term storage. (the long-term storage field is dotted with the same round white containment unit which now has a domed cap that has been used to seal it) First adopted in 1986, these containers resemble giant thermos bottles. They are placed on transfer vehicles and taken to a nearby storage pad on-site. (large rectangular concrete building which resembles a loading dock with all the doors) Dominions new dry storage system uses a series of reinforced concrete bunkers to hold the storage containers horizontially, providing the same safe and robust storage as the vertical metal containers. (a flat bed truck carries a storage container down the road to be placed in the concrete bunker) Once loaded with used fuel in the storage pool and seal welded so the radioactive material is safely isolated from the environment. The container is placed horizontally on the transfer vehicle and slowly transported to the steel reinforced concrete bunker. To ensure safety, the top and sides of this concrete modelare at least three to four feet thick. (the truck backs into the concrete bunker to unload the storage container) Dry storage is a safe and secure method for interim storage of used fuel designed to withstand the most severe accident conditions.

The United States government is ultimately responsible for the management of the nation's used nuclear fuel. A blue ribbon commission, appointed by the President, issued a report in 2013 with various recommendations for final permanent storage. Following Fukushima in 2011, the U.S. nuclear industry adopted additional safety measures for dealing with a severe natural disaster. (a small domed building stores all the equipment needed in case of an emergency) Adopting an approach known as flex, the industry added a completely new layer of shared backup safety systems to support and safely maintain a damaged unit. Portable electric generators, pumps, hoses, and other safety equipment are stored in hardened buildings on-site. In the event of an emergency, they can be quickly moved to the station and used to keep the facility safe in the unlikely event that the stations multiple backup safety systems are unable to operate.

Dominion is fully commited to meeting the energy needs of our customers safely, efficiently, and in a manner that protects our environment. Our nuclear power stations play an important role in providing clean and affordable electricity that's available whenever our customers need it. We hope that you have enjoyed this presentation.