

## Facts about Safety and Emergency Planning Braidwood Generating Station October 2011

This document provides facts about safety procedures, equipment and systems related to earthquakes, flooding and other disaster preparedness at the Braidwood Generating Station. This is not a comprehensive review of all facility safety procedures. It is meant to show Exelon Nuclear's commitment to the highest safety standards at all its facilities.

### Braidwood Generating Station is protected against earthquakes

- Exelon's facilities are engineered to withstand earthquakes between 6.0 and 6.9 on the Richter scale *at the facility site*, which translates into larger earthquakes as measured at the epicenter. This is far above any historical earthquake risk data for the area.
- Braidwood safety systems and components are protected in reinforced concrete structures, allowing them to remain functional in earthquakes, tornados, floods or an accident internal to the facility.
- Among protected systems are those that provide emergency cooling water to the reactor and spent fuel pools, emergency diesel generators and diesel fuel tanks.

### Braidwood Generating Station is protected against floods

- Braidwood is designed to remain in a safe and secure condition even in significant floods. Tsunamis are not a threat to Braidwood due to its location.
- Braidwood emergency equipment is protected from water incursion; this includes water tight doors (that protect essential service water pumps and the diesel oil storage tanks) which serve safety related cooling systems and the emergency diesel generator.
- Braidwood is situated about 600 feet above sea level. The nearest body of water, the Kankakee River, is 4.5 miles from the facility and runs about 570 feet above sea level. The highest recorded flood in this area was 586.3 feet above sea level in 1883 and 1887.

### Braidwood Generating Station is protected against power loss

- The electricity that powers the facility comes from a switchyard (similar to a substation) that is connected to the grid by six transmission lines.
- Should all offsite power sources fail, four locomotive-sized emergency diesel generators and four independent battery banks ensure continued electricity for safe, secure shutdown and safe, secure cooling of the facility.
- The four emergency diesel generators are safely contained in separate rooms within a reinforced concrete structure. They start automatically when offsite power is lost and can run 24-7 for months if needed.
- The generators are fueled by three underground diesel fuel tanks with a total capacity of 44,000 gallons of diesel fuel, a seven-day supply on site 24-7, 365. Pipes and pumps run underground to the diesel generators. The station has plans for replenishing diesel fuel supplies in a natural disaster that causes an extended power loss.
- Braidwood has four banks of large emergency batteries in four locations within the facility. Each set of batteries can provide emergency backup power for about eight hours should all diesel generators become unavailable.
- The emergency diesel generators are tested monthly. Batteries are inspected weekly.

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## **Braidwood Generation Station is protected against hydrogen build up**

- Braidwood Generating Station has developed systems and strategies that minimize hydrogen buildup inside the facility, believed to be the cause of explosions in the Japanese facilities.
- These systems and strategies include venting containment via the containment purge system and a hydrogen recombiner system that safely and securely converts hydrogen into water, thus avoiding gas buildup.

## **Braidwood Generating Station water resources**

- Braidwood has 10 independent methods of safely putting water into the reactor if needed.
- Braidwood has five independent methods of safely putting water into the used fuel pool if needed.
- The capacity of the used fuel pool is approximately 500,000 gallons of water. Primary water for the pool is maintained in two tanks, with a total capacity of 240,000 gallons.
- The two refueling water storage tanks also provide a backup to the auxiliary source of water with a total capacity of 900,000 gallons.

## **Braidwood Generating Station has extensive emergency plans**

- Braidwood has extensive emergency procedures to respond to emergency conditions in order to protect the health and safety of the public and its employees during emergency events.
- Facility operators, maintenance personnel, engineers, and the emergency planning workforce verify their qualifications on a daily basis.
- Braidwood and all U.S. facilities have in place “Severe Accident Mitigation Guidelines” that prescribe actions and require pre-staged equipment (portable diesel generators and portable power packs) beyond normal emergency operating procedures to address severe challenges to the reactor core.
- Braidwood conducts multiple emergency drills each year, and conducts an NRC graded drill every two years.
- Station emergency drills are overseen by the Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency (FEMA), with participation of state and local emergency agencies including the Illinois Emergency Management Agency.

## **Braidwood Generating Station used fuel facts**

- Braidwood’s used-fuel pool exceeds safety standards and is engineered to withstand forces greater than the largest earthquake ever seen in the region. Pool walls are three to six feet thick steel-reinforced concrete with a stainless steel liner to maintain adequate water levels at all times.
- The used-fuel pool is elevated 585 feet above sea level.
- Dry-cask storage for used fuel will begin by the end of 2011.

## **Quick facts about Braidwood Generating Station**

- Braidwood Generating Station is a dual-unit Pressurized Water Reactor with a concrete steel-lined containment structure. Unit 1 provides 1,194 total net megawatts of electrical capacity at full power while Unit 2 provides 1,166 total net megawatts of electrical capacity at full power.
- Unit 1 began producing electricity in 1988 and Unit 2 began producing electricity in 1988. Braidwood’s Unit 1 is licensed to operate until 2026. Unit 2 is licensed to operate until 2027. The main source of cooling water for Braidwood is the on site lake.
- The facility employs approximately 850 people with a payroll of approximately \$66 million.