

TOUR OF CALLAWAY ENERGY CENTER

APRIL 14, 2022

9:00 to 12:30

On Thursday, April 14 a presentation and tour of the Callaway Energy Center was given to members of the Missouri Public Service Commission and the Office of Public Counsel. Nuclear Site Vice President Barry Cox gave the presentation (attached). Attendees dressed into protective clothing and briefly went into the reactor to view the maintenance activities, and also viewed the spent fuel pool.

Missouri Public Service Commission attendees:

Commissioner Glen Kolkmeier
Advisor Mark Johnson
Chief of Staff and Advisor Whitney Scurlock
Legislative Director Doug Anderson

Office of Public Counsel attendee

John Clizer

Ameren Missouri attendees:

Nuclear Site Vice President Barry Cox
Regulatory and Legislative Vice President Warren Wood
Sr. Director Engineering Brent Jungmann
Manager Nuclear Communications Anne Roselius
Nuclear Communications and Strategy Jamie Oestreich
Communications Specialist Karina Amsdem
Manager Regulatory Affairs Gaye Suggett
Regulatory Liaison Aubrey Krcmar
Legal Assistant Rachel DuMey



Welcome to Callaway
Energy Center

TRUST BEHAVIORS

Trust Model – Our Values

Trust Building Behaviors							
<ul style="list-style-type: none"> Provide immediate coaching and feedback Take action to identify, eliminate and/or mitigate the hazard Follow the Safe Work Practices Manual Recognize, understand, and continue to evaluate working conditions Value and reinforce Focus 5 behaviors 	<ul style="list-style-type: none"> Tell the truth Be consistent Do what we say we will do (Walk the Talk) Admit mistakes, accept responsibility, and apologize Maintain confidentiality 	<ul style="list-style-type: none"> Communicate face-to-face when appropriate Show empathy and compassion Display loyalty to the client Predictably communicate decisions that affect others Active listen Seek first to understand, then to be understood 	<ul style="list-style-type: none"> Treat everyone with dignity and respect Ensure people are heard Respect that both verbal and non-verbal language matters Be curious and continuously grow Seek out and value unique talent and perspectives Recognize and eliminate barriers to individual success 	<ul style="list-style-type: none"> Make, meet, & exceed commitments Follow up in a timely manner Recognize when things change Hold ourselves and others accountable for achieving excellent results Do our best Know, meet and exceed industry Best standards Embrace new tools and processes 	<ul style="list-style-type: none"> Volunteer to help co-workers Engage all stakeholders to arrive at team solutions Coach teammates Seek opposing opinions Execute the plan with loyalty to team decisions Share knowledge 	<ul style="list-style-type: none"> Recognize and acknowledge current reality Forgive in order to move forward Find solutions Take responsibility Meet & exceed expectations Treat people, not equipment, as our greatest assets Focus resources on key priorities Ensure adequate resources Continually seek to improve processes Appropriately consider people in business decisions 	
Safety & Security Never Compromise	Integrity Do the Right Thing	Respect Value Others	Diversity, Equity & Inclusion Be Courageous	Commitment to Excellence Bring Your Best	Teamwork Work Together	Accountability Own Your Actions and Reactions	Stewardship Leave It Better
<ul style="list-style-type: none"> Production over safety Accepting unnecessary risk Resistance to coaching Complacency 	<ul style="list-style-type: none"> Inconsistency of word and action Deception Dishonesty 	<ul style="list-style-type: none"> Belittling others Talking behind someone's back Berating the group for individual behaviors Not returning phone calls or emails 	<ul style="list-style-type: none"> Individual exclusion Silence equals acceptance Not valuing different perspectives Hurtful or derogatory language or actions 	<ul style="list-style-type: none"> Breaking our commitments and promises Not following up when things change Losing focus Accepting less than excellence 	<ul style="list-style-type: none"> Autocratic decision making (I/it) Putting personal agendas above the team 	<ul style="list-style-type: none"> Ignoring or denying issues Making excuses Blaming others Resisting involvement Holding a grudge 	<ul style="list-style-type: none"> Letting emergent issues undermine priorities Allowing waste and inefficiency Inhibiting personal growth and development Wasting resources
Trust Damaging Behaviors							

Revised 1.4.2021



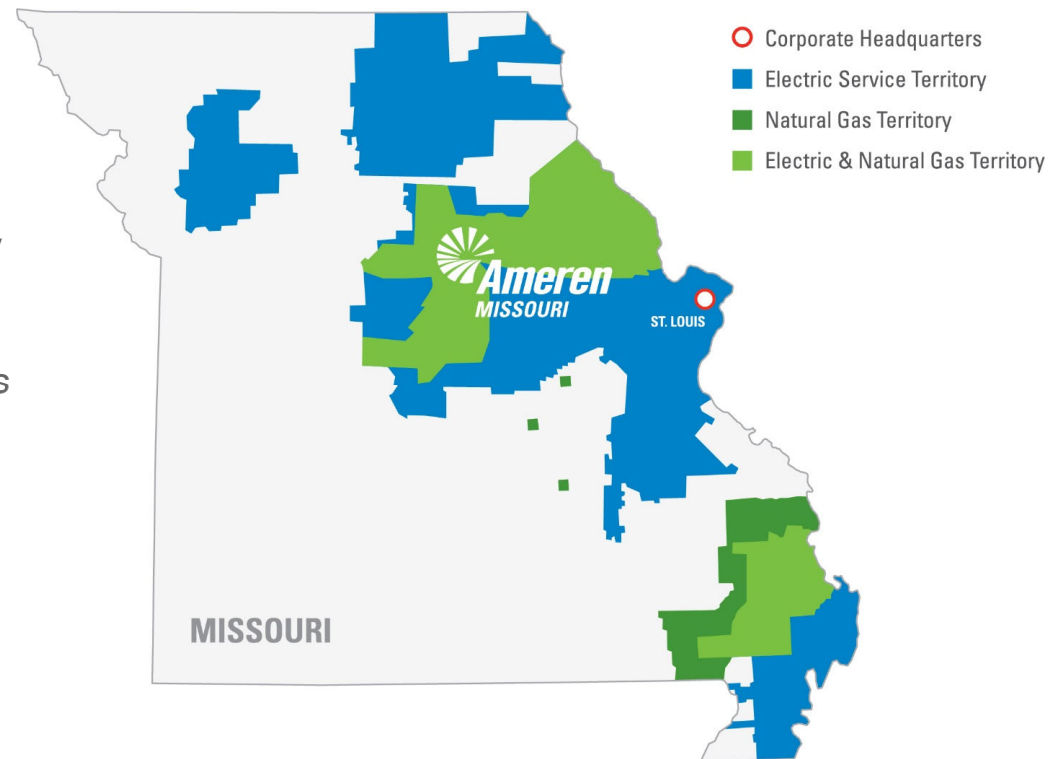
- Be respectful
- Be prepared
- Listen with an open mind
- Seek opposing opinions
- Attack problems not people
- It's not okay to not speak up
- Follow up on actions

Ameren Missouri

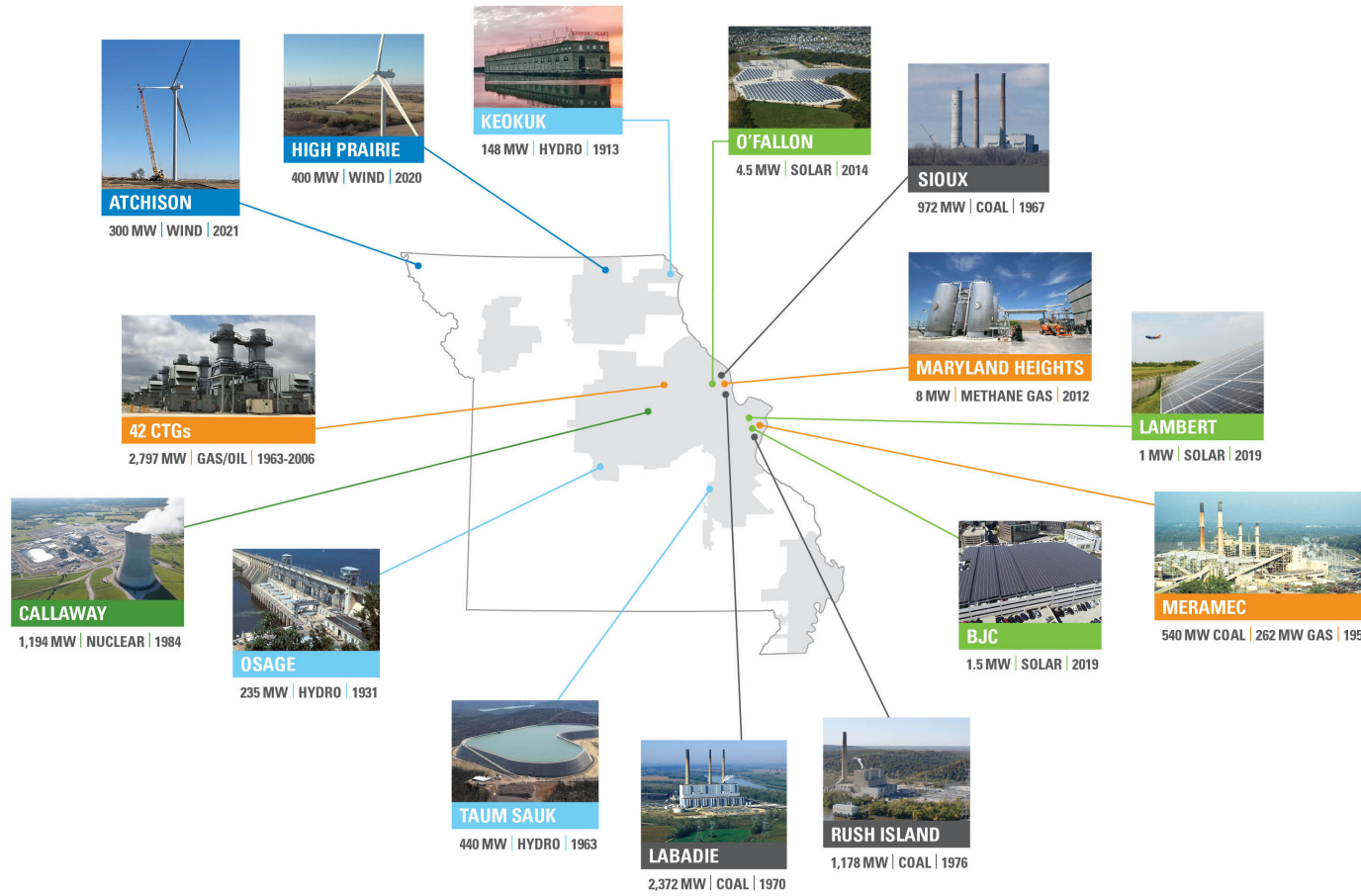


Integrated Electric & Gas Utility

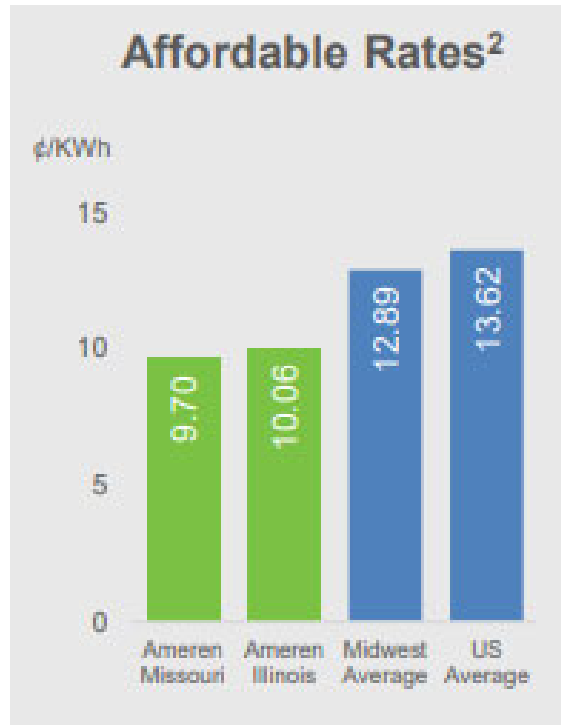
- 1.2 million electric customers
- 132,000 natural gas customers
- 24,000 square miles of service territory
- 3,300 miles of gas distribution lines
- 33,000 miles of electric transmission lines
- 10,500 MW of generation
- Service to 64 counties and more than 500 communities
- ~ 3,900 co-workers



Ameren Missouri Generation



Affordable Rates - ¢/KWH



Ameren Missouri's and Ameren Illinois' residential rates are 25% lower than the Midwest Average and **25% lower** than the U.S. Average.

AVERAGE RESIDENTIAL ELECTRIC PRICES – Edison Electric Institute, "Typical Bills and Average Rates Report" for the 12 months ended June 30, 2021.

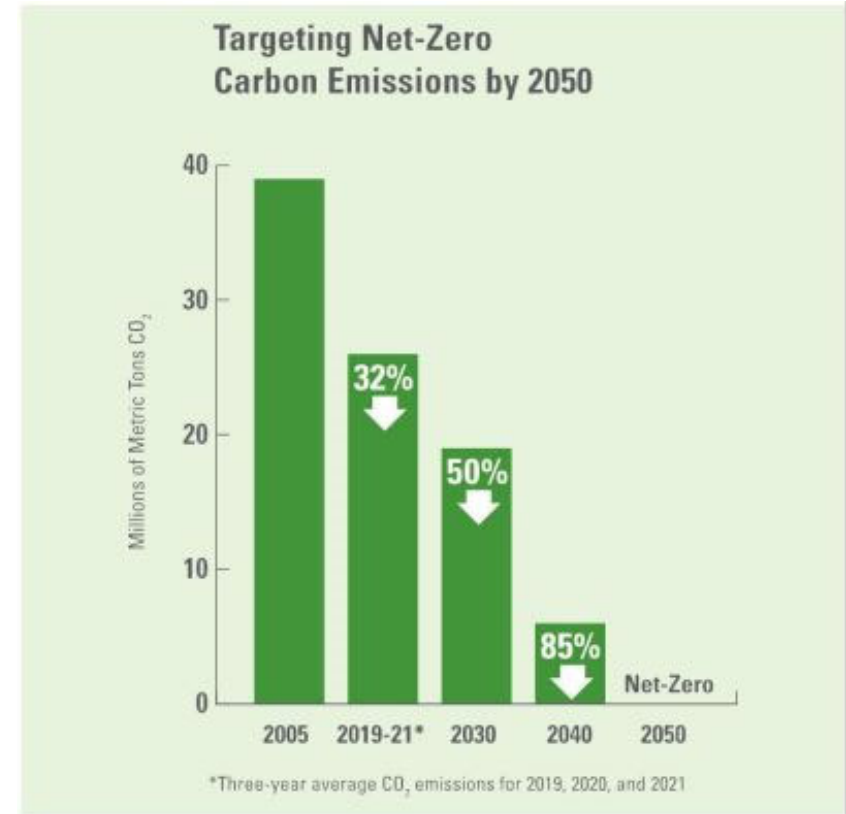
Environmental Stewardship

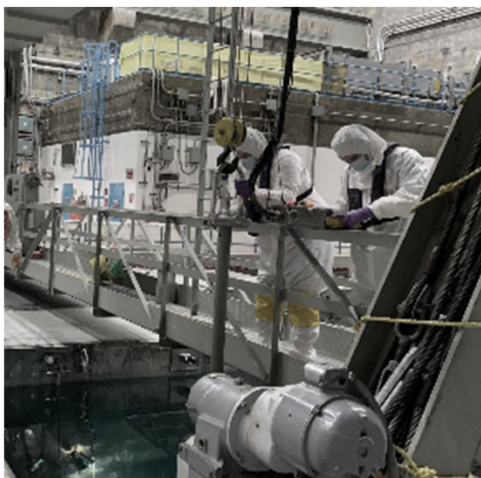
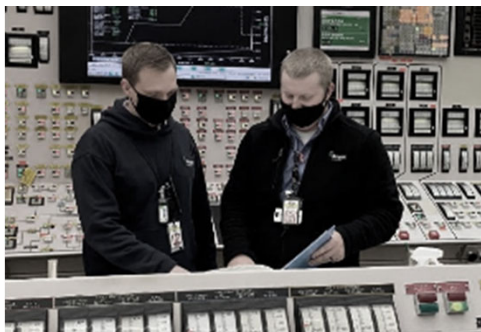


Renewable Energy

We are making the transition to **cleaner** energy in an **affordable** manner for our customers.

Our plan includes significant investments in new wind and solar generation and continued funding of robust energy efficiency programs that save customers money. In addition, our plan includes targeting **net-zero carbon** emissions by 2050.





Nuclear 101



How many nuclear plants are operating in the United States?

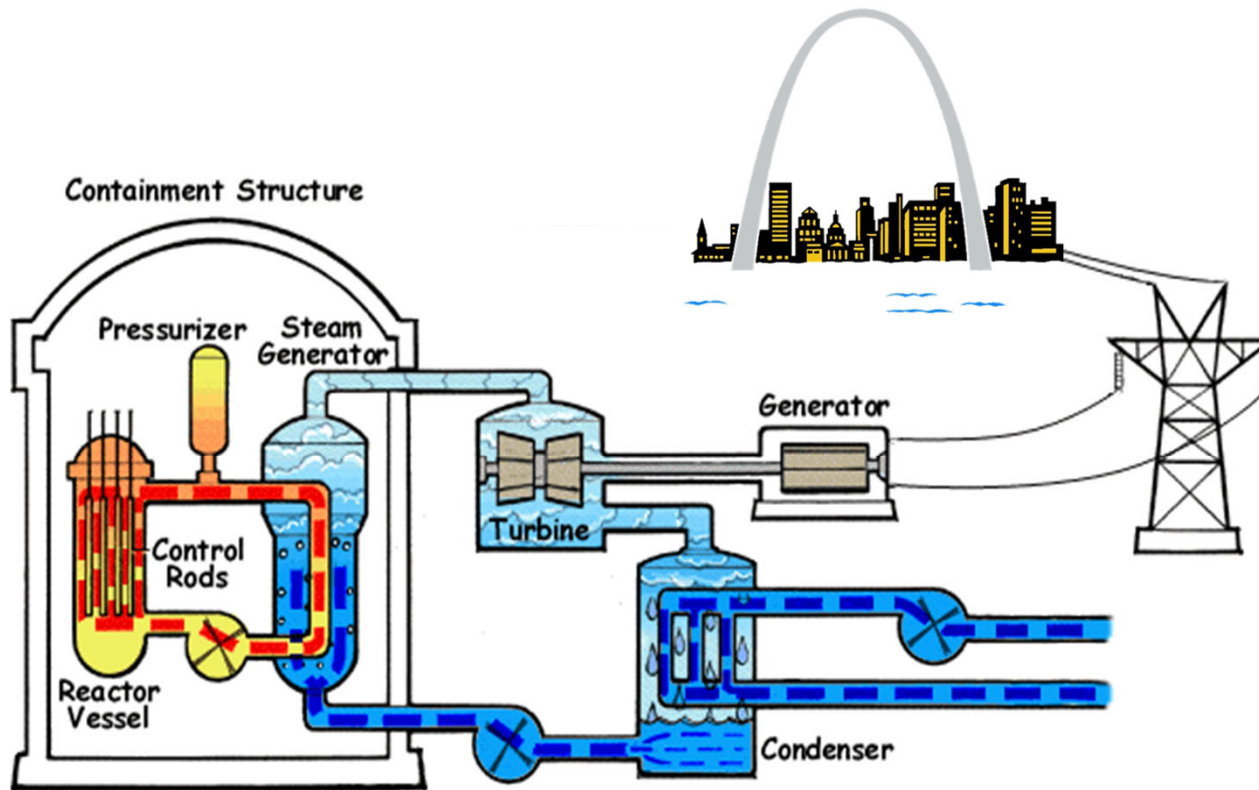
- A. 17**
- B. 39**
- C. 94**
- D. 565**



Nuclear power provides what percentage of electricity in the United States?

- A. 5 percent
- B. 20 percent
- C. 46 percent
- D. 63 percent

How Does Nuclear Energy Work?



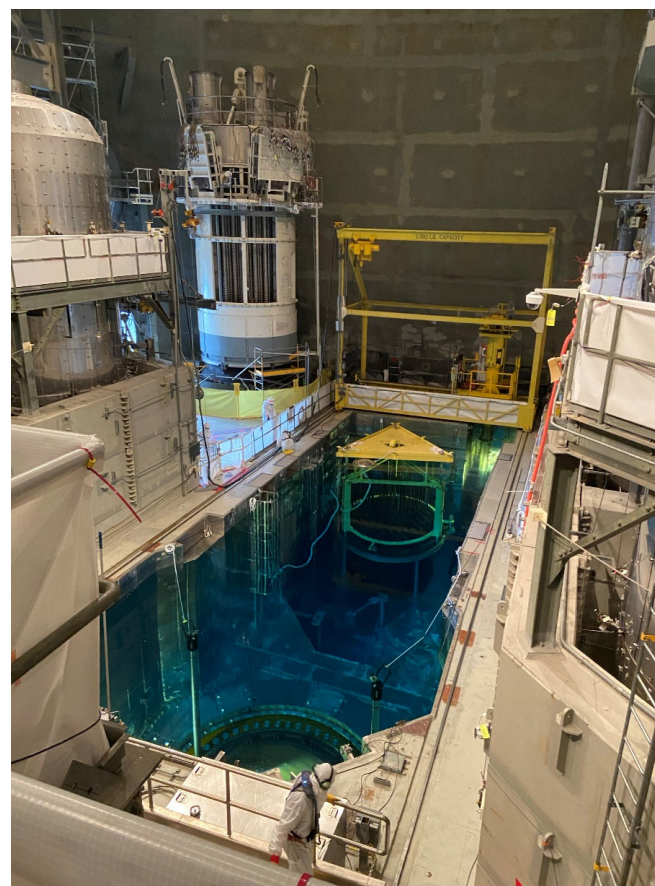
[Click here for movie](#)

Maintenance and Refueling Outages

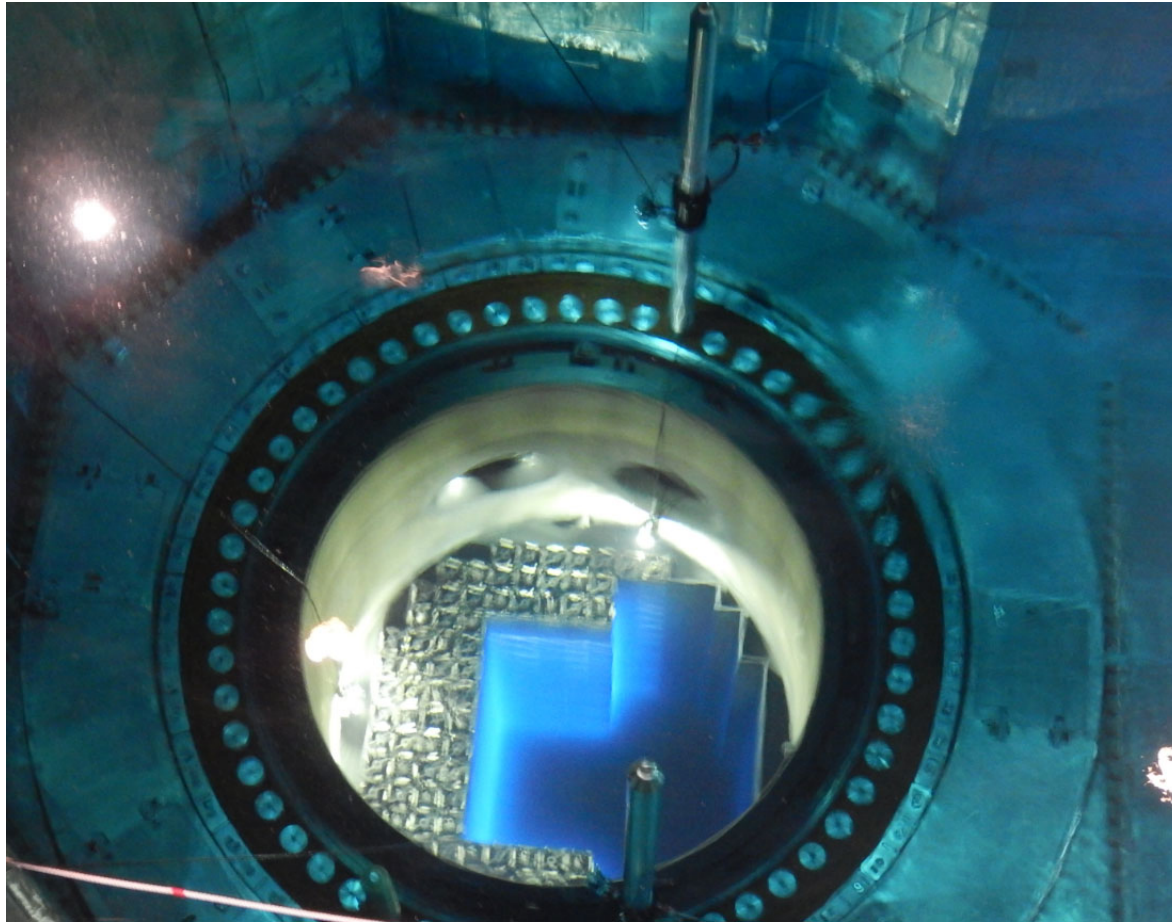
- Every eighteen months, routine refueling outage where inspections, maintenance and refueling of the reactor occur
- Work approximately 11,000 activities
- 84 of 193 fuel assemblies will be replaced
- 1,000 supplemental contractors join the team, majority from Missouri



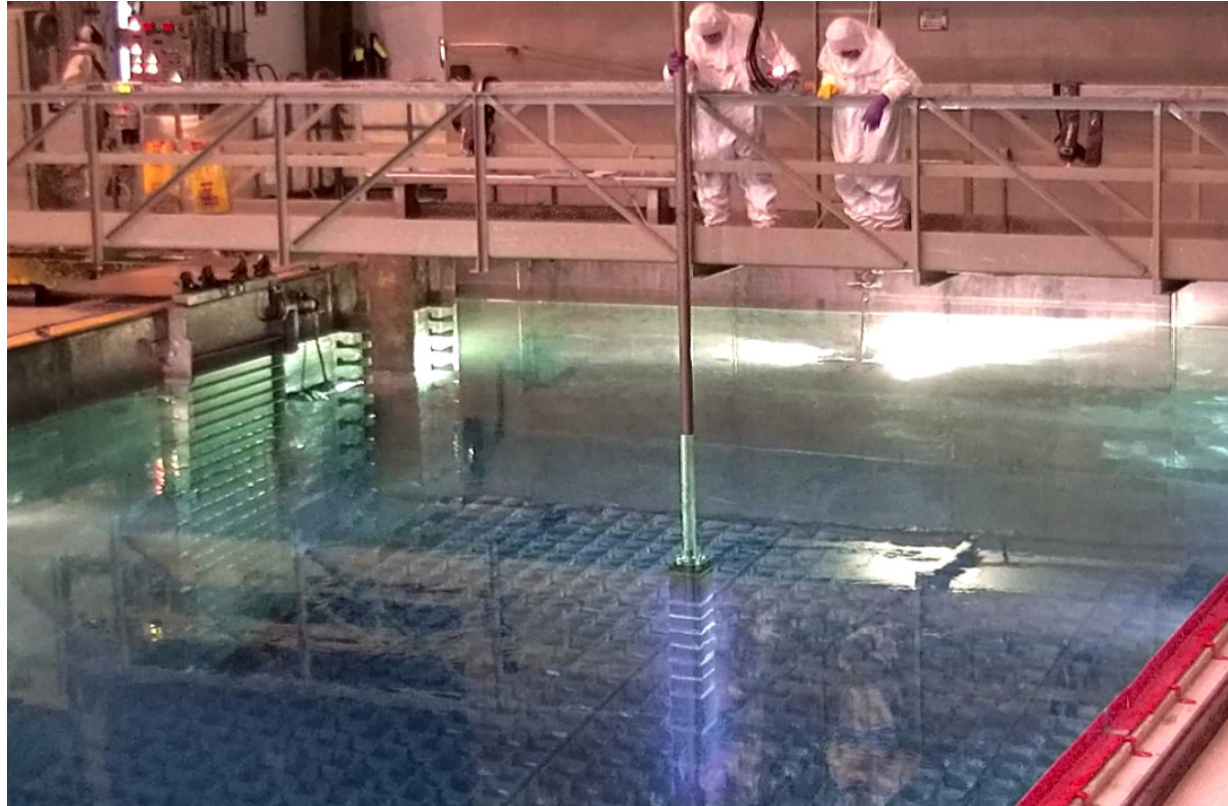
Reactor Vessel and Fuel Building



Refueling



Spent Fuel Pool



Dry Cask Storage

- Interim storage for spent fuel
- In accordance with Nuclear Waste Policy Act of 1982
- All spent fuel currently stored in on-site pool and 30 dry casks canisters
- Provides storage capacity in support of continued plant operation through life extension



SAFETY BRIEF

Safety is Never Compromised – three types:



Nuclear

– protect the health and safety of the public - our employees see to that every day – security is highly trained and well armed

Radiological

– Radiological Brief

Industrial

An industrial environment

- **HAZARDS:**
 - Trip hazards such as floor grating and concrete curbs
 - Loose gravel and icy surfaces
 - Don't touch or bump any equipment
 - Hold on to handrails when traveling on stairs
- No cell phone or camera use (leave cell phones in room)
- Personal Protective Equipment will be issued
 - Hard hats
 - Safety glasses
 - Earplugs in designated areas

SECURITY BRIEF

- Stay with your assigned escort at all times – within sight. If you become separated from your escort, stay where you are.
- Ensure your visitor badge is displayed in plain view at all times.



RADIATION PROTECTION BRIEF



- You assume risks every day (going to your office). By touring this site you will encounter industrial safety risks as well as radiological risks.
- Radiation, simply defined, is energy emitted through space and matter. This energy is expressed in a unit known as “REM” (Roentgen Equivalent Man). REM is a measure of how the energy or radiation affects the human body.
- Since radiation exposure at Callaway site is so low we actually measure in millirem or 1/1000 of a REM. The average person living in the US receives 620 mrem/year from natural and manufactured sources.
- There are no known effects due to exposure to ionizing radiation at or below the federally regulated limits. However, to be conservative a risk is assumed with all exposure.
- The Radiological Protection Program at Callaway is designed to minimize these risks.
- These risk associated with occupational doses are very small and considered acceptable when compared to that of other occupational health risks.

RADIATION IS A NATURAL PART OF OUR ENVIRONMENT

- Americans receive radiation exposure of about 620 millirem (mrem) annually from all sources
- Fifty percent comes from naturally occurring radiation from the Earth, in the air and water, from outer space, and in our own bodies
- The other 50% (310 mrem) comes from man-made sources, such as medical and dental X-Rays and certain consumer products
- Example Exposure Rates:
 - Chest X-Ray = 10 mrem
 - CAT Scan = 1,000 mrem or more
 - Round-trip flight from New York to LA = 2 – 5 mrem
 - Public exposure from nuclear plants/year = 0.4 mrem
 - Nuclear plant worker avg. annual dose = 100 mrem
 - Callaway worker avg. annual dose = 30 mrem



RADIATION PROTECTION BRIEF

- Your exposure will be monitored today using an alarming self reading dosimeter which will provide a readout of your dose and dose rate.
- All areas of your tour today have been surveyed to be <0.5 mrem/hour. As a visitor, you are limited to <10 mrem total dose.
- As part of the fetal protection program the Nuclear Regulatory Commission limits the dose to the embryo/fetus during the entire pregnancy if a woman formally declares the pregnancy to the licensee. Callaway has set a lower limit than the NRC of 450 mrem/pregnancy and 50 mrem/month. Since the Visitor limit is even lower at <10 mrem/year no other actions are need to comply with the Fetal Protection Program.
- In the nuclear industry we limit exposures by using a practice known as ALARA “As Low As Reasonably Achievable.” It’s a very simple concept of Time, Distance and Shielding.



RADIATION PROTECTION BRIEF

- We also ask you about any medical treatments; in particular, those involving nuclear medicine. The medical isotopes can show up days, or weeks, later. Our monitors are very sensitive but cannot detect radiation origin so they will detect any radiation given off by your body from medical treatments.
- Escorts will be using Radiation Work Permit R25VISIT to access the RCA. Visitors must follow applicable instruction on their escort's RWP.
- Stay with your escort and follow their instructions especially in the RCA. It is best not to touch or lean on anything if not required for safety purposes.
- Escorts must remain with the visitor at all times while in the RCA. Escort duty cannot be transferred.



RADIATION PROTECTION BRIEF

- Escorted individuals are NOT ALLOWED entry to any Contamination, Airborne Radioactivity, High Radiation Areas, Locked High Radiation Areas or Very High Radiation Areas.
- Escort shall be a Radiation Worker.
- Escort to visitor ratio shall be consistent with security escort requirements.
- No eating, drinking, chewing, or smoking in the RCA. No gum.
- In case of a plant emergency alarm, your escort will assist you in exiting the area.



RCA Visitor Access Authorization Form Instructions

- Each RCA visitor must sign an acknowledgement of responsibilities and indicate they have not recently received medical treatment that involved radioactivity introduced to the body.
- Each escort must sign an acknowledgement of responsibilities for each visitor.
- The escort for each group will sign into the RCA on RWP 25VISIT using the normal Automated Access Control Terminals.
- A Radiation Protection Technician at the RCA access control point (Control Building 1984' Level) will give each RCA visitor a Self Reading Dosimeter (SRD) that will need to be worn on a neck lanyard.





Callaway
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