American Nuclear Society

Presentation to the Latin American Section

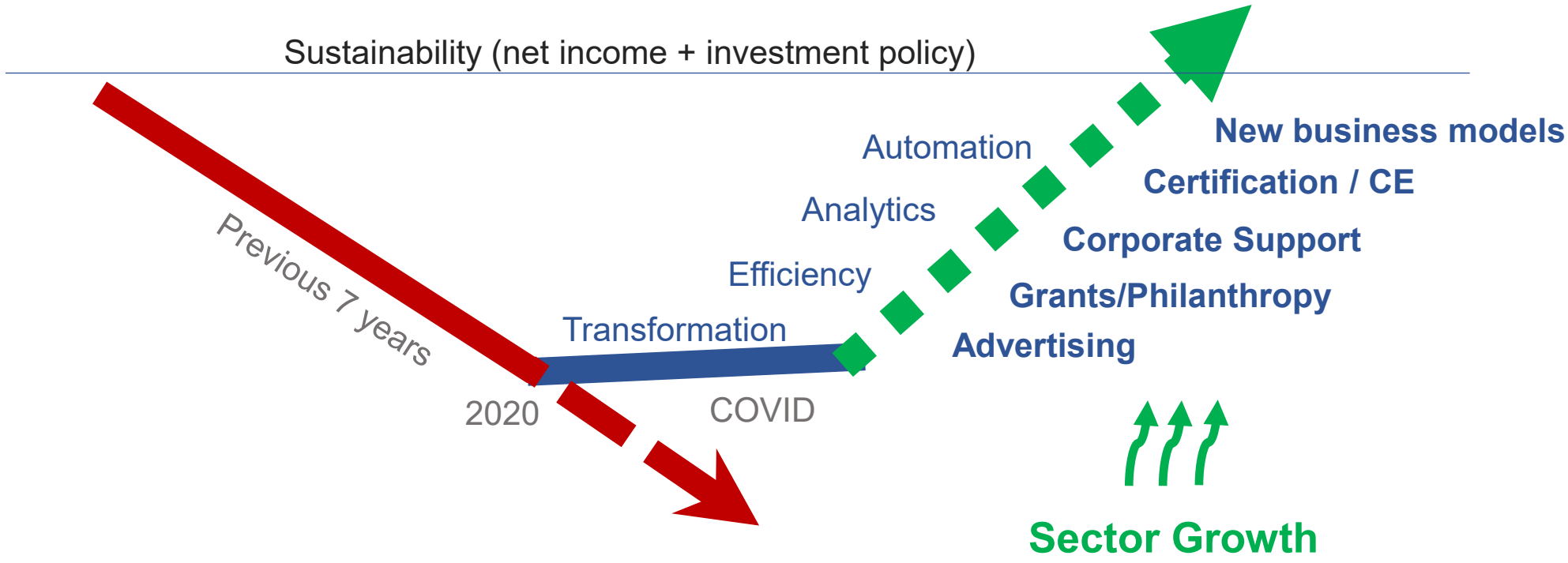
Kenneth Petersen, *ANS President*

August 22, 2023

Update on American Nuclear Society

- ANS Strategic Pathway
  - New sources of Revenue
  - Membership
- K-12 Stem
- Rapid Response Taskforce
- Certification Program
- Generic Repository Standard

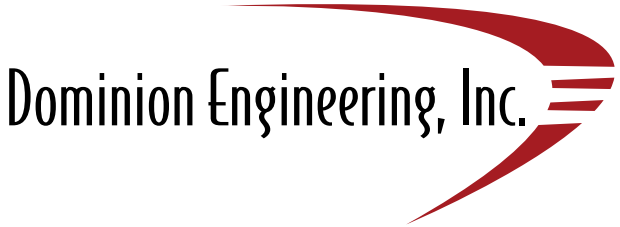
ANS Strategic Pathway



ANS Trustees of Nuclear

Raised $354,000 to-date

CLEARPATH



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U.S. DEPARTMENT OF ENERGY

Asset-Based Collaboration for Effective Engagement in Consent-Based Siting – Awarded $1,988,614

- **Purpose**: advance the public conversation surrounding consent-based siting of consolidated nuclear materials in partnership with Minority Serving Institutions.

Powering Our Future – Awarded $199,800

- **Purpose**: building a diverse nuclear workforce through educational outreach, engaging K-12 educators and students, state elected officials, and community members.

Advancing nuclear energy's role in addressing energy, environmental, and economic needs – Awarded $270,000

- **Purpose**: ANS will assist Energy Communities Alliance (ECA) to ensure existing and potential host communities of nuclear projects are informed, engaged and enabled to help educate their own stakeholders.

Consent-Based Siting for Interim Storage Program – Awarded $73,000

- **Purpose**: ANS will provide a conduit to independent community-based organizations where Society members already participate in their local schools, faith-communities, and civil society organizations.

Nuclear Legislative Working Group – Awarded $375,263

- **Purpose**: provide scientific and technical information to state legislative bodies throughout the United States.

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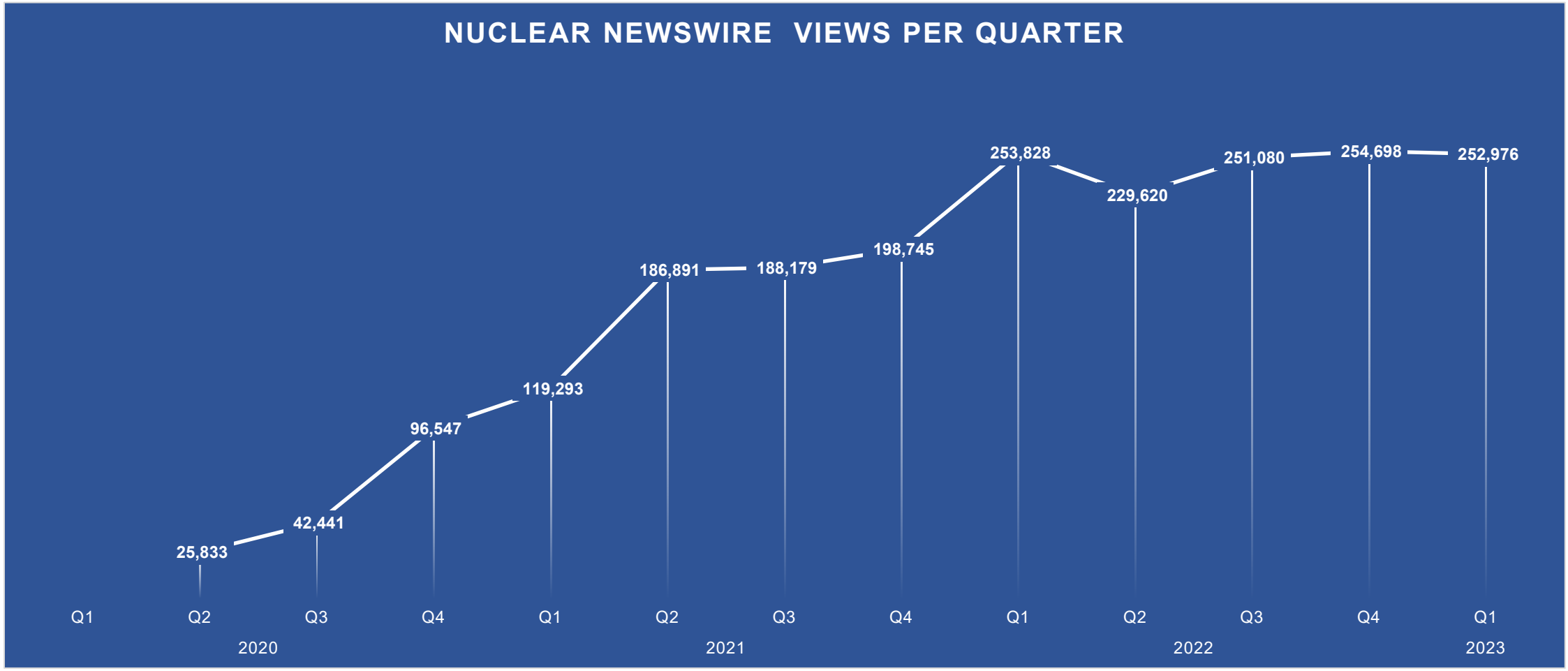
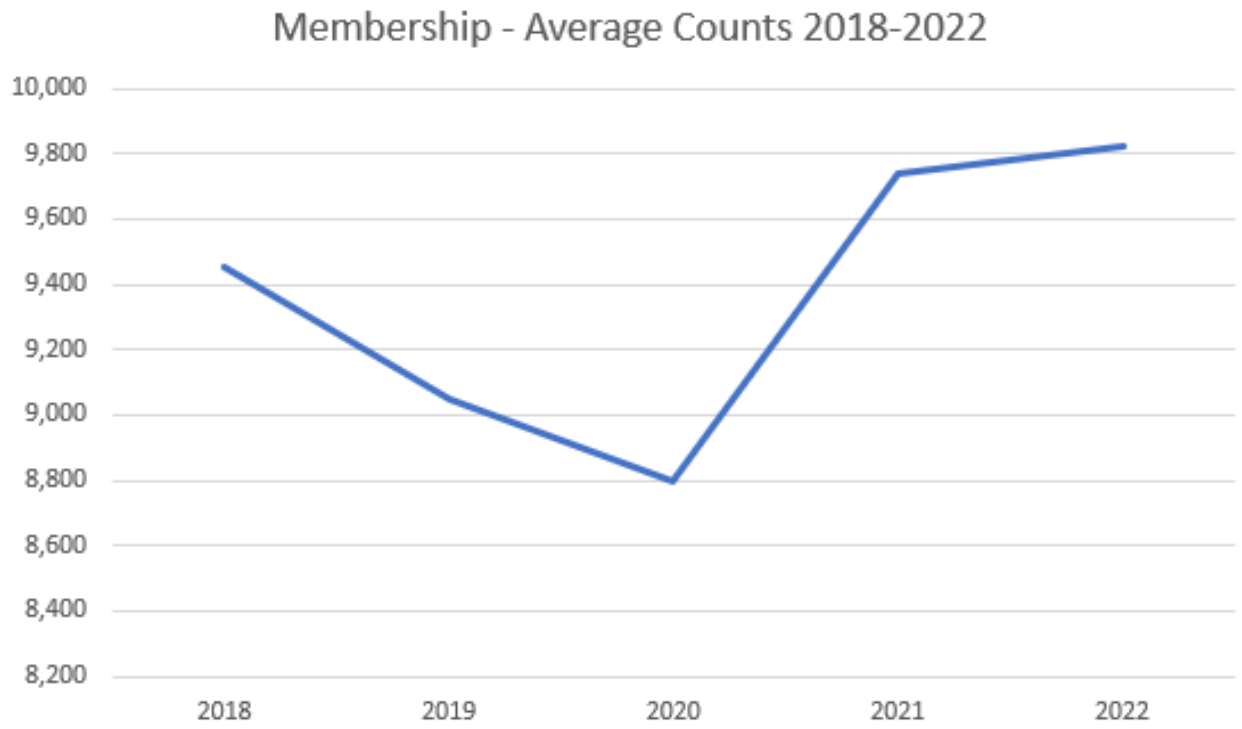
Nuclear Newswire



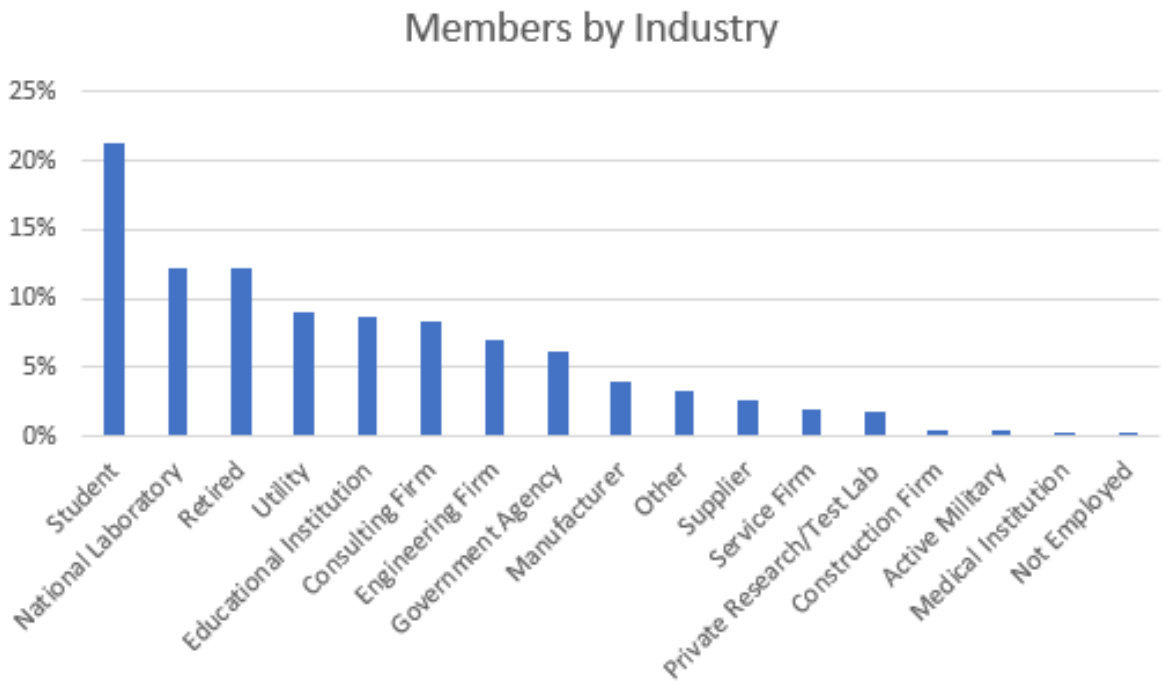
Membership Snapshot

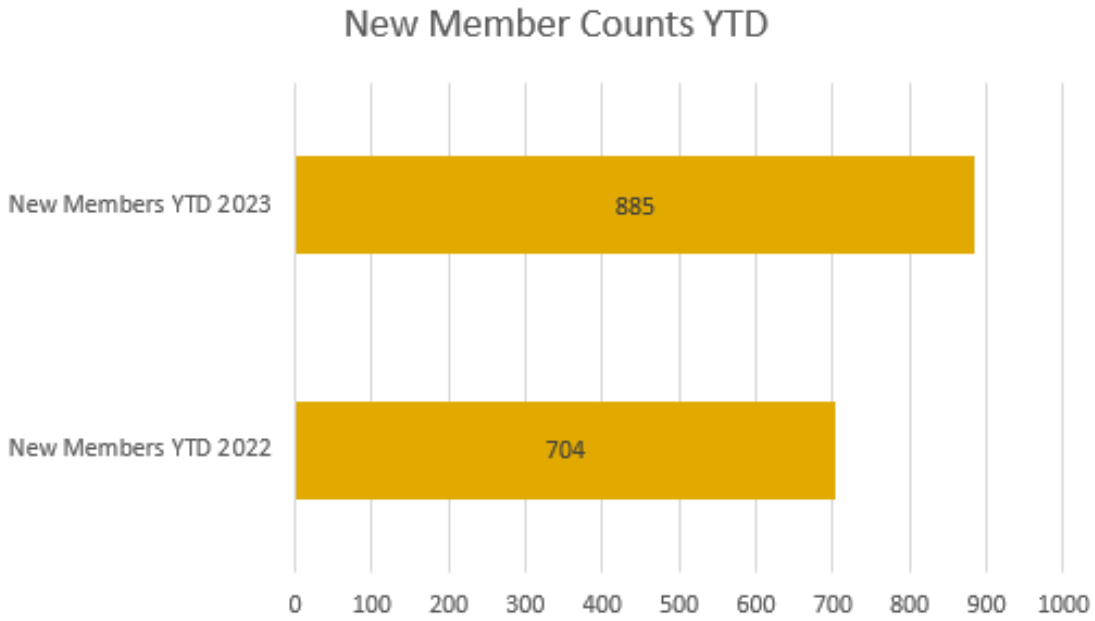
- 9,803 Individual Members
- 103 Organization Members
- 200+ Individual Trustee Members, 64% of whom are in the utility sector.
- Average monthly membership counts for Jan – May are trending ahead of same period in 2022 (9973 vs 9667)



Data as of 5/22/2023
Methodology: Average monthly membership by year, as reported by Acumen and Nimble.

Membership Trends





Student, National Labs, & Retired remain in top three positions. Utility moves ahead of Educational Institution and Consulting Firm, driven by Trustee individual members.

K-12 STEM Programs

Teaching nuclear science & technology in every classroom in the nation – with a focus on under-served communities.

Navigating Nuclear™ + Nuclear STEM Toolkits + Educator Training + Classroom Ambassadors + Pathways to Nuclear

By-the-numbers

5,000 teachers served

1.6 million students & counting

Over **$2 million** invested

ANS® Rapid Response Taskforce

Trusted voice of independent experts

ANS Rapid Response Taskforce

NPR Jacksonville

wjct PUBLIC MEDIA

Another delay at planet Vogtle

Amanda Bachmann
PhD student in nuclear engineering, Uni. of Illinois

Minneapolis

KARE 11

Xcel Energy temporarily shutting down Monticello plant after finding another chemical leak

Emily Caffrey
Assistant Professor of health physics, Uni. of Alabama

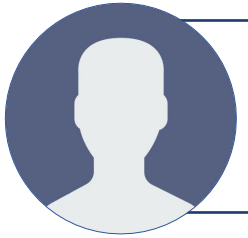
AP ASSOCIATED PRESS

Turkey quake revives debate over nuclear plant being built

Andrew Whittaker
Professor of civil engineering University at Buffalo

npr

Ukraine's top nuclear plant lost power for the sixth time. Is disaster imminent?



Anonymous
Former engineer of Zaporizhzhia NPP

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FT FINANCIAL TIMES

US nuclear enjoys revival as public and private funding pours in

Craig Piercy
CEO & Executive Director,
American Nuclear Society

POLITICOPRO

Moving Past Yucca

Steven Arndt
2022-23 President,
American Nuclear Society

HUFFPOST

The U.S. Is On The Cusp Of A New Nuclear Energy Milestone — And Debate

Craig Piercy
CEO & Executive Director,
American Nuclear Society

NPR Jacksonville

wjct PUBLIC MEDIA

Plant Vogtle on verge of providing power

Steven Nesbit
Past President,
American Nuclear Society

Newsweek

Putin Still Selling U.S. Nearly $1 Billion in Nuclear Fuel

Steven Nesbit
Past President,
American Nuclear Society

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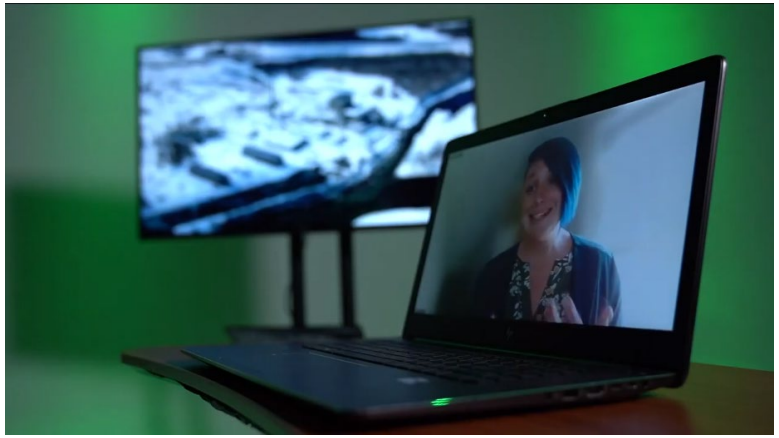
Xcel Energy temporarily shutting down Monticello plant after finding another leak

KARE 11

March 23, 2023
Minneapolis, Minnesota — Danny Spewak

Reporter (Voice Over):	*No doubt, 400,000 gallons of water containing tritium represents a larger leak. But the Minnesota Department of Health and other agencies say there is no evidence of a threat to the public.*
Reporter :	Do you agree with that assessment?
Emily Caffrey:	"I do agree with that assessment."
Reporter (VO):	*Dr. Emily Caffrey is an expert in health physics at the University of Alabama at Birmingham.*
Caffrey:	"It's on-site; it's not publicly accessible, so it's not a concern for public safety at this time."
Reporter (VO):	*Caffrey notes that tritium is naturally occurring.*
Caffrey:	"It's all around us; it's in our water; it's in our bodies."
Reporter (VO):	*In her estimation of Monticello, even if someone drinks two liters a day for a whole year at the levels that leaked, the exposure would still be less than the background radiation that you get simply living within the U.S.*
Caffrey:	"Really we're talking about a very, very small dose."
Reporter (VO):	*Still, after repairs to the leak failed to work, Xcel Energy has started the process of temporarily shutting down the plant.*
Caffrey:	"It is a prudent decision to shut it down early and just take care of it, so there's just not more leakage. They've cleaned up about a third of that tritium already. So again, [they will] monitor the situation, watch the numbers. I expect you'll see the on-site ones decrease and I don't expect you'll see anything off-site but that's the prudent thing to do."



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ANS Recommendations for New Generic Repository Environmental Standards for the U.S. - *Background*

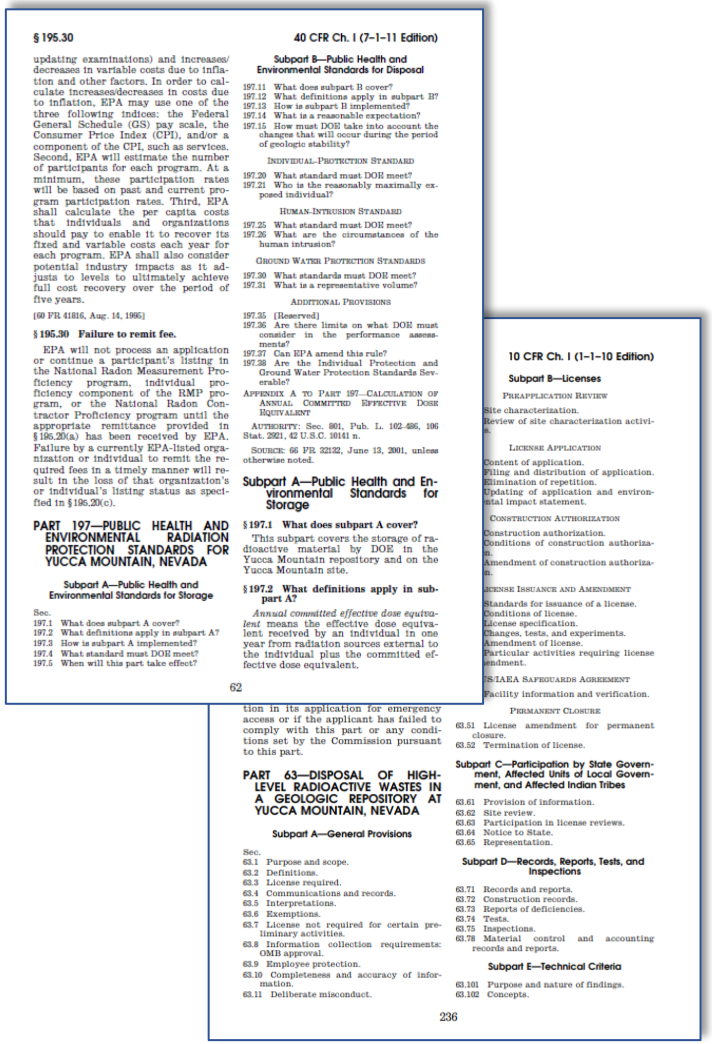
- Current generic repository regulation 40 CFR part 191 is out-of-date and in many cases inconsistent with the international state-of-the-practice
- Modern, transparent standards are needed to support potential efforts to site and license a geologic repository (i.e., in addition to, or instead of, the proposed repository at Yucca Mountain)
- Multiple organizations have called for a new generic standard
  - E.g., Blue Ribbon Commission on America's Nuclear Future (2012); "Reset" committee; ANS; others
- Let's not just talk about it!
  - **ANS established a Special Committee on Generic Standards for Disposal of High-Level Radioactive Waste**

ANS Generic Disposal Regulations Committee

- **John Kessler**, chair (J Kessler and Associates, LLC)
- Lead author: **Peter Swift** (Sandia National Laboratories (retired))
- International regulations: **Michael Apted** (Intera)
- Characteristics of future humans: **Steve Nesbit** (LMNT Consulting)
- **Lake Barrett** (former head of DOE Office of Radioactive Waste)

Recommendations

- Adopt the existing Yucca Mountain regulations (40 CFR Part 197 and 10 CFR Part 63) as the starting point for new generic standards
  - Closer to current U.S. and International practice
- Specific ANS recommendations identify aspects of the existing regulations to retain or modify, and topics to add to future standards



ANS Proposed Standard will be Available Soon (on ANS website)

US Industry Update - The Future is Bright

A lot of great news

- Investors, including venture capital
- Bipartisan government support
- New technology and new applications
- Improved development and construction methods
- Heighten understanding of energy security

Vogtle Unit 3 and 4

- Vogtle Unit 3 started commercial operation July 31, 2023
- Vogtle Unit 4 started loading fuel August 17, 2023

Resent U.S. Government Action

- Inflation Reduction Act (IRA) Production tax credits
  - Up to $ 15 per megawatt-hour
  - Available for facilities in service in 2024 to 2032
  - Supports the Civil Nuclear Credit program in the Bipartisan Infrastructure Law
- IRA Investment tax credits
  - From 6 percent to 30 percent
  - From 2025 to 2031 or when CO_2 emission fall
- High-Assay Low-Enriched Uranium
  - IRA invests $ 700 million to support the development of a domestic supply chain

Trending Towards SMRs

- SMRs frequently include modularity, affordability, faster construction times, enhanced safety features and can be right-sized to meet grid needs
- More flexibility in siting and can be easily shipped to remote sites
- Frequently use new fuel types

NuScale small modular reactor design
NuScale LLC Photo

Some Key Announcements

- Dow announced it will install an X-energy's XE-100 HTGR at their UCC Seadrift Operations manufacturing site in Texas
- Energy Northwest announced they will build up to 12 XE-100 HTGRs next to their Columbia nuclear station.
- TVA announced it will build a GEH BWRX-300 SMR at Clinch River
- Terra Power announced they will build a Natrium reactor in Kemmerer, Wyoming
- Duke announced it will use SMR technology to replace coal plants
- Major advances in fusion
  - Lawrence Livermore performed second net positive fusion experiment
  - DOE awarded $112M to 12 companies to support supercomputing modeling
  - DOE awarded $46M for commercial fusion energy development

Questions?

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Thank You

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