CORYS

Dynamic simulation for
Power, Transportation and Hydrocarbons Industries

Staying Afloat in a Changing Industry – Retirements, Plant Closures, and License Extensions

SCS Conference, January 2020
Jody Ryan, Chief Commercial Officer, Corys Inc.

A Time of Upheaval

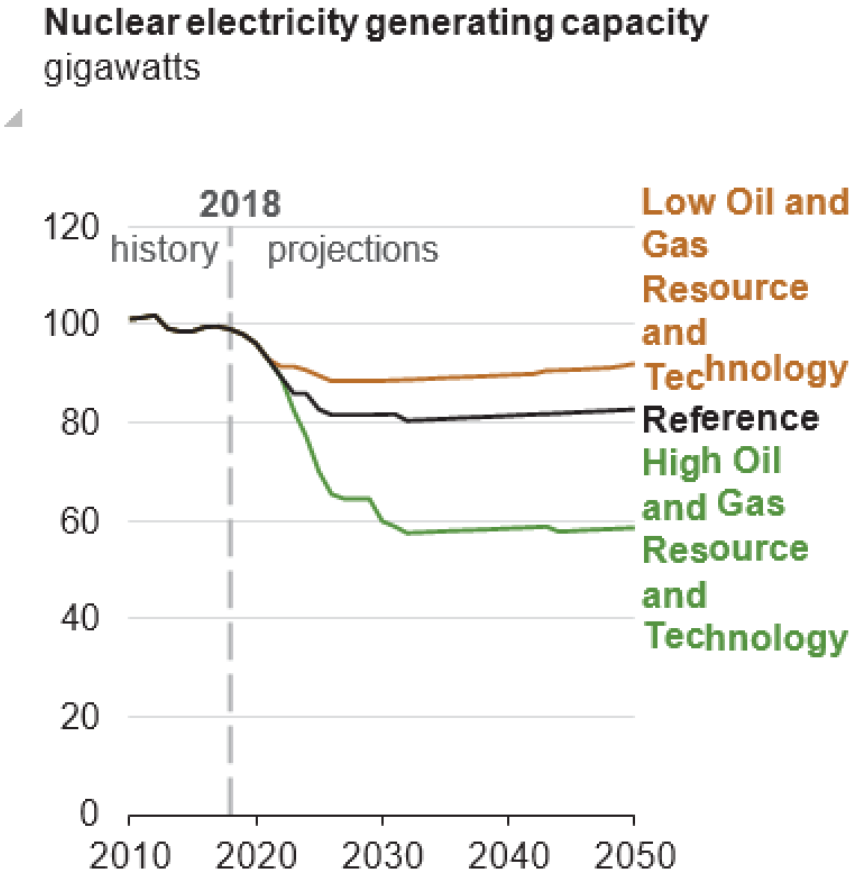
Plant Closures (Since 2013):

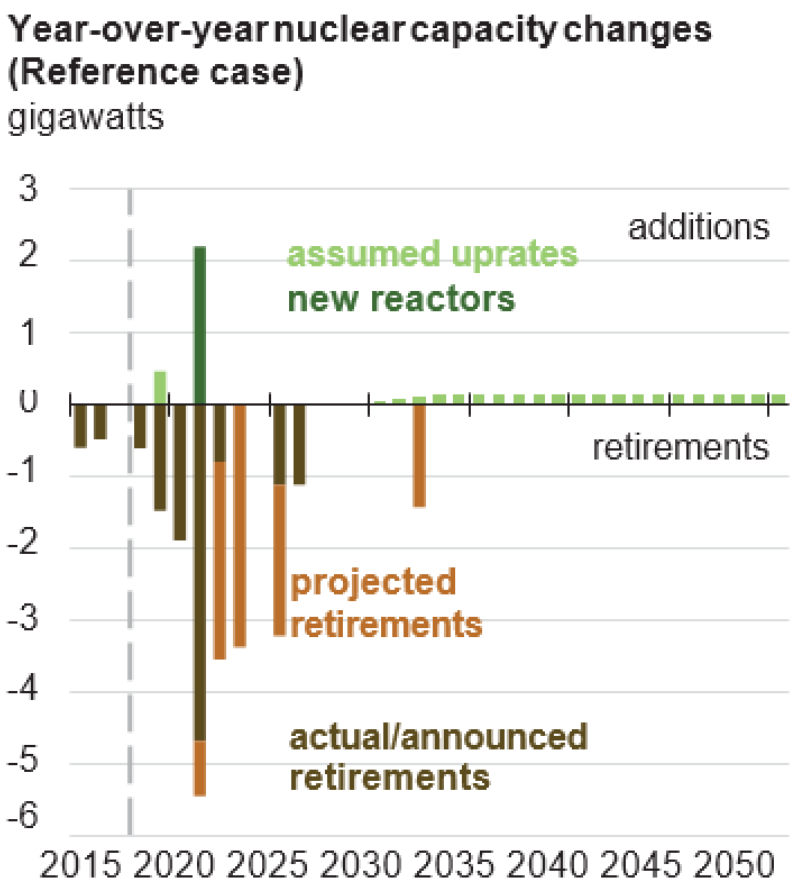
- Crystal River
- Kewaunee
- San Onofre 2&3
- Vermont Yankee
- Ft. Calhoun
- Oyster Creek
- Pilgrim
- TMI

Upcoming Plant Closures:

- Indian Point 2&3
- Palisades
- Duane Arnold
- Diablo Canyon 1&2
- Davis Besse (?)
- Beaver Valley (?)
- Perry (?)

A Time of Upheaval





Source: U.S. Energy Information Administration, Annual Energy Outlook 2019

A Time of Upheaval

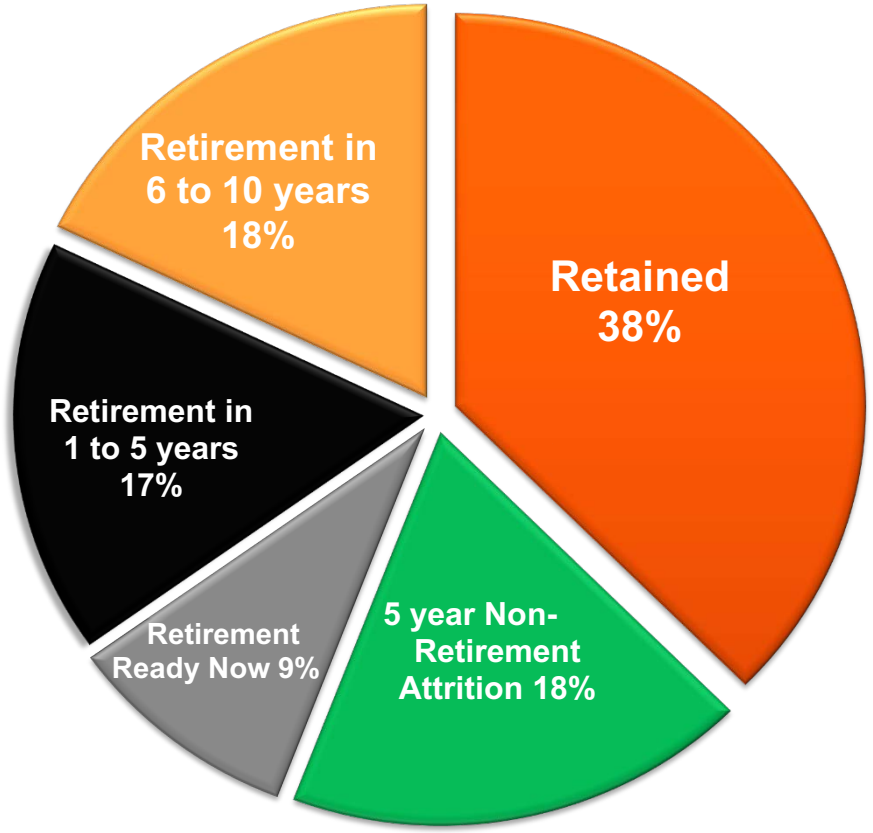
On the Bright Side

- New Plants – Vogtle 2&3
- License Extensions to 80(!) Years
  - Turkey Point (recently approved)
  - Surry and North Anna (expect approval soon)
  - Duke (Entire Fleet, extension process to begin in 2021)
  - More to Come!

- Second extensions expected to require major plant modifications, much larger than first extension.
- Simulator staff and vendors will be challenged.

More Upheaval: Nuclear Workforce Turnover

Estimate: 62% of the industry has the potential to retire or leave for other reasons



Source: Gaps in the Energy Workforce Pipeline, CEWD Survey

Nuclear Simulation Workforce Turnover

Recent Simulator Industry Retirements:

- Rod Russell (ANO)
- John Richter (Hatch)
- Ernie Ernfield (Beaver Valley)
- Mark Parrish (Hope Creek)
- Scott Whitson (Prairie Island)
- Bill Dobbins (Ginna)
- Tony Regis (Dresden)
- Robert Goldman (Grand Gulf)
- Ken Elgert (North Anna)
- Phat Tran (Surry)
- Dan Bell (Palisades)
- Sam Brooks (Catawba)
- Ravi Ravindranath (Columbia)

Utility Impact

Plant Closures:

- Decreased job opportunities
- Difficulty in bringing new people into the industry

License Extensions:

- Additional simulators at affected plants
- Heavy workload supporting existing simulators along with plant upgrades and new simulators

Workforce Turnover:

- Need to recruit and train new simulator engineers
- Problem – Management Does not Appreciate Depth and Breadth of Simulator Engineer Skillset

Utility Impact

What do I do all day?

- Maintain Simulator Code
- Maintain Simulator Hardware
- Maintain Simulator Fidelity
- But wait! There's more!

Credit: Joe Poisson, "How to Train Your Simulator Engineer", 2020 SCS Conference

Vendor Impact (Corys)

Plant Closures:

- Decrease in Customer Base
- No impact on workload (Yet)

License Extensions:

- Increased workload beginning in 2020
- Should offset decreased customer base

Workforce Turnover:

- Increased demands for site support
- Requests for training services

Corys Workforce:

- Aging workforce, but no retirements, no turnover
- Strong contingent of younger engineers, now highly experienced (10+ years)
- Corys is confident of remaining a strong, viable vendor for the foreseeable future

Corys Approach:

Provide Customer Support

- Annual Maintenance Program to Provide Supplemental Technical Resources

- Full-time On-Site Support
  - Keep simulator going and train new engineers
  - 6 weeks to 6 months

- Customized Training Courses
  - At Corys Offices
  - On-Site

- SimTech Training – Every 2 Years (Next: October 2020, Orlando, Florida)
  - Always THOR Advanced Thermal Hydraulics Model Training
  - Also T-REX Engineer and T-REX Instructor Training if Demand will Support