Duke Energy Nuclear Programs Update for the South Carolina Nuclear Advisory Council

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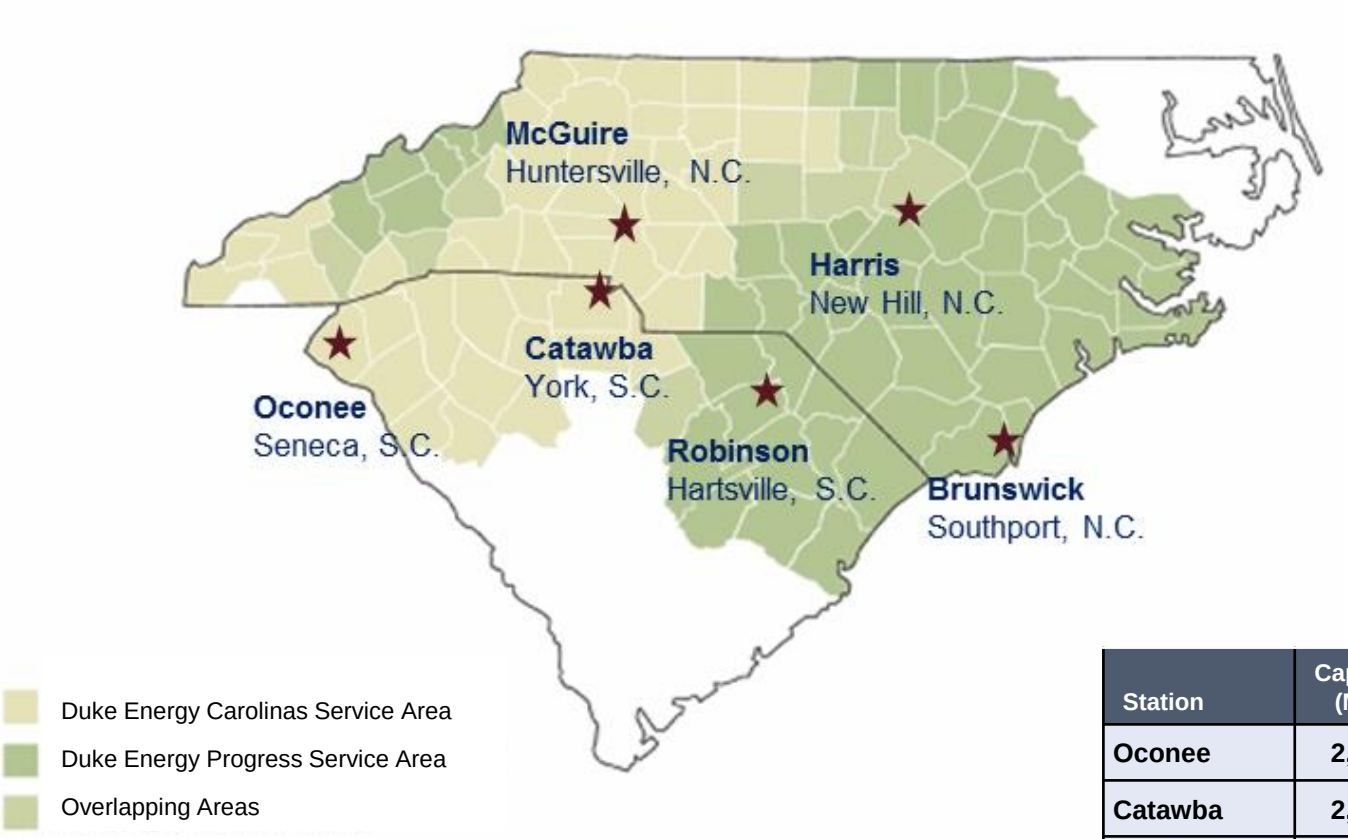
For Information Purposes Only

DUKE ENERGY®

Agenda

- Nuclear Fleet Performance Overview
- Subsequent License Renewal Process
- Subsequent License Renewal Industry Status
- Duke Energy Subsequent License Renewal Status

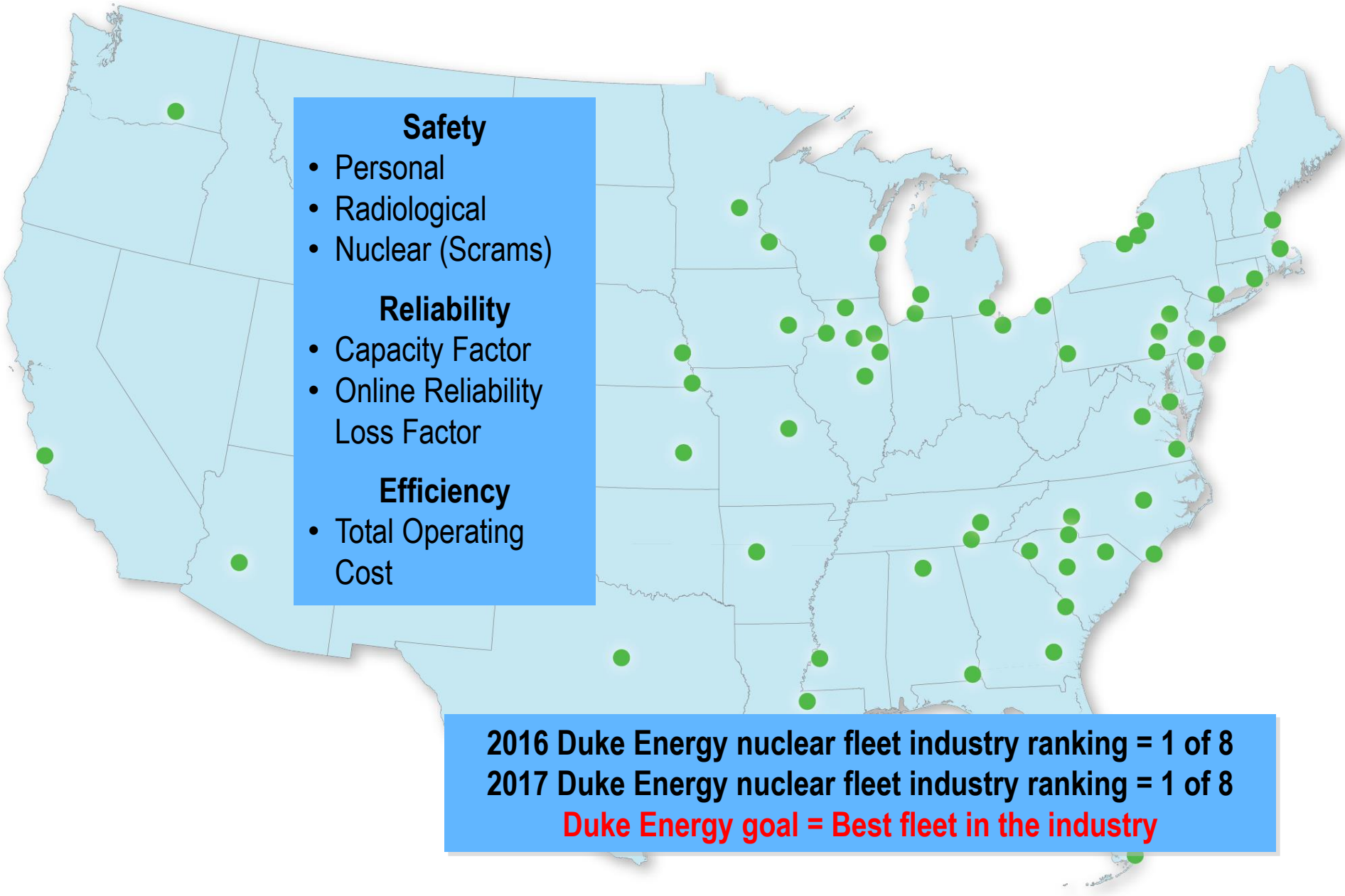
Current Nuclear Fleet



Station	Capacity (MW)	Units	Commercial Operation	License Expiration
Oconee	2,554	3 PWR	1973	2033, 2034
Catawba	2,290	2 PWR	1985	2043
McGuire	2,316	2 PWR	1981	2041, 2043
Brunswick	1,870	2 BWR	1975	2034, 2036
Harris	928	1 PWR	1987	2046
Robinson	741	1 PWR	1971	2030
Crystal River	Retirement announced 2013			
Total	10,699	11		

Duke Energy owns 100% of all units except the Catawba units.

Nuclear Fleet – Key Performance Indicators



Safety
- Personal
- Radiological
- Nuclear (Scrams)

Reliability
- Capacity Factor
- Online Reliability Loss Factor

Efficiency
- Total Operating Cost

2016 Duke Energy nuclear fleet industry ranking = 1 of 8
2017 Duke Energy nuclear fleet industry ranking = 1 of 8
Duke Energy goal = Best fleet in the industry

2016 and 2017 Generation Highlights

2016

- Fleet record annual capacity factor of 95.72 percent
- Catawba Nuclear Station completed small uprate on Unit 1 (additional 20 MWe)
- Oconee completed its shortest ever refueling outage in the spring (23 days) only to be surpassed in the fall (22 days)

2017

- Fleet annual capacity factor of 95.64 percent, second best only to 2016
  - 19th year of fleet capacity factor greater than 90 percent
  - Exceeded U.S. industry average for past 25 years
- Brunswick station completed a record dual-unit continuous run of 357 days
- Harris Nuclear Plant set a 12-month generation record of producing more than 8 billion kWh
- Three of the refueling outages in 2017 ended continuous runs –
  - Brunswick Unit 2 – record 711 days
  - McGuire Unit 1- record 523 days
  - Oconee Unit 2 – 716 days, a new fleet record
- Catawba Nuclear Station set an annual generation record of producing more than 19 billion kWh
- Robinson Nuclear Plant has worked 957 days without a recordable injury (through May 17, 2018)

Duke Energy Nuclear Outreach

- Employees involved in community outreach
  - School supply drives
  - Food drives
  - Blood drives
  - Holiday gift drives

- Active involvement in North American Young Generation in Nuclear (NAYGN)
  - Wrote *Marie's Electric Adventure*, a book explaining nuclear energy to elementary school children
  - Won a Nuclear Energy Institute Top Innovative Practice (TIP) Award

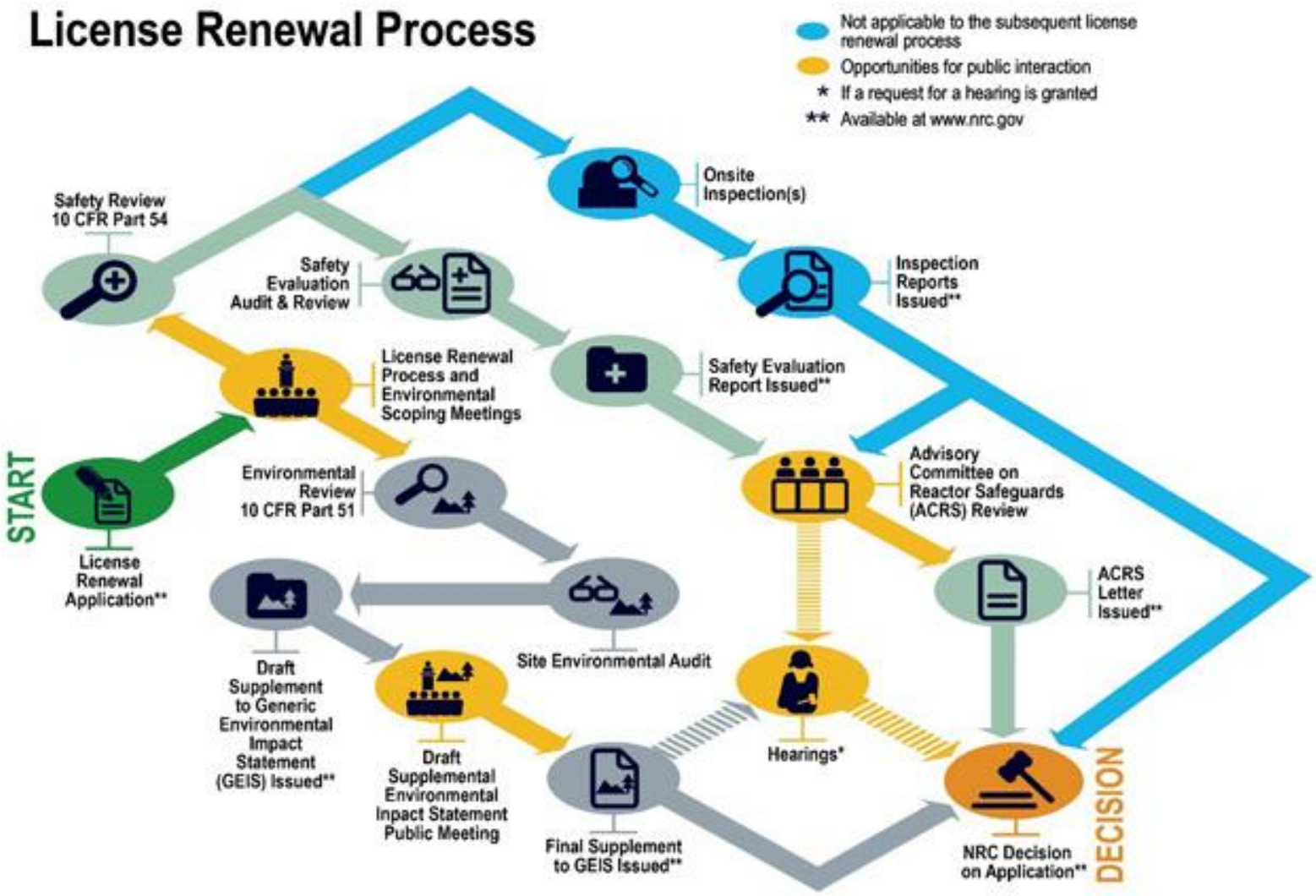
Industry Subsequent License Renewal Regulatory Background

- License renewal is governed by Title 10 of the Code of Federal Regulations (10 CFR) Part 54, *Requirements for Renewal of Operating Licenses for Nuclear Power Plants.*

- The Nuclear Regulatory Commission (NRC) Commissioners decided to leave 10 CFR 54 intact for SLR.

- The NRC Commissioners stated the NRC staff should continue to update license renewal guidance, as needed.
  - NUREG-2191 – Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report
  - NUREG-2192 – Standard Review Plan for the Review of Subsequent License Renewal (SRP-SLR) Applications for Nuclear Power Plants

Subsequent License Renewal Regulatory Process



Source: U.S. NRC

Industry Subsequent License Renewal Technical Progress

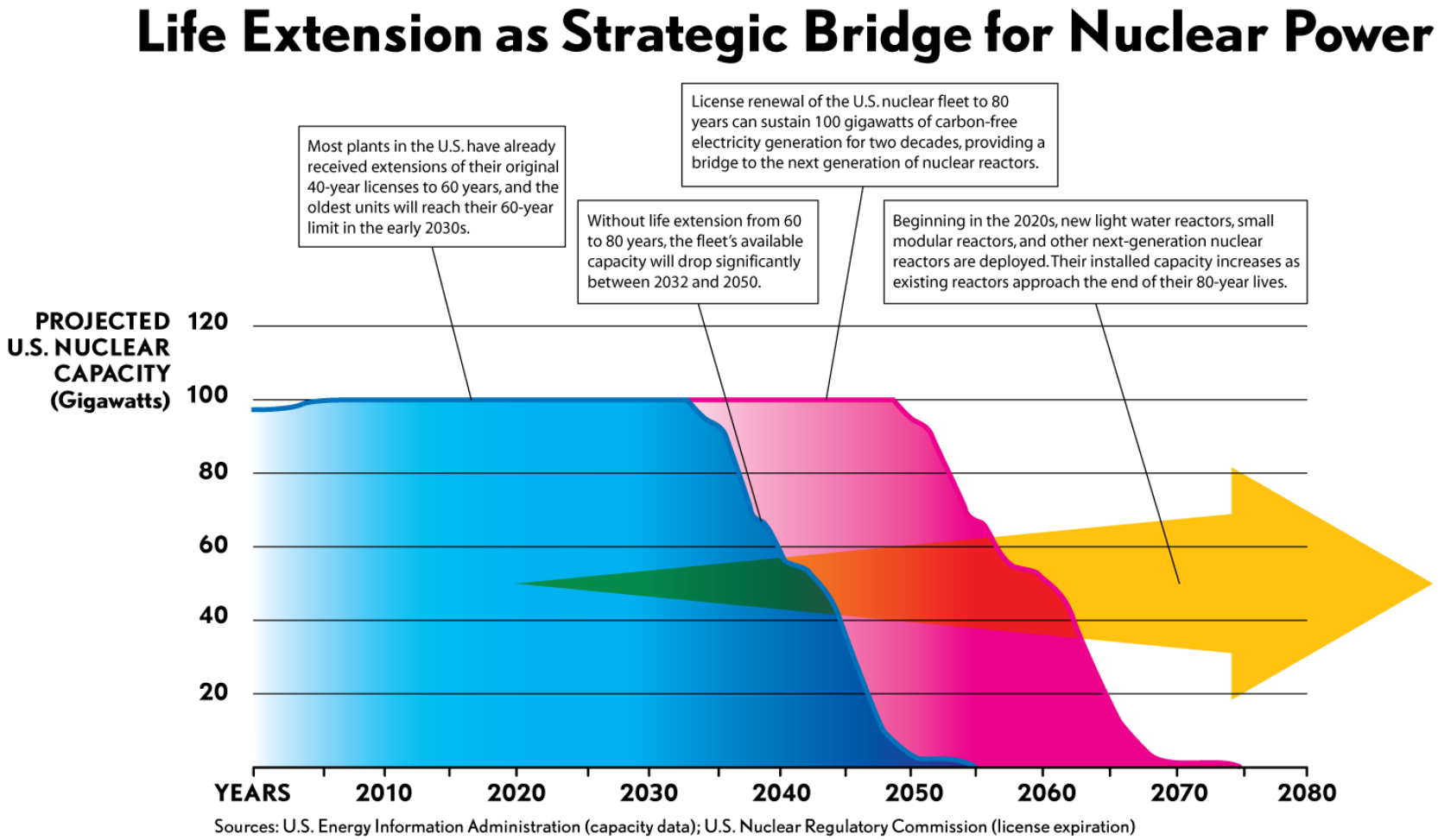
- Research to better understand technical issues associated with the long-term, safe operation of nuclear power plants:
  - The Department of Energy (DOE)
  - Electric Power Research Institute (EPRI)
  - Nuclear industry
- This research has shown nuclear plants can be safely operated during a second license renewal period.
- Nuclear plants continue to operate safely through
  - Continuous upgrade and replacement of parts and systems
  - Rigorous NRC oversight
  - Learnings from research and operating experience

Industry Subsequent License Renewal Submittal Status

- Subsequent License Renewal Application submittal to date:
  - NextEra – Turkey Point, January 2018

- Future submittals announced:
  - Exelon – Peach Bottom, July 2018
  - Dominion – Surry, December 2018
    North Anna, 2020

Industry Subsequent License Renewal – What It Means



Duke Energy Nuclear Fleet Licenses

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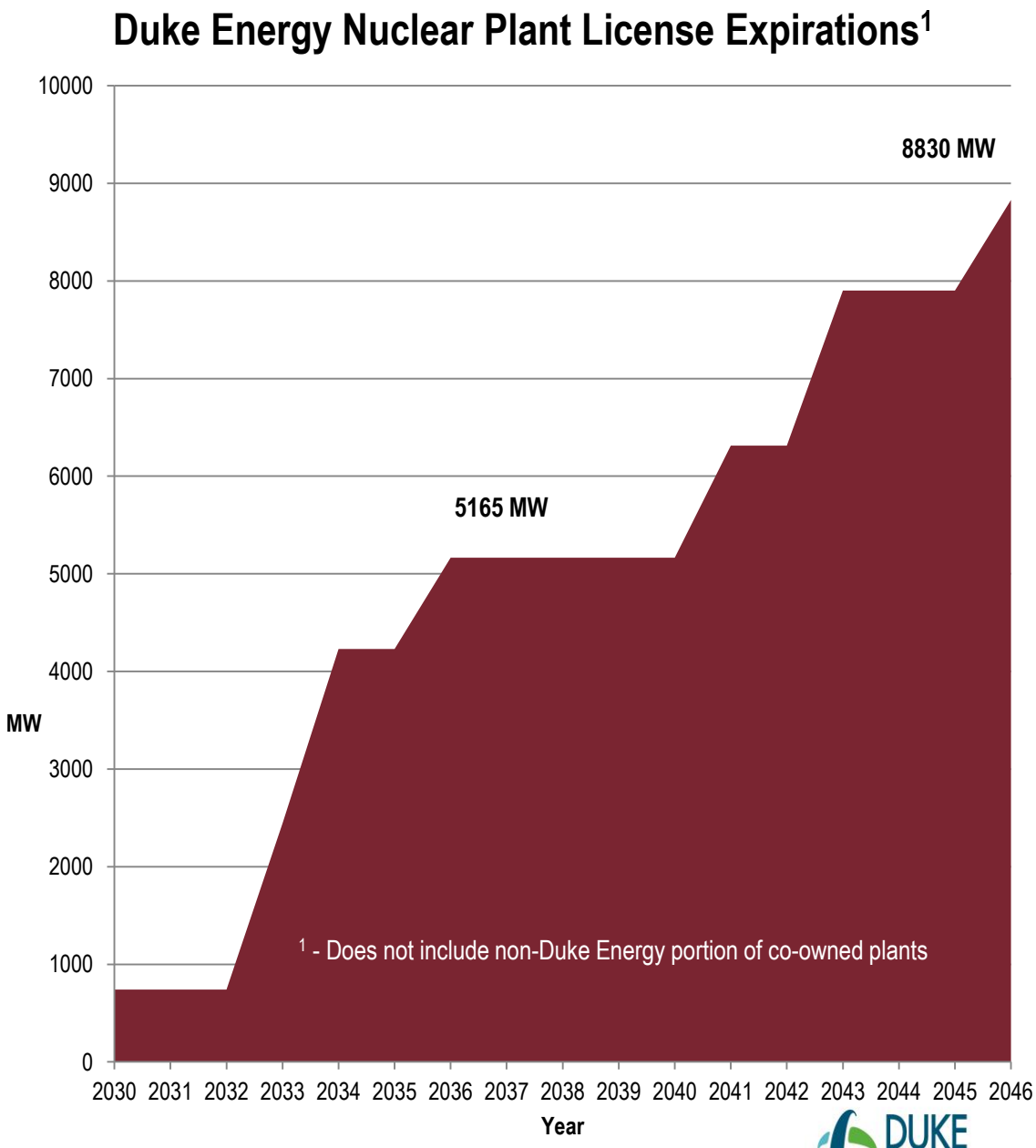
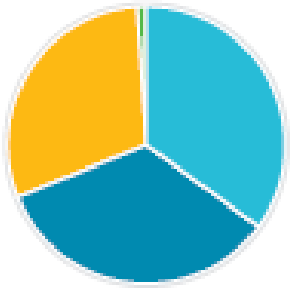


Duke Energy Commitment to the Environment

- Duke Energy is committed to a low-carbon future, as outlined in 2017 Climate Report to Shareholders:
  - Current plan to achieve 40 percent CO2 emission reduction by 2030 compared to 2010 levels
  - Duke Energy's contribution to a global "two-degree policy" calls for a 72 percent reduction in CO2 emissions by 2050 compared to 2010 levels, referred to as Pro Rata Reductions
- In 2017, operation of our nuclear fleet avoided the release of about 82 million metric tons of CO2, as much CO2 as is released from more than 17 million passenger cars.
- Our nuclear fleet plays an important role in our company's efforts to lower carbon emissions. One pathway to 2050:

2017 Regulated Utility Generation (MWh)



35% Existing nuclear
1% Hydro/solar
30% Natural gas
34% Coal

2050 Regulated Utility Generation – Pro-Rata Reductions (MWh)

31% Existing nuclear
23% Hydro/solar/wind
33% Natural gas
13% New load-following zero-emitting

Duke Energy Commitment to Customers and Communities

Customers

- In the Carolinas, nuclear power
  - Provides more than 50 percent of our customers' electricity
  - Is a critical component in our generation portfolio
  - Has served Carolinas customers well for more than 45 years
  - Contributes to fuel diversity, which is important for our customers now and in the future

Communities

- Our nuclear fleet remains a driver for economic success
  - Provides good jobs – 6,300 Duke Energy employees plus additional contract workers during refueling outages
  - Provides partnership opportunities in the communities where our plants are located
  - Provides significant tax bases - more than $322 million in property and payroll taxes in 2017
    - S.C. nuclear payroll = $94 million
    - S.C. nuclear property = $44 million

Duke Energy Subsequent License Renewal

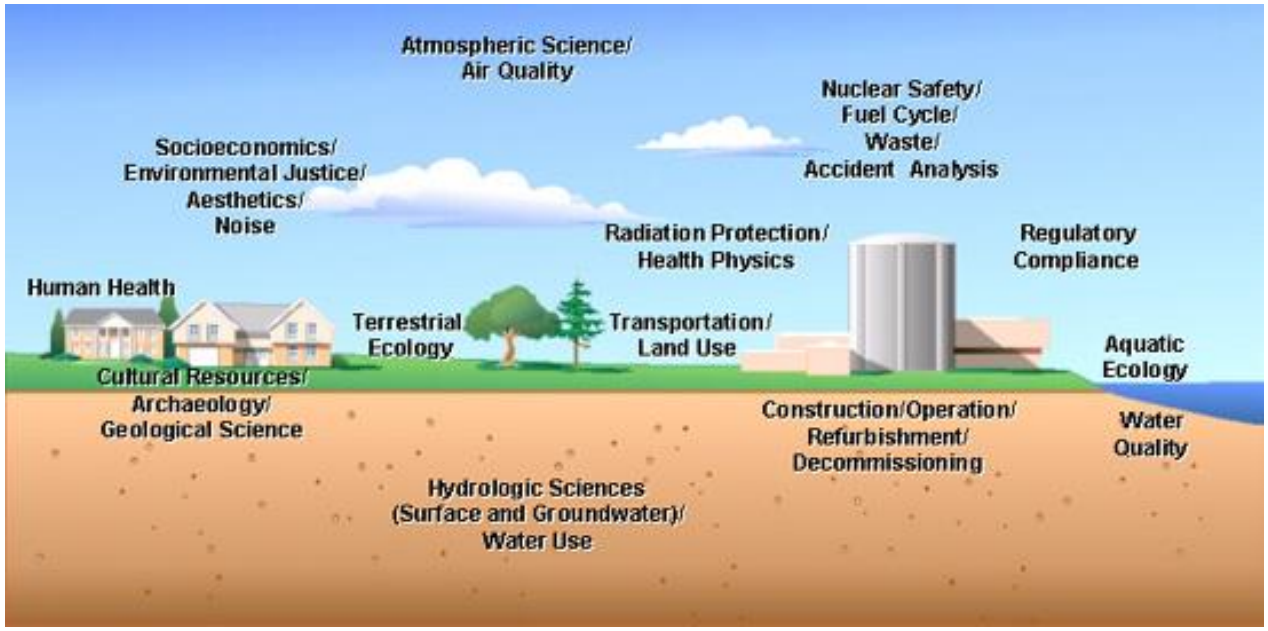
- Team evaluating Subsequent License Renewal for the nuclear fleet
  - Evaluating the technical basis for operation beyond 60 years
  - Leading and participating in industry working groups
  - Participating in Nuclear Regulatory Commission public meetings
  - Interfacing with lead Subsequent License Renewal applicants
    - Benchmarks
    - Peer Reviews of Subsequent License Renewal Applications
  - Performing economic analyses

- We believe all of our nuclear plants are good candidates for Subsequent License Renewal.

- Pursuing Subsequent License Renewal will provide the opportunity to operate the plants up to 80 years if it makes economic sense and provides benefits for our customers.

Questions ?

SLR Environmental Process



Source: U.S. NRC