

Duke Energy

Responsible Alpha co-developed the business, economic, and investment analysis used by 123 environmental, indigenous rights, and racial justice organizations in their letter to the Honorable Gary Gensler, Chair, U.S. Securities and Exchange Commission on the proposed rule "The Enhancement and Standardization of Climate-Related Disclosures for Investors." The submission is here.

Responsible Alpha's analysis suggests investors need companies to disclose their climate-related financial risks and strategies for managing them, their greenhouse gas (GHG) emissions, their plans to remain viable or thrive in a low-carbon future economy, and their financial resilience across these dimensions, as it relates to and is in support of the communities where these companies exist, and their impacts are often felt and underreported. To further buttress and support this analysis, Responsible Alpha wrote 12 business cases of which the case below on Duke Energy is one.

Summary

Duke Energy Corporationⁱ, \$84 billion in market capitalization, \$62 billion in fixed income securities, and 27,000 employees, is an energy company located primarily in the Americas that owns an integrated network of energy assets and it is one of the largest U.S. utilities.

In 2020, Duke reported Scope 1 emissions of 75 million mtCO₂e, 24.5 thousand metric tons SO₂, 39 thousand metric tons NO_x, and 142.4 thousand metric tons methane emissions with coal generating 20.9% total electricity.ⁱⁱ

For years, Duke has stored coal ash in landfills and ponds that often leak toxins into waterways. A leak in 2014 at a Duke North Carolina coal ash pond site left coal ash coating 70 miles of the Dan River. In 2015, Duke pled guilty and agreed to \$102 million in fines and restitution due to federal environmental crimes because the company acknowledged it coal ash dumps at five power plants to leak toxic waste into water supplies.

Then, in North Carolina, the Southern Environmental Law Center (SELC) brought lawsuits on behalf of several community groups, resulting in the largest coal ash cleanup in the nation through enforceable commitments to excavate or recycle 126 million tons from all 14 of Duke's leaking, unlined coal ash sites across the state. A historic settlement in January 2020, negotiated by SELC with the Department of Environmental Quality and Duke, marked the finale of years of administrative and legal actions seeking cleanups in North Carolina.ⁱⁱⁱ Duke has forecast that its coal ash cleanup will cost at least \$9.390 billion.

Duke's net income decreased to \$1.4 billion in 2020 compared to \$3.7 billion in 2019 primarily due to impairment charges and revenue reductions related to the \$1.1 billion coal combustion residuals (CCR) settlement agreement filed with the North Carolina Utilities Commission (NCUC) to resolve coal ash cost recovery issues.

With coal ash cleanup costs to date reported at \$3.154 billion and forecast to be at least \$9.390 billion, this has materially diminished Duke's reported \$59 billion for its capital expenditure plan to transition to a clean energy future.

Company Overview

Duke Energy Corporation manages a portfolio of natural gas and electric supply, delivery, and trading businesses in the United States and Latin America. Duke is also one of the top electric power holding companies in the US, serving about 7.9 million retail customers in six US states, covering more than 90,000s square miles of service area in the Southeast and Midwest. Its electric utilities and infrastructure owns approximately 50,800 MW of generation capacity. The company also serves about 1.6 million natural gas customers through more than 60,000 miles of pipelines and service lines. Duke's rate-regulated utilities

serve customers in the Carolinas, Florida, Ohio, Indiana, and Kentucky. The company also owns some renewable energy assets like wind and solar farms.

Climate, Community, and Environmental Risks

Climate Risks

Climate risks must be understood to include secondary risks from the production of greenhouse gas (GhG) emissions, because the secondary risks, including coal ash, would not have occurred except as a byproduct of GhG production. In this line of reasoning, poisoning the environment and communities by burning coal is a climate impact. As such it should be disclosed, along with the costs of remediation.

The issues discussed here are collateral damages arising from Scope 1 emissions. In 2020, Duke reported Scope 1 emissions of 75 million mtCO_{2e}, 24.5 thousand metric tons SO₂, 39 thousand metric tons NO_x, and 142.4 thousand metric tons methane emissions with coal generating 20.9% total electricity.^{iv}

In addition to the hazards incurred through GhG emission, this report documents collateral direct hazards from the production of energy from coal. Exposure to toxins that are byproducts of burning coal are widespread through atmospheric deposition onto soils and through leaching of stored waste into groundwater and surface water. These sites are themselves vulnerable, and they render surrounding populations vulnerable through health impacts. It is reasonable to expect that poor and marginalized communities without political power to resist pollution will soon become plagued with health issues, further undermining community resilience.

Wet storage of coal ash means that the ash is mixed with water and stored in surface impoundment lagoons. In 2012, 80 percent of all ash that wasn't reused was stored in on site surface impoundments and landfills. Site closure frequently involves capping the ash in place, which does not prevent groundwater movement through the site. Capping has been shown to create anaerobic conditions that increase the leaching of arsenic.^{v vi}

In a 2011 National Pollution Discharge Elimination System Renewal Permit to Duke by the NC Department of Environment and Natural Resources, the state stipulated semi-annual in-stream monitoring for arsenic, selenium, mercury, chromium, lead, cadmium, copper, zinc and total dissolved solids. The monitoring is to occur upstream and downstream of ash pond outfalls. Amendments also required that liquid coal ash storage structures meet the dam design and safety requirements according to the state administrative code. The changes did not prohibit the releases of mercury, selenium, and arsenic into Lake Wylie, which provides drinking water for York County SC and the town of Belmont NC.^{vii}

Community Risks

Lack of transparency in lobbying obscures the impact that the utilities may have had on local and state government. They avoided regulation successfully for decades, but the costs have been passed down to state and local governments. Utilities must be aware of the costs – Duke and North Carolina Department of Environmental Quality, with North Carolina Department of Health and Human Services, cover the healthcare costs of community members living within 9 miles of coal-fired power plants in NC, their wet coal ash waste ponds, and dry waste mounds and pits. Without a doubt the impacts extend well beyond 9 miles in waterways and in the air. Advocacy groups are demanding that the full health care costs of all North Carolina communities are included in the cleanup costs. The true costs of coal may never be known, but the legacy of coal is a lasting public health impact on communities, and a drain on their economic capacities.

Separately, according to Southeast Coal Ash, an advocacy group, the Environmental Protection Agency (EPA) estimates that 72 percent of all toxic water pollution in the country comes from coal-fired power plants.^{viii} The toxic coal ash pollution flowing into lakes, rivers, streams, groundwater and bays results in death and mutation of fish and wildlife. Along with an increased risk of cancer from toxic heavy metal exposure, coal ash can affect human development, create lung and heart problems, and contribute to premature mortality. A report from the U.S. Commission on Civil Rights found that the EPA should categorize coal ash as a “special waste” because “racial minorities and low-income communities are

disproportionately affected by the siting of waste disposal facilities and often lack political and financial clout to properly bargain with polluters when fighting a decision or seeking redress.” The report urged EPA to assist communities in enforcing EPA’s coal ash rule and conduct testing of drinking water wells near coal ash pits. The report also found that Additionally consumption of fish and wildlife contaminated by coal ash pollutants is unsafe. Loss of these resources may disproportionately impact poor and Black, Indigenous, and people of color (BIPOC) communities.

Environmental Risks

The first widely recognized case of wildlife damage from coal combustion waste (CCW) in the U.S. occurred in 1967 when a containment dam broke, spilling coal ash slurry into the Clinch River, VA, killing 217,000 fish and poisoning benthic invertebrates for 124 km downstream.^{ix} In a study published in 2012, scientists from the US Forest Service and US Fish and Wildlife Service concluded that the combined direct and indirect cost of poisoned fish and wildlife exceeds \$2.3 billion dollars (to date of publication) and projected that the costs would increase by an additional \$3.85 billion over the next 50 years. The study notes that EPA’s regulatory impact analysis of the costs and benefits of pollution control fails to include avoided damages to natural resources. They argued that surface impoundments posed unacceptably high ecological risks regardless of location or design.^x Poisoning of species, including amphibians, fish, bird and reptiles cause environmental impacts ranging from physiological, developmental, and behavioral toxicity to major population and community-level changes.^{xi}

Risks to Investors and Costs to the Company

Costs to Duke

- In 2015, Duke pled guilty and agreed to \$102 million in fines and restitution due to federal environmental crimes because the company acknowledged it coal ash dumps at five power plants to leak toxic waste into water supplies.^{xii}
- In December 2020 the NC state Supreme Court ruled that regulators should revisit an order that would have passed the expense of coal ash cleanup to Duke's customers. Under an agreement announced on Jan 21, 2021, between Duke, state officials, and the Sierra Club, \$1.1 billion would be removed from what customers would pay for cleanup.^{xiii xiv}
- On August 19, 2021, Duke Energy received \$215 million in financial settlements with a group of insurers to recover costs for cleaning up coal ash. Duke argued that costs should be covered from general liability insurance coverage provided in the 1980s.^{xv}
- In January 2021, Duke reached an agreement with the North Carolina Attorney General, the North Carolina Public Staff, and the Sierra Club on costs related to coal ash management and safe basin closure. The agreement brought financial clarity to approximately \$9 billion of mitigation costs, supporting coal ash cost recovery in North Carolina for Duke Energy Carolinas and Duke Energy Progress with a rate of return for the company. Duke agreed to reduce North Carolina customers’ costs by approximately \$1 billion. Obligations for closure of ash basins are based upon discounted cash flows of estimated costs for site-specific plans. Certain ash basins have had probability weightings applied to them based on different potential closure methods and the probabilities surrounding pending legal changes.^{xvi}
- Duke Energy Carolinas and Duke Energy Progress agreed not to seek recovery of approximately \$1 billion of systemwide deferred coal ash expenditures, but will retain the ability to earn a debt and equity return during the amortization period, which shall be five years under the 2019 North Carolina rate cases and will be set by the NCUC in future rate case proceedings. The equity return and the amortization period on deferred coal ash costs under the 2017 Duke Energy Carolinas and Duke Energy Progress North Carolina rate cases will remain unaffected. The equity return on deferred coal ash costs under the 2019 North Carolina rate cases and future rate cases in North Carolina will be set at 150 basis points lower than the authorized return on equity (ROE) then in effect, with a capital structure composed of 48 % debt and 52 % equity. Duke Energy Carolinas and Duke Energy Progress retain the ability to earn a full WACC return during the deferral period, which is the period from when costs are incurred until they are recovered in rates.^{xvii}

- Duke recognized asset retirement obligations (ARO) of \$5.293 billion in 2021 for closure of coal ash impoundments. ARO is recorded when Duke has a legal obligation to incur retirement costs associated with the retirement of a long-lived asset and the obligation can be reasonably estimated. The Duke Energy Registrants are subject to state and federal regulations covering the closure of coal ash impoundments, including the EPA CCR rule and the Coal Ash Act, and other agreements. AROs recorded on the Duke Energy Registrants' Consolidated Balance Sheets include the legal obligation for closure of coal ash basins and the disposal of related ash as a result of these regulations and agreements. The ARO amount recorded on the Consolidated Balance Sheets is based upon estimated closure costs for impacted ash impoundments. The amount recorded represents the discounted cash flows for estimated closure costs based upon specific closure plans. Actual costs to be incurred will be dependent upon factors that vary from site to site.^{xviii}
- Duke Energy Carolinas and Duke Energy Progress have approximately \$1.2 billion and \$1.4 billion, respectively, in regulatory assets related to coal ash retirement obligations as of December 31, 2021. Future spending, including amounts recorded for depreciation and liability accretion, is expected to continue to be deferred. The majority of spend is expected to occur over the next 15-20 years.^{xix}
- 2021: As of January 2021, Duke forecasts coal ash cleanup costs to \$9.390 billion with \$3.154 billion spent to date on coal ash cleanup.

Risks to Duke's Investors and Lenders

- 2016: The Government Pension Fund of Norway divested its est. \$420 million equity investment in Duke. Costs to beneficiaries were not disclosed.
- 2020: Duke's net income decreased to \$1.4 billion in 2020 compared to \$3.7 billion in 2019 primarily due to impairment charges and revenue reductions related to the \$1.1 billion coal combustion residuals (CCR) settlement agreement filed with the North Carolina Utilities Commission (NCUC) to resolve coal ash cost recovery issues.
- 2021: With coal ash cleanup costs to date reported at \$3.154 billion and forecast to be at least \$9.390 billion, this has materially diminished Duke's reported \$59 billion for its capital expenditure plan to transition to a clean energy future.
- 2021: Fully incorporating Duke's coal ash debt obligations adds about \$3 billion to Duke's consolidated debt. As a result, S&P downgraded Duke downgraded to BBB+ from A-. S&P also downgraded the issue-level rating on the senior unsecured debt of Duke Energy and Progress Energy to BBB from BBB+ and the issue-level rating on senior unsecured debt at Duke Energy's rated subsidiaries to BBB+ from A-. Additionally, Duke Energy's hybrid instruments, including its junior subordinated notes and preferred stock, were lowered to BBB- from BBB.^{xx}

Transition risks are extremely high, both in terms of liability and in terms of renewed and strengthened regulatory oversight. Technology in the form of clean energy may lead to financial risks to legacy operators too slow to make the switch to renewables and clearer fossil fuels. Coal powered plants are becoming stranded assets saddled by high regulatory costs and are no longer competitive in the energy markets. In the transition to cleaner sources of energy, some companies will be financially precarious, and may not have the resources to cover clean-up costs. Human Rights Watch argues that those companies that continue to embrace coal should be forced to set aside funds for its clean-up.^{xxi} Public pressure is growing to reduce GhG emissions, and with them the legacy of toxic waste. Energy producers like Duke have spent very substantial sums to influence public opinion and preserve their reputation, and more importantly, to influence legislation. This is a reliable indicator of the reputational risks that they bear, risks that may quickly resolve into regulatory and financial risk.

It is unknown how much Duke and other electricity providers have spent fighting coal ash regulation. Southeast Coal Ash claims the most protective effluent limitation guideline option would cost less than 1 percent of annual utility revenue to adopt, according to uncited EPA analysis. The 2015 EPA national regulations for coal ash exempts landfills that had already closed, even if unremediated. Environmental activists are pressuring EPA to close the loopholes left in the 2015 ruling and provide more aggressive enforcement, including the denial of exemptions requested by utilities. EPA Administrator Michael Regan, who oversaw coal ash regulation in NC before coming to Washington, said "I've seen firsthand how coal ash contamination can hurt people and communities... Coal ash surface impoundments and landfills must operate and close in a manner that protects public health and the environment. Today's actions will help us

protect communities and hold facilities accountable."^{xxii} Regulatory impact on utilities can be expected to continue, even for closed sites, due to the legacy of contaminated soils and waters.

References

- ⁱ Duke Energy Corporation is ticker DUK US Equity, FIGI BBG000BHGDH5, ISIN US26441C2044, and 141 bonds, 16 loans, 2 preferred shares, and 19 municipal bonds in its capital stack.
- ⁱⁱ Duke Energy Corporation (2020). *Achieving a Net Zero Carbon Future: Duke Energy 2020 Climate Report*. https://desitecoreprod-cd.azureedge.net/_media/pdfs/our-company/climate-report-2020.pdf?la=en&rev=45b5aec13ca1407084733f90e0d0847a
- ⁱⁱⁱ Southern Environmental Law Center (not dated). *Coal ash cleanup*. <https://www.southernenvironment.org/topic/coal-ash-cleanup/>
- ^{iv} Duke Energy Corporation (2020). *Achieving a Net Zero Carbon Future: Duke Energy 2020 Climate Report*. https://desitecoreprod-cd.azureedge.net/_media/pdfs/our-company/climate-report-2020.pdf?la=en&rev=45b5aec13ca1407084733f90e0d0847a
- ^v Southeastcoalash.org (not dated). *Coal Ash Storage*. <http://www.southeastcoalash.org/about-coal-ash/coal-ash-storage/>
- ^{vi} Kingery, Duke University for ScienceDaily (April 12, 2016). *Oxygen key to containing coal ash contamination Potentially overlooked factor could affect safety of coal ash disposal*. <https://www.sciencedaily.com/releases/2016/04/160412211142.htm>
- ^{vii} Global Energy Monitor (not dated). *G.G. Allen Steam Plant*. https://www.gem.wiki/G.G._Allen_Steam_Plant
- ^{viii} Southeastcoalash.org (not dated). *Impact Wildlife*. <http://www.southeastcoalash.org/about-coal-ash/environmental-impacts/impact-wildlife/>
- ^{ix} Lemly and Skorupa, Environmental Science and Technology (August 9, 2012). *Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 Years of Wildlife Poisoning*. <http://www.southeastcoalash.org/wp-content/uploads/2013/04/Lemly-and-Skorupa-Coal-Waste-Impacts-on-Wildlife-August-9-2012.pdf>
- ^x Lemly and Skorupa, Environmental Science and Technology (August 9, 2012). *Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 Years of Wildlife Poisoning*. <http://www.southeastcoalash.org/wp-content/uploads/2013/04/Lemly-and-Skorupa-Coal-Waste-Impacts-on-Wildlife-August-9-2012.pdf>
- ^{xi} Rowe, Hopkins, and Congdon, Environmental Monitoring and Assessment, 80, 207–276 (December 2002). *Ecotoxicological implications of aquatic disposal of coal combustion residues in the United States: a review*.
- ^{xii} CBS News (May 14, 2015). *Duke Energy fined \$102 million in coal ash spill*. <https://www.cbsnews.com/news/duke-energy-fined-102-million-in-coal-ash-spill/>
- ^{xiii} Falero and Robertson, Associated Press and Reported by WFAE radio (January 25, 2021). *Duke Energy Customers Won't Be Charged \$1.1B For Coal-Ash Cleanup After NC Settlement*. <https://www.wfae.org/energy-environment/2021-01-25/duke-energy-nc-officials-announce-coal-ash-expense-deal>
- ^{xiv} Morehouse, Utility Dive (January 26, 2021) *Duke coal ash clean up settlement shifts \$1.1B in costs away from North Carolina ratepayers*. <https://www.utilitydive.com/news/duke-coal-ash-clean-up-settlement-shifts-1-1b-in-costs-away-from-north-car/593925/>
- ^{xv} Boraks, WFAE Radio (August 19, 2021). *Duke Energy Wins \$215M In Settlements With Insurers Over Coal Ash Costs*. <https://www.wunc.org/environment/2021-08-19/duke-energy-wins-215m-in-settlements-with-insurers-over-coal-ash-costs>
- ^{xvi} Duke Energy Corporation (December 31, 2021). *2021 10-K*.
- ^{xvii} Duke Energy Corporation (December 31, 2021). *2021 10-K*.
- ^{xviii} Duke Energy Corporation (December 31, 2021). *2021 10-K*.
- ^{xix} Duke Energy Corporation (December 31, 2021). *2021 10-K*.
- ^{xx} Khalid, S&P Global (January 26, 2021). *S&P downgrades Duke, utilities following coal ash settlement*. <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/s-p-downgrades-duke-utilities-following-coal-ash-settlement-62299759>
- ^{xxi} Saadoun, Human Rights Watch (August 21, 2019). *Who Will Pay to Clean Up US Coal Ash Pollution? Environmental Protection Agency's Proposal Risks Serious Harm*. <https://www.hrw.org/news/2019/08/21/who-will-pay-clean-us-coal-ash-pollution>
- ^{xxii} Bruggers and Green, NPR (January 12, 2022). *In Orlando, a mountain of coal ash evades EPA rules. It's not the only one*. <https://www.npr.org/2022/01/12/1065214649/in-orlando-a-mountain-of-coal-ash-evades-epa-rules-its-not-the-only-one>