

# Contracts to Burn

## *How Long-Term Fossil Fuel Contracts and Power Purchase Agreements Lock In Pollution, Harm Consumers, and Slow the Clean Energy Transition*

*Highlights: Long-term contracts for the purchase of fossil fuels and fossil fuel-derived power lock in substantial future emissions. By 2050, current contracts to buy and burn fossil fuels for power in the United States are projected to create 5.4 billion tons of carbon dioxide (CO<sub>2</sub>), 3 million tons of nitrogen oxides (NO<sub>x</sub>), and 3.7 million tons of sulfur dioxide (SO<sub>2</sub>), primarily from coal contracts. A portion of these contracts are signed between companies having the same owner and are used to continue business-as-usual operation, thereby delaying movement to cleaner energy sources. Most current contracts for fuel and power end by 2030; ending them before their expiration date and avoiding new contracts can reduce the pollution they lock in over the next decade, save consumers money in the long run, and move us toward a carbon-free power sector.*

Transitioning to a carbon-free power sector is essential to addressing climate change and reducing the negative environmental and health impacts associated with power generation. Yet obstacles often impede the process of replacing fossil fuel power with lower cost wind, solar, and other clean energy sources. One such obstacle is the historical utility practice of entering into long-term purchase agreements for fossil fuels, such as coal and natural gas, as well as for the power derived from these fuels. Such contracts obligate participating utilities and other power providers to buy emission-producing fuels and generate power from those fuels for short (five years or less) to long (10 years or more) periods of time. These obligations negatively affect air quality and public health, cost consumers money, and lock in future global warming emissions. A troublesome subset of long-term contracts is “affiliate transactions,” agreements between subsidiaries of the same parent company or between a parent company and one of its subsidiaries, which are also analyzed here.



*Contracts to buy and burn fossil fuels obligate utilities to procure dirty power. Ending this practice can allow the flexibility needed to achieve climate goals. Source: shank\_ali/iStockphoto*

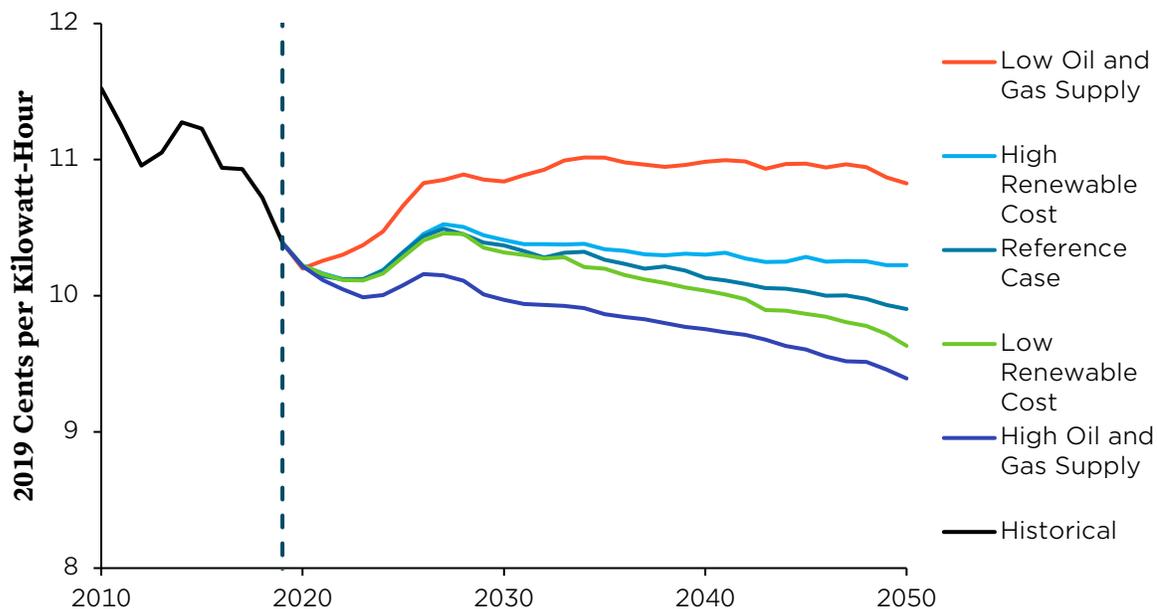
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## **Why Do Contracts Matter?**

Long-term contracts for fuel and/or power have been common in the power sector to guarantee a reliable long-term supply of energy for utilities and other power providers. Utilities often advocate for long-term contracts to provide a hedge against fuel and power price volatility by locking in prices for each. Think of these long-term contracts as like signing a cell phone contract with a multiyear commitment and specified data plan.

But what happens when a new phone comes out on a new carrier or you find yourself using less data than you originally planned? Or, what if your phone carrier goes bankrupt or is bought by another company and no longer honors the terms of your previous phone contract? That seemingly good deal can become more of a burden. A utility experiences similar risks when it buys bulk fuel or power through a long-term contract. The contract ends up forcing utilities to spend money and burn fuel and creates implicit and explicit costs associated with the contract.

Figure 1. Electricity Price Projections in the US Energy Information Administration’s Annual Energy Outlook 2020



*Electricity prices are projected to decrease under a wide range of future scenarios. Entering into long-term contracts for power from fossil fuel power plants when the addition of lower-cost renewables is providing cheaper and cleaner alternative power sources is harmful to both consumers and the environment. Source: EIA 2020*

For example, the price of fossil fuel power written into a contract can become more expensive compared to alternatives over time, especially given the declining price of renewables and other low-cost resources listed on the wholesale market (Figure 1). Take, for example, American Municipal Power (AMP), the power supplier for its 135 members in the Ohio Valley and mid-Atlantic states. Its 50-year “take-or-pay” contracts for power from two power plants burdened its members with much higher power prices than prices available elsewhere. AMP member Cleveland Public Power found that, from 2012 through 2019, it paid at least \$106 million more than if it had procured the same capacity and power from PJM’s wholesale regional market (Schlissel 2020). The take-or-pay requirements seen in power contracts can also be found in fuel contracts, so these restrictive provisions can also add unnecessarily high fuel prices, which in turn drive up consumer costs.

Similarly, when fuel suppliers file for bankruptcy, new owners or creditors do not necessarily need to honor the terms of existing contracts and can opt to raise the price they charge for fuel. For example, when the mine supplying coal to Montana’s Colstrip power plant filed for bankruptcy, its creditors announced they would not honor the terms of their current coal contract with Colstrip’s owners and instead pushed to create new contracts with higher coal prices (Lutey 2019).

In both of these examples, cost savings that were supposed to result from signing long-term contracts did not materialize. In these and other examples discussed in this paper, it would save consumers money to have not signed a long-term contract. Consumers do not get hit with only the financial costs of these contracts, but also the environmental and public health consequences resulting from burning fossil fuels. It is these unwritten monetary, environmental, and health costs that arise from buying expensive and dirty power that get passed on to ratepayers through these transactions.

Furthermore, such contracts can be more broadly harmful because they discourage the development of new resources such as wind, solar, and storage. Our research shows that when cities and municipalities want to procure their own renewable energy, they can struggle to do so because of onerous contracts with power suppliers. For example, when electric cooperative United Power installed as much solar as it could procure in 2017 without violating the terms of its contract with Tri-State Generation & Transmission, it shifted to investments in battery storage. Tri-State subsequently changed its policies, reclassifying battery storage to group it with renewable energy generation projects and counting it toward the capacity threshold it had imposed on United Power and other clients for procuring their own energy (Smyth 2018). These limitations have driven United Power and another utility to work to exit their contracts with Tri-State (see Box 1). Similar issues are affecting Tennessee Valley Authority (TVA) members, which are facing pressure from TVA to sign long-term contracts for a fossil fuel-heavy power mix while also hearing customer demand for low-cost clean energy (Bruggers 2019; Flessner 2019). A utility contract for a specific fossil fuel and associated power incentivizes that utility to procure and burn that fuel. Over the long run, if a utility is locked into such contracts, it has less incentive to procure alternatives and also less opportunity to do so.

Finally, these agreements can also create conflicts of interest, particularly when the same company owns both parties to the agreement—as in so-called affiliate transactions. These agreements have been used to preserve profit margins at the expense of ratepayers and to stymie competition. For example, in New Orleans, the local provider of electricity is Entergy New Orleans (ENO), owned by Entergy LLC. Entergy LLC also owns several companies that own and operate power plants that sell electricity to ENO. ENO has used these contracts as justification for not adopting more renewables (Daniel 2019a). As discussed later, there are ways for power providers to exit these contracts and prevent future financial and environmental damages.

## **A Snapshot of Contracts in 2019**

Contracts for fossil fuels and power derived from fossil fuels will force utilities to emit a myriad of pollutants, including heat-trapping gases. For power and fuel contracts not to stand in the way of climate goals, utilities and other power providers should not sign any new contracts that extend beyond the next few years.

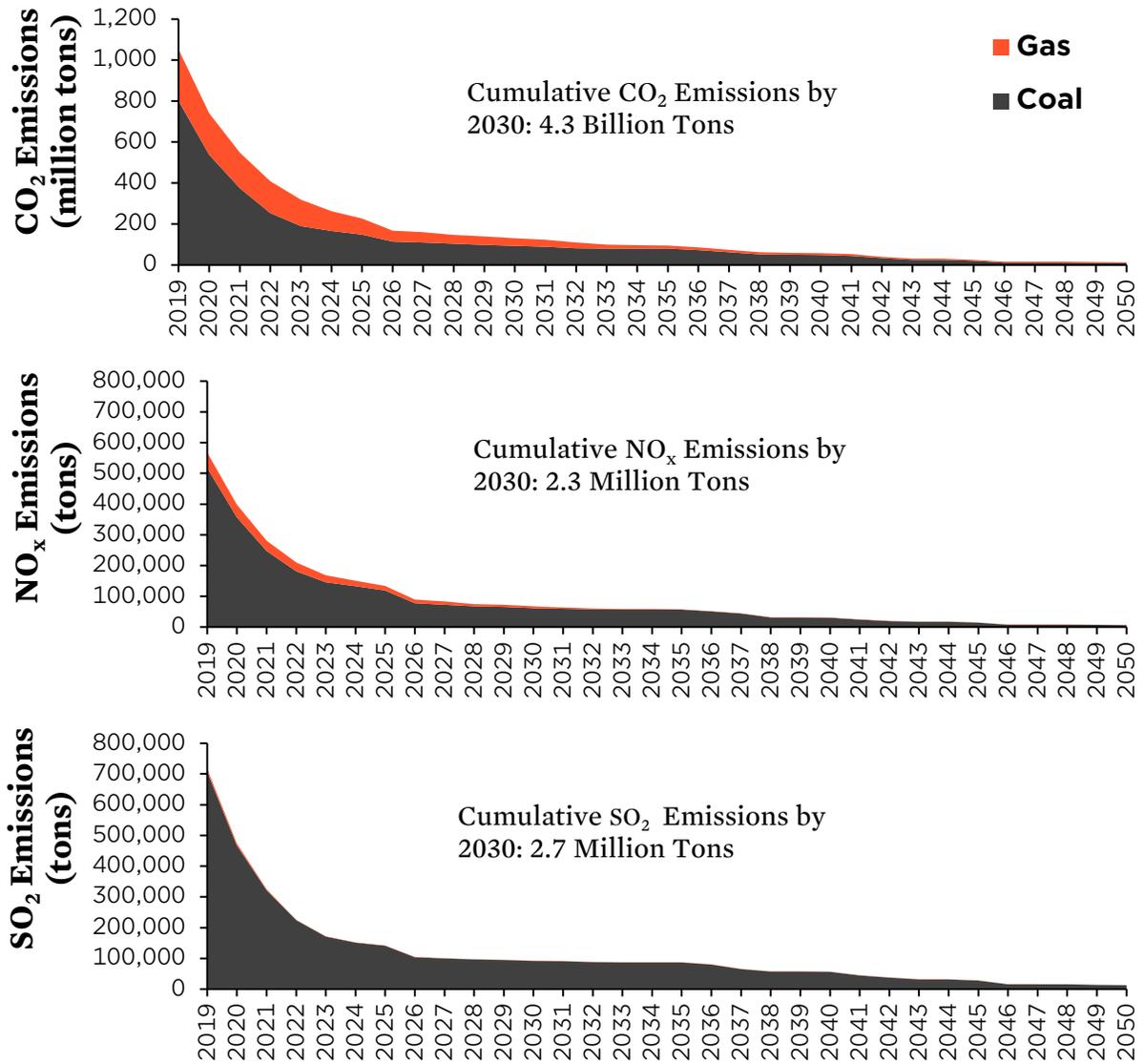
### **FUEL CONTRACTS AND POWER PURCHASE AGREEMENTS (PPAS)**

To assess the extent and impact of long-term fuel and power contracts, in general and among affiliates, the Union of Concerned Scientists (UCS) analyzed the quantity and price of coal, oil, and natural gas purchased via long-term contracts by power plants in the United States and via the spot market during 2019, using data reported to the US Department of Energy's Energy Information Administration through Form 923.<sup>i</sup> From that data, we estimated the amount of

CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub> that would be emitted from burning each fuel in the future, assuming that the same quantity of fuel is purchased and consumed each year as in 2019.

When evaluating emissions for each power plant, we also accounted for any known PPAs that would obligate the plant to run into the future. The details of the PPAs we analyzed were sourced from S&P Global and supplemental sources for specific power plants, when appropriate.<sup>ii</sup> We also projected how much pollution utilities subject to such PPAs would produce. Given that fuel from a fuel contract can be used to satisfy a PPA, we made sure not to double-count any projected emissions by counting only the larger source of emissions, whether that source was the fuel contract or the PPA. The key findings of this analysis are shown below.

Figure 2: Future Emissions Locked In by Fuel and Power Contracts



Fuel and power contracts lock in emissions for years to come. Note: Units for CO<sub>2</sub> emissions are million tons; units for NO<sub>x</sub> and SO<sub>2</sub> emissions are tons.

## LOCKED-IN EMISSIONS PROJECTIONS

Our analysis found that in 2019 fossil fuel-burning power plants emitted just over 1 billion tons of CO<sub>2</sub>, 580,000 tons of NO<sub>x</sub>, and 725,000 tons of SO<sub>2</sub> resulting solely from the contracts signed for fuel and/or power (see Figure 2). Furthermore, by 2030, contracts to burn fossil fuels are projected to create 4.3 billion tons of CO<sub>2</sub>, 2.3 million tons of NO<sub>x</sub>, and 2.7 million tons of SO<sub>2</sub>. We analyzed 442 power plants with fuel contracts and/or PPAs that extend beyond 2019. The emissions projections out to 2050 are overwhelmingly dominated by emissions resulting from fossil fuel contracts, specifically coal contracts, rather than from power contracts, for several reasons:

Table 1. Power Plants Having Most Emissions Resulting from Long-Term Contracts

Power Plant	Cumulative CO <sub>2</sub> Emissions (million tons) by 2050	Cumulative NO <sub>x</sub> Emissions (thousand tons) by 2050	Cumulative SO <sub>2</sub> Emissions (thousand tons) by 2050	Fuel Type	Fossil Fuel Contract	PPA	State
Prairie State Energy Campus	309.5	92.1	239.9	Coal	✓	✓	IL
Coal Creek	254.5	175.1	168.8	Coal	✓		ND
Antelope Valley	130.5	63.1	190.8	Coal	✓		ND
Laramie River Station	113.9	70.4	60.0	Coal	✓		WY
West County Energy Center	113.4	7.4	0.6	Gas	✓		FL
Milton R. Young	106.8	163.8	50.6	Coal	✓	✓	ND
Brame Energy Center (Rodemacher 2)	102.2	105.9	119.0	Coal	✓	✓	LA
Four Corners	101.1	30.2	19.7	Coal	✓		NM
Dry Fork Station	87.2	17.4	23.6	Coal	✓		WY
San Miguel	80.8	58.9	232.4	Coal	✓	✓	TX
Leland Olds	72.6	79.6	32.6	Coal	✓		ND
Acadia Energy Center	66.4	5.2	0.3	Gas	✓		LA
Pirkey	57.6	42.7	46.8	Coal	✓		TX
Harrison	55.3	24.1	48.2	Coal	✓		WV
Dolet Hills	55.3	56.8	222.9	Coal	✓		LA
Coyote	54.6	115.6	216.9	Coal	✓		ND
Nebraska City	54.3	30.2	75.6	Coal		✓	NE
Jim Bridger	51.4	28.9	36.1	Coal	✓		WY
Brame Energy Center (Rodemacher 3)	50.2	7.7	28.6	Coal	✓		LA
Okeechobee Clean Energy Center Unit 1	50.0	3.6	0.3	Gas	✓		FL

*The 20 power plants that have the highest CO<sub>2</sub> emissions resulting from long-term contracts are listed here.*

**Logistics:** Coal is often purchased through contracts due to the logistical hurdles of buying coal from a mine and transporting it to a power plant. Natural gas, on the other hand, is transported by pipeline directly to power plants and is more readily purchased on the spot market or through short-term contracts, though shorter contracts for procuring coal are now far more common than they once were. Also, whereas coal can be easily stored in piles onsite at a power plant, natural gas cannot easily be stored onsite and therefore must be burned immediately; this fact increases the risk of procuring more natural gas than needed compared to the over-procurement risk associated with coal. For these reasons, long-term natural gas contracts are more uncommon and generally unnecessary.

**PPA Contract Terms:** The details (specifically the contract length and contracted capacity) are not always public for each PPA with each US power plant. Projecting emissions for each power plant that has a PPA requires knowing the length of the contract, the contracted capacity, and an emissions factor to convert the estimated generation to emissions. The lack of a comprehensive public source of information on the terms of PPAs (unlike for other publicly reported energy-related projects) makes it difficult to calculate comprehensive emissions projections for power plants with PPAs.<sup>iii</sup>

The analysis reveals the power plants with the highest projected emissions resulting from long-term contracts (Table 1). The 20 plants with the highest projected cumulative CO<sub>2</sub> emissions resulting from contracts account for 45 percent of the cumulative CO<sub>2</sub> emissions resulting from long-term contracts at all plants over the next 30 years, with coal plants in coal-heavy states dominating the emissions projections. For NO<sub>x</sub> emissions, the 20 highest projected emitters account for 59 percent of emissions from 2020 to 2050. For SO<sub>2</sub> emissions, the top 20 power plants account for 72 percent of the projected emissions from 2020 to 2050. Contracted CO<sub>2</sub> emissions are more distributed among power plants, making reducing CO<sub>2</sub> emissions through action on contracts more difficult. Projected NO<sub>x</sub> and SO<sub>2</sub> emissions locked in through 2050 tend to be concentrated at fewer power plants, suggesting a more targeted emissions control strategy might be more successful at reducing contracted NO<sub>x</sub> and SO<sub>2</sub> emissions.

## **AFFILIATE TRANSACTIONS**

Transactions between related parties are a small but important subset of the long-term power purchases analyzed here. Our analysis found that in 2019 affiliate transactions accounted for 126 terawatt-hours (TWh) of exchanged energy (13 percent of reported annual power transactions) for a value of \$6.4 billion. The top 10 buyers accounted for 111 TWh and 88 percent of the reported affiliate transactions (by volume) in 2019 (Table 2). The companies that spent the most on affiliate transactions in 2019 include Entergy, spending roughly \$1 billion on power purchased through subsidiaries; Exelon, \$991 million; American Electric Power Company, \$806 million; and Southern Company, which spent \$798 million and purchased the most power of all the utilities (24 TWh) from its affiliates.

Table 2. Utilities That Spent the Most on Affiliate Power Purchases in 2019

Buyer	Total Cost (\$Millions) 2019	Quantity Purchased from Affiliates (Gigawatt-Hours)	Rank by Quantity of Energy Purchased
Entergy	1,004	18,600	3
Exelon	991	21,602	2
American Electric Power	806	12,986	4
Southern Company	798	24,179	1
Public Service Enterprise Group	485	4,921	9
Duke Energy	375	8,835	5
Xcel Energy	336	5,947	6
CMS Energy	318	5,677	8
Ohio Valley Electric Corporation	265	5,723	7
Dominion Energy	183	2,569	10

Entergy sits at the top of the affiliate transaction list. Entergy has historically used affiliate transactions to continue business-as-usual operation. Having obligated its subsidiary ENO to buy power from the Entergy-owned Grand Gulf Nuclear Station, Entergy has argued that prior commitments make it unable to transition to renewables (Daniel 2019a). Furthermore, Grand Gulf is being kept online because of the affiliate transaction Entergy has created through PPAs with Entergy’s subsidiaries, despite issues with reliability and safety (Amy 2018). This rationale keeps money coming in from ratepayers at above-market prices to pay for uneconomic plants that should close if not for their affiliate transactions.

## Implications of Contracts

A few trends stand out when we look at the future of these contracts and their implications.

### WE ARE NOT LOCKED IN

Over the next 10 years, nearly all the fuel and power contracts that existed at the end of 2019 are set to expire, and the pollution projected to result from those contracts is expected to decrease by roughly 90 percent, according to our calculations. However, if those contracts are extended or renewed, then pollution from US power plants will not decrease as much over the next 10 years. And even if they do expire, 42 percent of fossil fuels purchased (in terms of heat content) during 2019 was purchased on the spot market, without a contract in place. Power plants may still operate and produce emissions even if their contracts expire and even if they do not sign new contracts to replace expired ones. But, from both an environmental and consumers’ standpoint, plant operators should not exacerbate this problem by entering into any new long-term fossil fuel-based contracts, because new contracts may likely lock in emissions and prices even farther into the future.

## **SOME CONTRACTS ARE BAD, BUT NOT ALL**

While some contracts for power are clearly set up in a way that harms customers, not all contracts are. In contrast to fossil fuel contracts, which often lead to negative consequences for ratepayers and the environment, PPAs for renewables such as solar and wind can lead to better outcomes for a multitude of reasons.

Renewables contracts provide benefits that fossil fuel contracts do not. First, renewable energy either displaces existing fossil-fuel power or helps avoid the need for new fossil fuel power plants and therefore reduces an array of air, water, and soil pollutants (Beiwald et al. 2015). But there are benefits of renewable energy PPAs beyond just reduced emissions. Wind and solar PPAs are increasingly structured to be directly purchased by “offtakers” such as private corporations, cities, or even private individuals, which means that the contract will not lock other customers into paying higher-than-market-rate prices for power now or in the future (Tawney et al. 2017). Wind and solar PPAs are increasingly structured in ways that shift risk away from consumers and onto the developer. This structuring includes shorter contracts and assignment of market price risk to the developer (Lacey 2019). Moreover, while wind and solar require a lot of upfront costs to build, the financial arrangements of PPAs can be set up so that the customer does not have to put any money down. Solar PPAs, for example, can be installed for a customer whose own property is the installation site; this customer can therefore switch to renewable energy as soon as installation is complete and can begin saving money as soon as the system becomes operational (SEIA n.d.). Finally, renewable PPAs, by encouraging use of renewable energy rather than fossil fuels, can improve public health and help combat climate change. Questions about which entities engage in renewable PPAs and which take ownership of these resources need to be addressed for each PPA, but from a ratepayer and environmental perspective, renewable PPAs can be a much more economically and environmentally sound choice.

## **THESE AGREEMENTS ARE NOT INSURMOUNTABLE BARRIERS**

Fossil fuel-based long-term contracts can generally be exited through buy-out clauses, exit fees, renegotiation, or other means (Daniel 2019b). Exiting bad contracts can be a tumultuous process, but when the benefits outweigh the costs, it is worth the tumult. For example, Colorado’s Delta-Montrose Electric Association (DMEA) exited its supply contract with Tri-State so it could pursue more renewables, reaching a settlement for \$136.5 million after deciding it would save more than that amount in the long run (Walton 2020) (Box 1).

Furthermore, these contracts do not have to stand in the way of power plant retirements (Bodnar et al. 2020). Coal Creek, for example, the power plant projected to produce the most contracted CO<sub>2</sub> emissions through 2050, announced it is now set to retire in 2022, despite having a contract to buy coal through 2045 (Sierra Club 2020; S&P Global 2020). Its contract with its fuel supplier allows an early contract termination if the plant is retiring (Hughlett 2020). Similarly, Dolet Hills, which had an affiliate fuel contract in place with Dolet Lignite Company until 2050, has announced that both the mine and power plant will be closing in the next few years (Sweeney 2020). Still, barriers to exiting bad contracts do exist. Some contracts, such as those with TVA, require a 20-year notice to exit and specify substantial risks to member utilities that decide to opt out, requiring them to burn fossil fuels for years to come. These contracts are currently being challenged in court (Driscoll 2020).

### Box 1. Can Companies Terminate Their Bad Power Contracts?

Some power providers are starting to see that it would make more sense to buy out their current power contracts than to remain locked in to contracts they signed years ago. For example, United Power and La Plata Electric Association (LPEA), electric utilities located in Colorado, are each involved in legal challenges aimed at exiting their supply contracts with Tri-State, an electric power cooperative based in Colorado and serving 45 members in Colorado, New Mexico, Nebraska, and Wyoming (Smyth 2019). United Power and LPEA argue that their long-term supply contracts with Tri-State are costing them millions of dollars more than they would pay if they purchased electricity on the open market and that their contracts are preventing them from transitioning to cleaner, low-cost renewables. United Power has argued that it has paid roughly \$150 million of overhead charges during the past four years alone and will continue to incur these excess charges through 2050, the end of its contract, if it stays in it (Best 2020). Furthermore, the supply contracts with Tri-State have clauses that limit the amount of locally produced renewable power that distributors can utilize. For both utilities, that amount is currently capped at 5 percent of their electrical load. This means both United Power and LPEA are contractually obligated to buy 95 percent of their electricity from Tri-State, a factor in their decisions to exit their contracts. Thus, these contracts not only are expensive, but also prevent distributors from having the flexibility to procure energy from clean energy sources. These distributors have therefore deemed it worthwhile to exit these contracts, despite the associated legal struggles and exit fees.

## Recommendations

Future decisions on fuel and power contracts should take account of environmental and consumer risks. First, state commissioners must scrutinize long-term fossil fuel and power contracts, both existing and new fuel and power contracts, as utilities propose recovering costs or entering into new agreements. Utility commissions should not be lulled into thinking that such contracts are the unavoidable industry norm or standard business practice, especially because when they are classified as a “standard business practice,” as they currently are, they are not subject to prudence review by commissioners. If it is deemed necessary for utilities to enter into long-term fuel or power contracts, regulators should ensure that there are clear and affordable exit strategies that do not keep consumers responsible for costly fuel and uneconomic power prices, take-or-pay provisions, or hefty exit fees. Furthermore, ensuring that contracts for fuel and power align with the public health obligations and climate commitments of many state and local governments is especially important as states increasingly commit to clean and carbon-free power.

## Conclusion

The industry perception that long-term contracts for fuel and power are the norm does not hold up to scrutiny. In 2019, more than 40 percent of fuel was procured on the spot market. The days of 30-year fuel contracts are nearly at an end. And for good reason. Given the decreasing costs and increasing benefits of transitioning to renewables, long-term contracts for fossil fuel and its associated power do not provide the same benefits they once did. They must be held to higher scrutiny so that ratepayers are not paying unnecessarily high bills and

emissions are not locked in for decades. Although one of the first steps to transitioning to carbon-free electricity generation is to avoid long-term contracts for fossil fuels and fossil fuel-derived power, those who are responsible for scrutinizing and terminating these contracts—utility regulators, state legislators, and potential contract participants themselves—cannot stop there. So long as fossil fuel power plants are open and running, their emissions pose real risks to public health and the climate; only through strong decarbonization initiatives will these problems be addressed.

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<sup>i</sup>Fuel contracts for oil represented less than 1 percent of fuel purchased in 2019 (in terms of heat content), and only four of the 442 power plants that had active contracts beyond 2019 listed oil as a primary fuel source. Since there were too few purchases to analyze the long-term emissions projections of oil contracts, we did not analyze them separately here. We did, however, include emissions resulting from oil contracts in aggregate statistics for fossil fuel contracts.

<sup>ii</sup> Supplemental information on PPAs for Prairie State Energy Campus was included here, since long-term contracts for power from this power plant were not reflected in S&P Global's database. See Sanzillo, Hamilton, and Schlissel (2012) for more information.

<sup>iii</sup> We did not attempt to estimate projected emissions for fossil fuel power plants that are under development that already have PPAs for when they start operating, nor did we attempt to quantify the emissions from all PPAs that are not power plant-specific. Therefore, this dataset likely underestimates emissions resulting from PPAs.