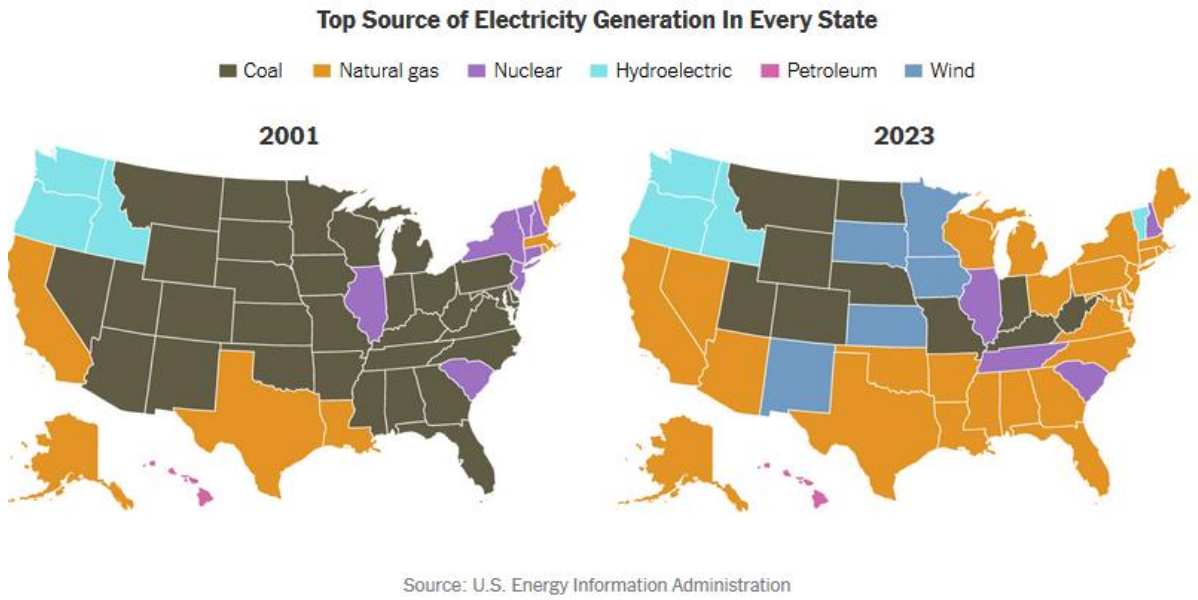
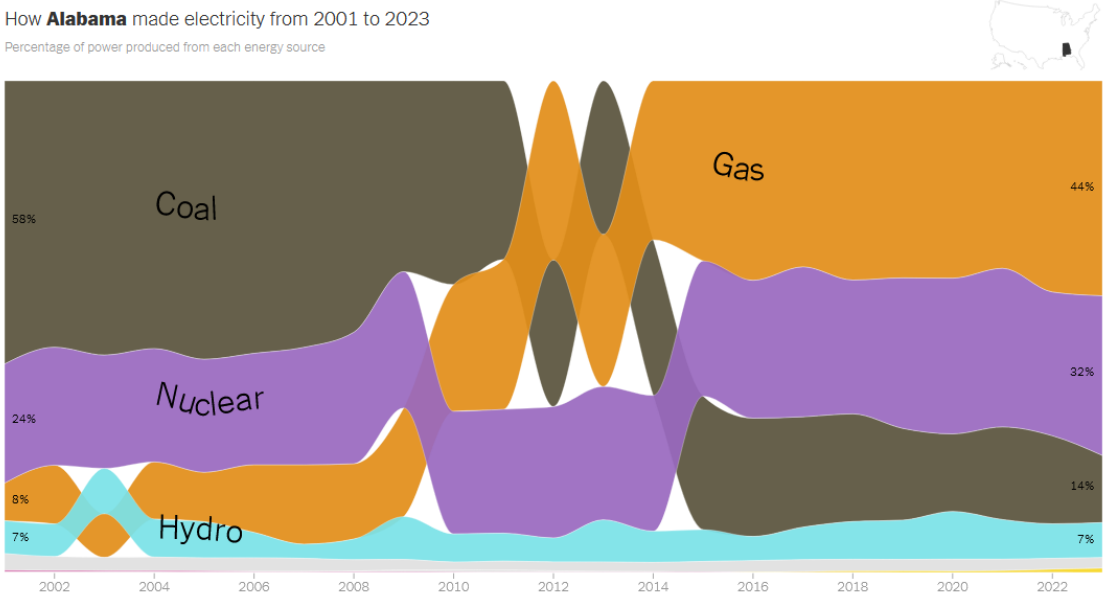
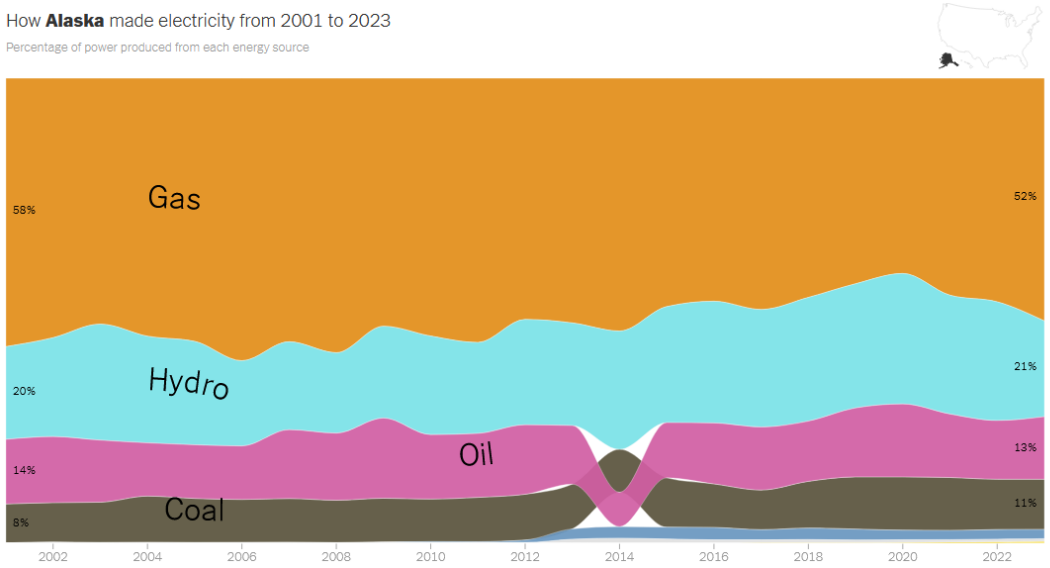
Episode 56WRA to 56WRAE August 8, 2024. How Does Your State Make Electricity? Alabama to Georgia

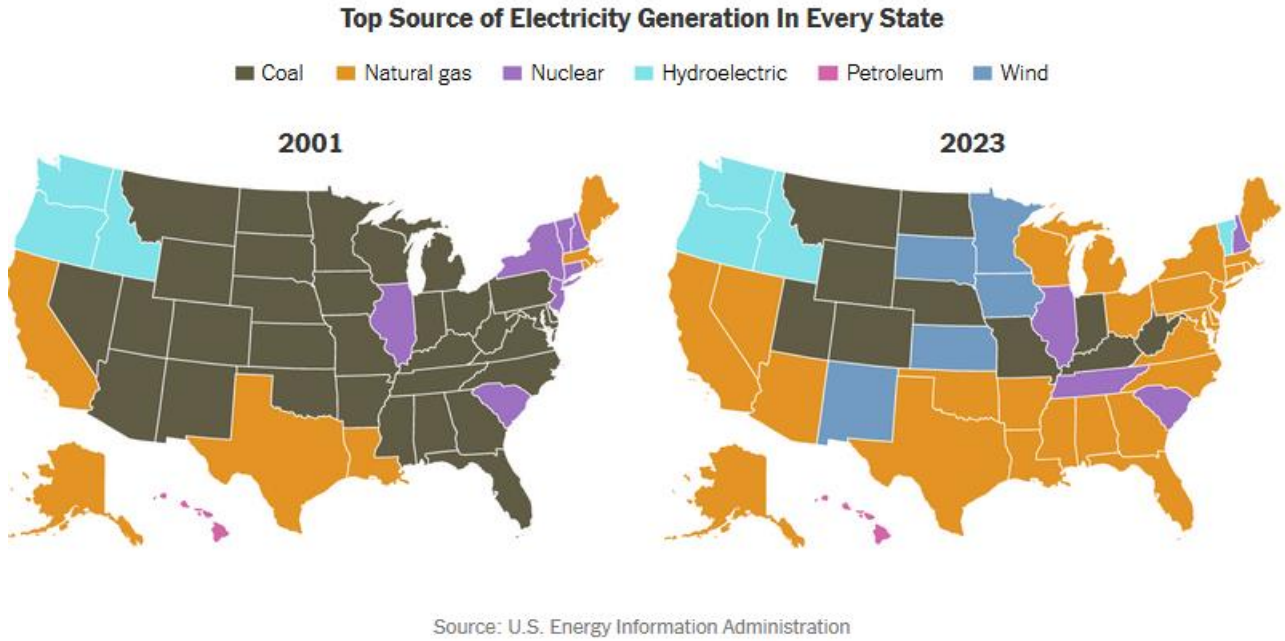
Episode 56WRA1 to 10 Alabama to Georgia. Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization. RAWSEP View: the United States Government should instead of certifying wood stoves as safe when they are not safe go forward with regulations that ban wood stove use and direct government money for use of dead wood only for home building and furniture building, for just a few examples of use of forest products for non-burning uses. A representative article in a wood burning industry magazine admits that wood burning is a substantial source of PM2.5 emissions. Yet this wood burning industry article since it is in a magazine that is an arm of the wood burning industry states that this wood burning should continue presumably because it is called renewable. Wood may be renewable in the sense that a tree can be planted in the place of a cut down burned tree but it takes centuries or decades for the newly planted tree to attain the stature of the cut





down burned tree. During those centuries or decades photosynthesis which converts CO2 to oxygen and so sequesters some carbon will not take place at as high a rate as photosynthesis happened previously. And wood burning emits both CO2 and PM2.5, and PM2.5 is not absorbed by trees so PM2.5 is not diminished by planting a tree in the place of a cut down and burned tree. Wood burning emits 90% PM2.5 particulate matter of 2.5 micrometer size the perfect size to infiltrate the human lung setting off a cascade of human health problems and early deaths. Contrary to many beliefs wood burning emits 2.8 times the PM2.5 as the fossil fuel coal burning and wood burning emits 450 times the PM2.5 as the fossil fuel natural gas burning. Replacing coal burning with wood burning creates more air pollution in the form of CO2 and PM2.5 than wood burning. This emission data comes from testing the cleanest burning wood stove in the United Kingdom the EcoDesign wood stove. An international convention does not count the emissions from wood burning. The emissions from wood burning are erased from all countries around the world

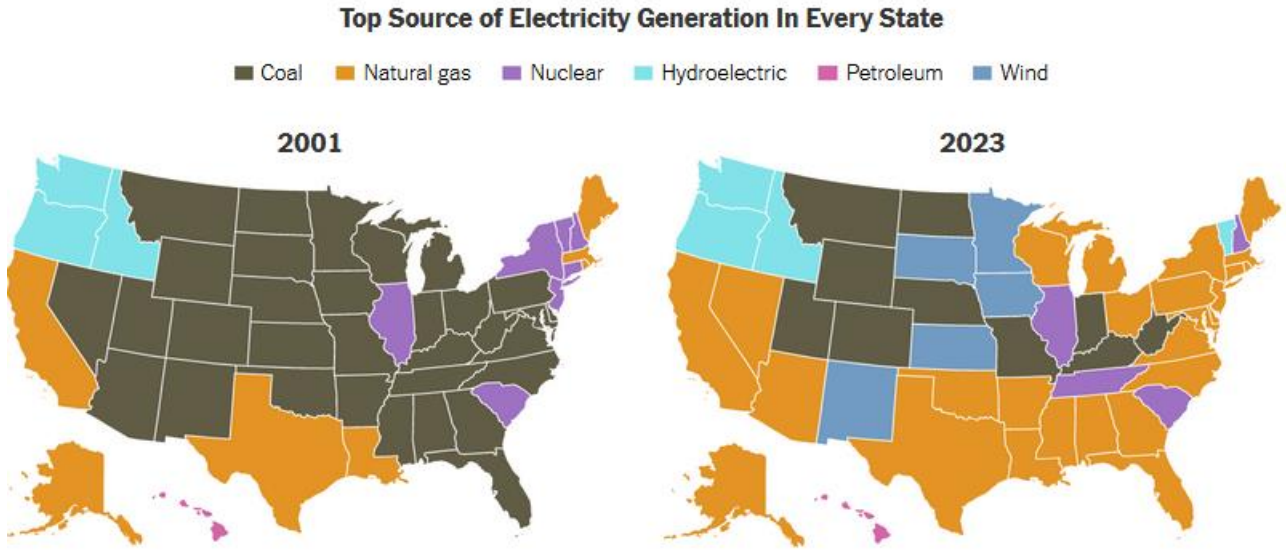




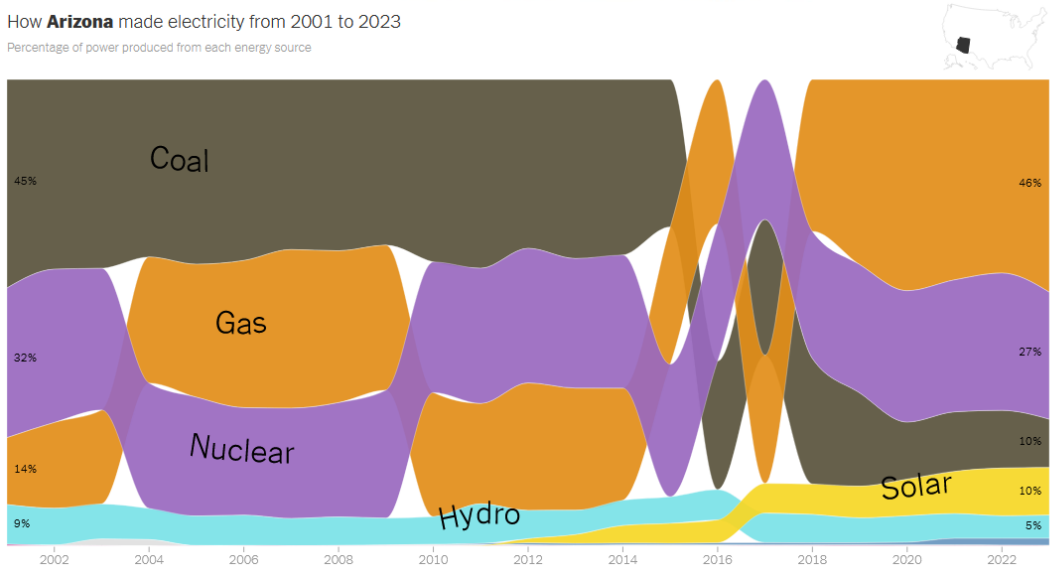
Source: U.S. Energy Information Administration

when calculating if each country has met its Climate Goals. This non counting or erasure of wood burning emissions data from Climate Goals does not mean wood burning emissions do not exist. Why is an organization named Residents Against Wood Smoke Emission Particulates concerned with industrial wood burning for energy rather than just indoor residential wood burning? The answer is that how each United State divides up the way it produces energy affects the air quality of all residents of that state and eventually affects the air quality of the United States and the world. Air travels and air pollution from one state is eventually not confined to that one United State. Why is 2024 a time when critiques of how each United state produces electricity not idle criticism? Solutions of change from polluting methods of producing electricity can happen in 2024 because of funding from the Inflation Reduction Act for a switch to Wind and Solar sources of electricity. Why is the failed scientifically debunked political argument called Carbon Neutrality of Wood Burning more than ever a problem in 2024? Lumping polluting renewables like Wood Burning with the truly clean Renewable energy sources of Wind and Solar for electricity generation by the states under one designation of Renewable

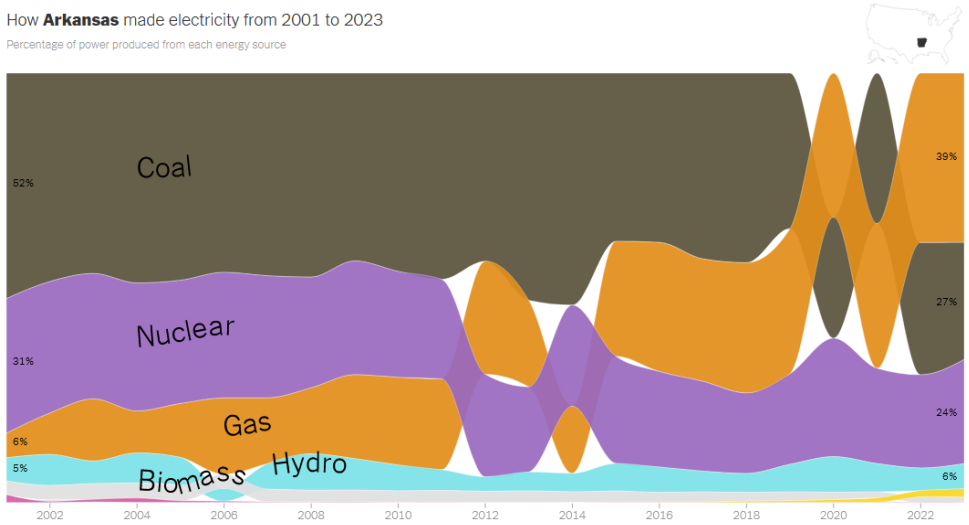
decisions

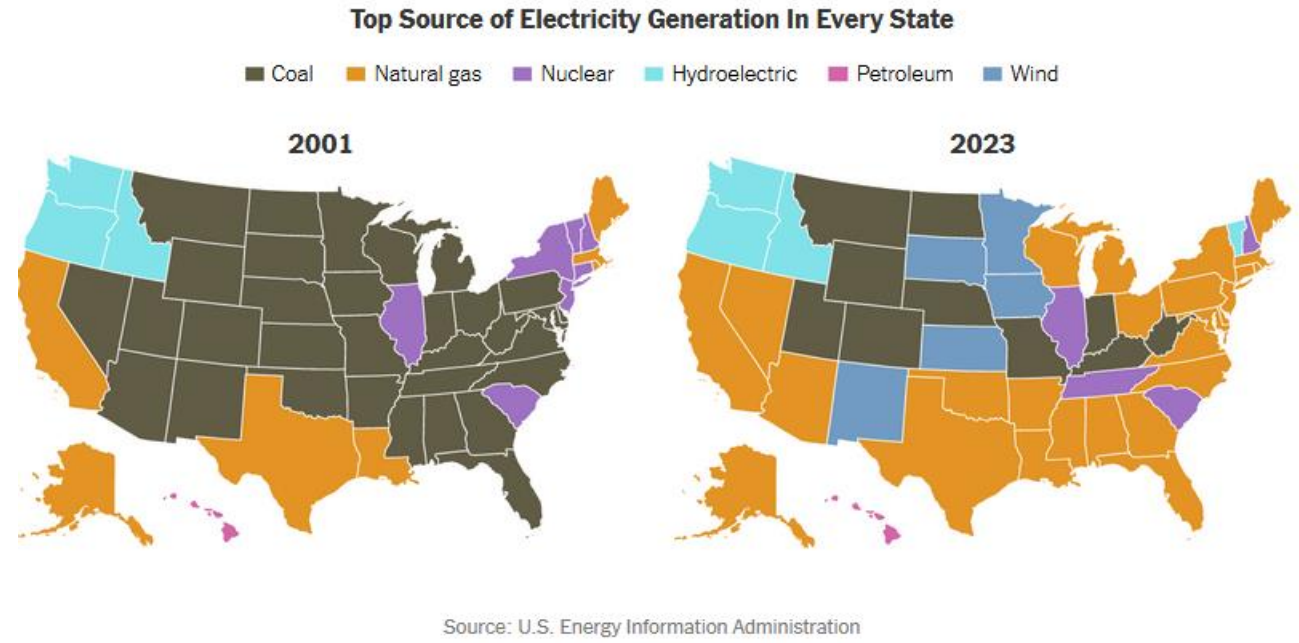


Source: U.S. Energy Information Administration

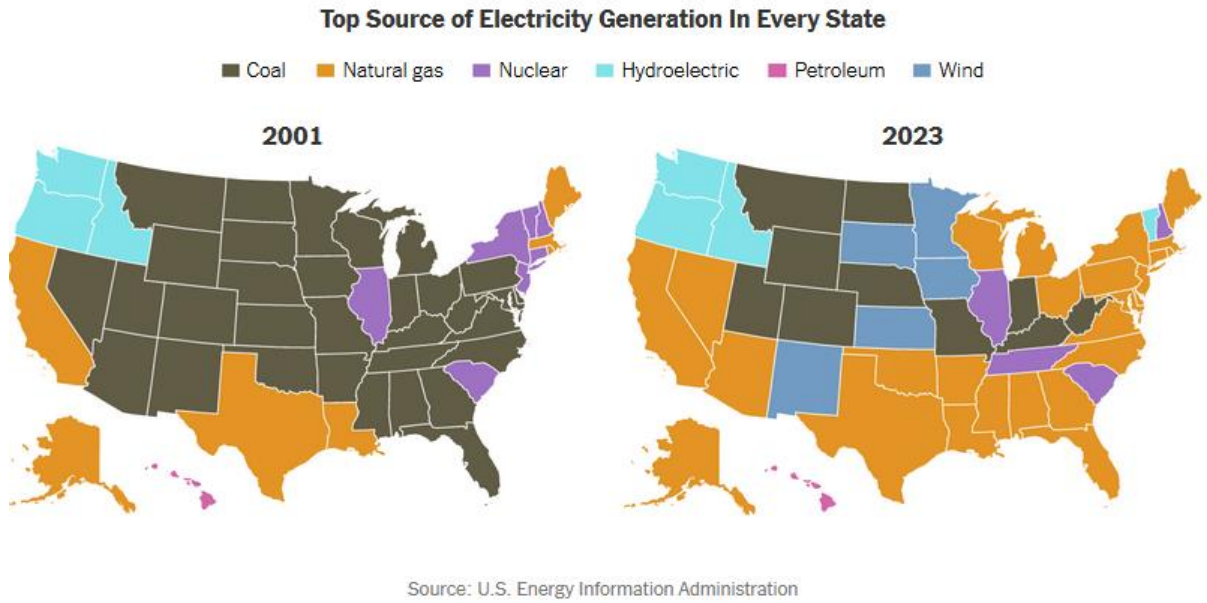


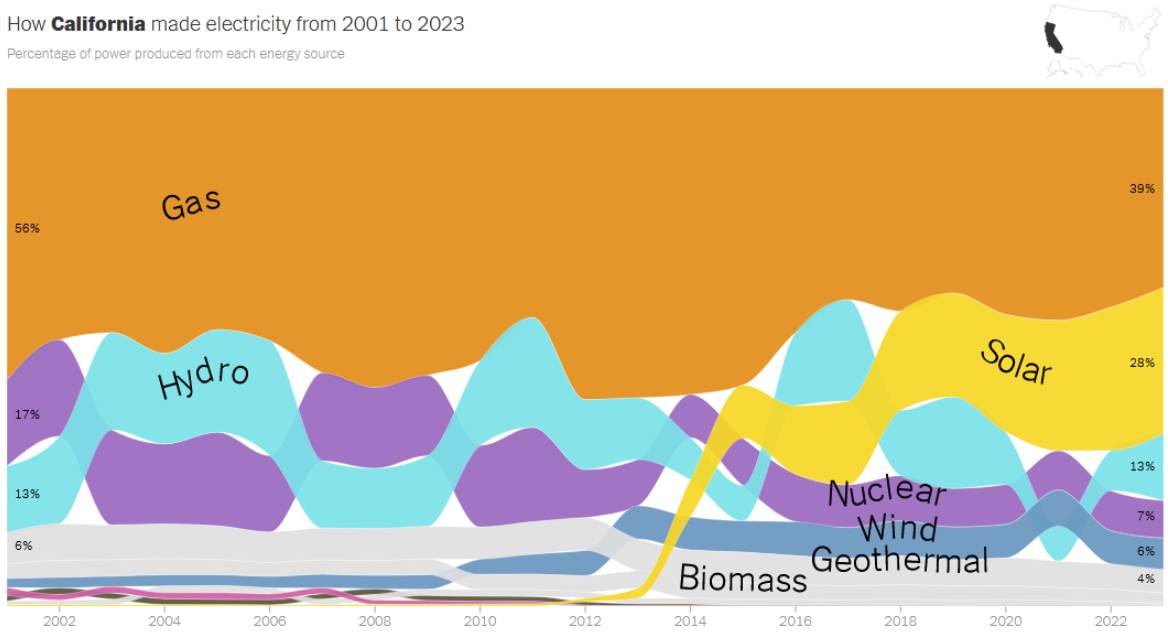
and providing government subsidies for that polluting wood burning called renewable is still going on in 2024. The cover argument for lumping polluting renewables with truly clean renewables is the scientifically debunked theory of Carbon Neutrality of Wood Burning. A new scientific study has found that when trees are exposed to wildfire smoke those trees block entry of the PM2.5 pollution from wood burning from the tree's pores. This demonstrates that trees do not absorb PM2.5 and so planting a tree does not magically take existing PM2.5 from wood burning from the air. The pollution from wood burning is still there for humans to breathe despite a tree being planted. RAWSEP View on the Article Below: How can we make United states decisions on energy sources for electricity and have those decisions on energy sources for electricity not be a stumbling block blocking a clean energy future? Perhaps the solution of using clean energy sources is already being implemented because Wind and Solar are more cost effective, and less logistically difficult to implement than say what is now allowed to be called renewable biomass woodburning for electricity generation. But we cannot sit back and see what arbitrary decisions states make to block clean energy implementation. We have to analyze why bad decisions



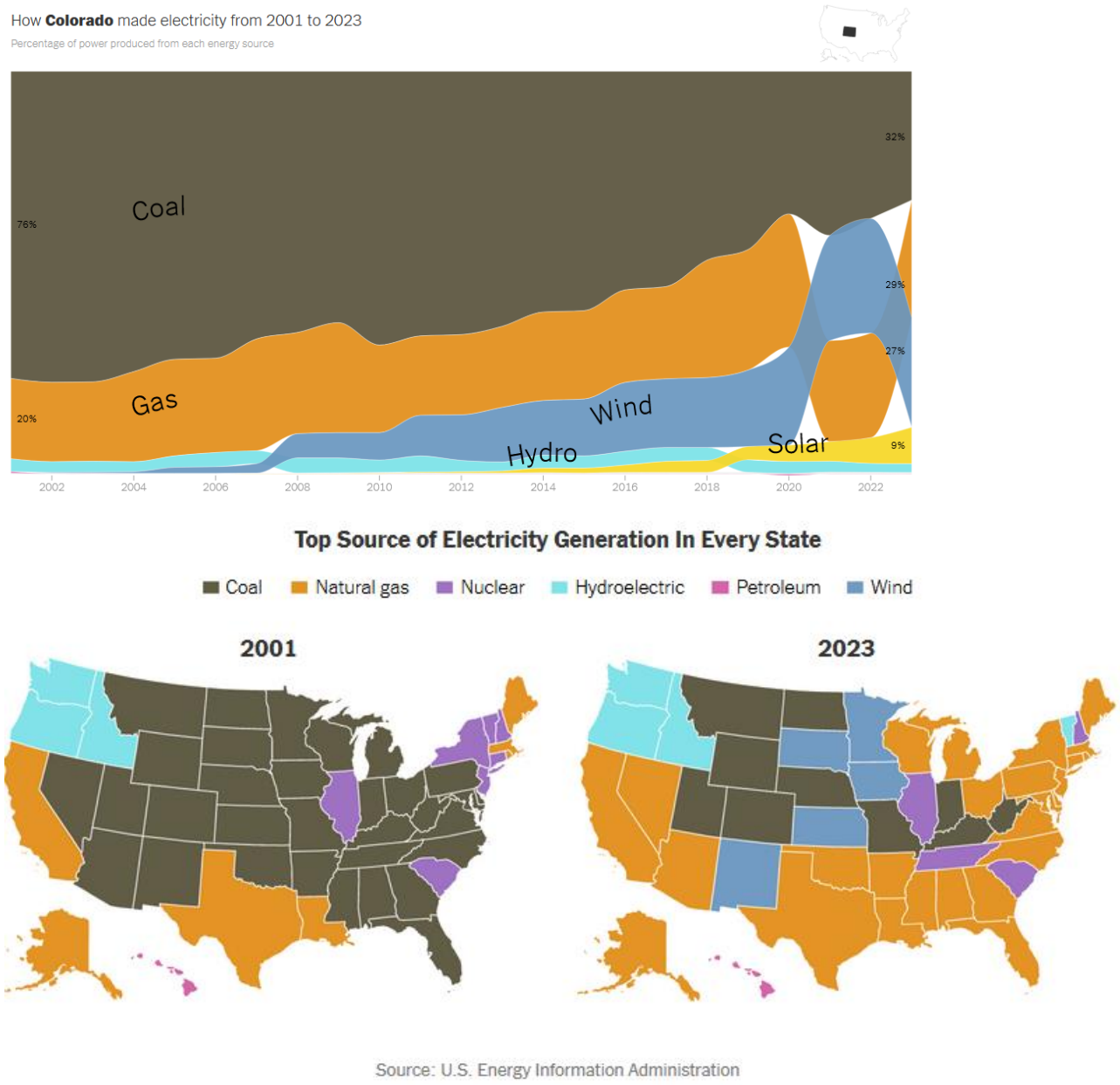


were made and find the reasons behind some states making good decisions. One excerpt from the article below. Money for Solar and Wind Clean Energy Generation. President Biden's signature climate and energy law, the 2022 Inflation Reduction Act, aimed to turbocharge the growth of renewable wind and solar energy nationwide and to support other technologies that could reduce emissions from the power sector, like nuclear energy, advanced batteries and carbon capture and storage for gas plants. But the future of that law remains uncertain in an election year, with Republicans promising to repeal many of its clean-energy provisions. What happens at the federal level is only part of the equation. States have the power to accelerate, slow down or block new energy development, too. From the article below. New York Times. How Does Your State Make Electricity? August 2, 2024 Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization.



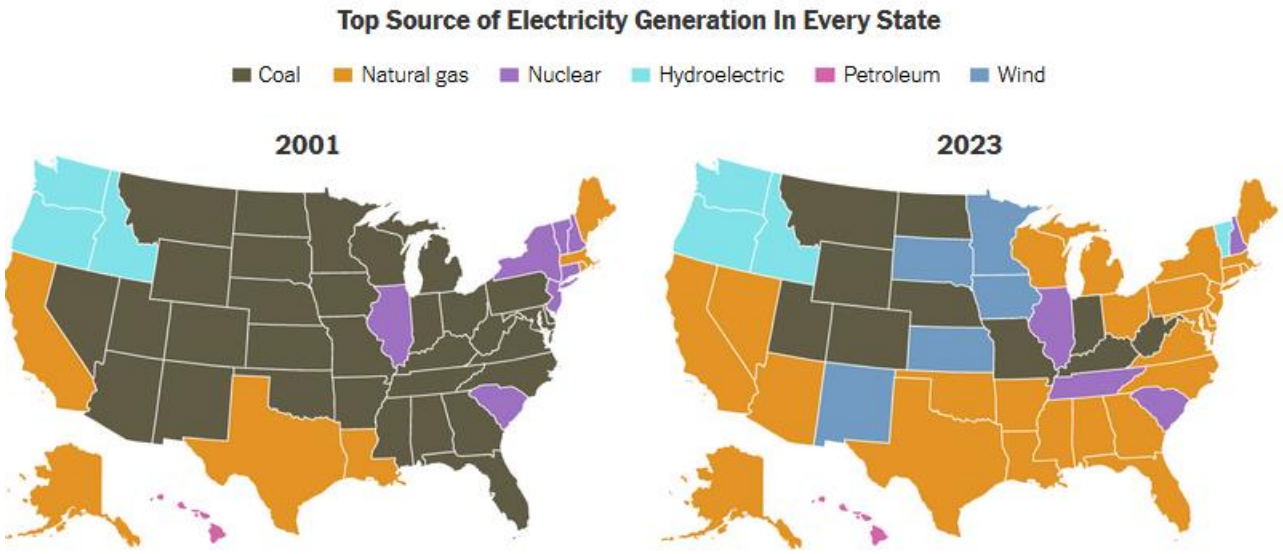


RAWSEP View: The New York Times compiled a similar analysis of how each state generates electricity in 2018 and 2020 also. This 2024 analysis from the New York Times article is based on Government figures. The idea that energy flows between United States is explained below as cross state imports and exports. Two excerpts from the article below explain this. Data notes and methodology. Data comes from the U.S. Energy Information Administration and reflects net electricity generation between 2001 and 2023, broken out by fuel source. The data includes utility-scale power generation and small-scale generation from technologies like rooftop solar, as well as industrial and commercial cogeneration. Data for 2023 is preliminary. Cross-state imports and exports of electricity are not shown in the charts, but electricity routinely flows between states and most states belong in part or in whole to wider power markets. Still, each state has the power to shape its power-generation mix through regulations. How states generate electricity is also influenced by the availability of local and regional energy resources. For example: Abundant wind in the Midwest, plentiful sunshine in the Southwest, and local coal in West Virginia and Wyoming. The charts do not reflect generation from pumped hydro or grid-scale battery storage because charging and discharging are not reported separately by the Energy Information Administration the E.I.A.

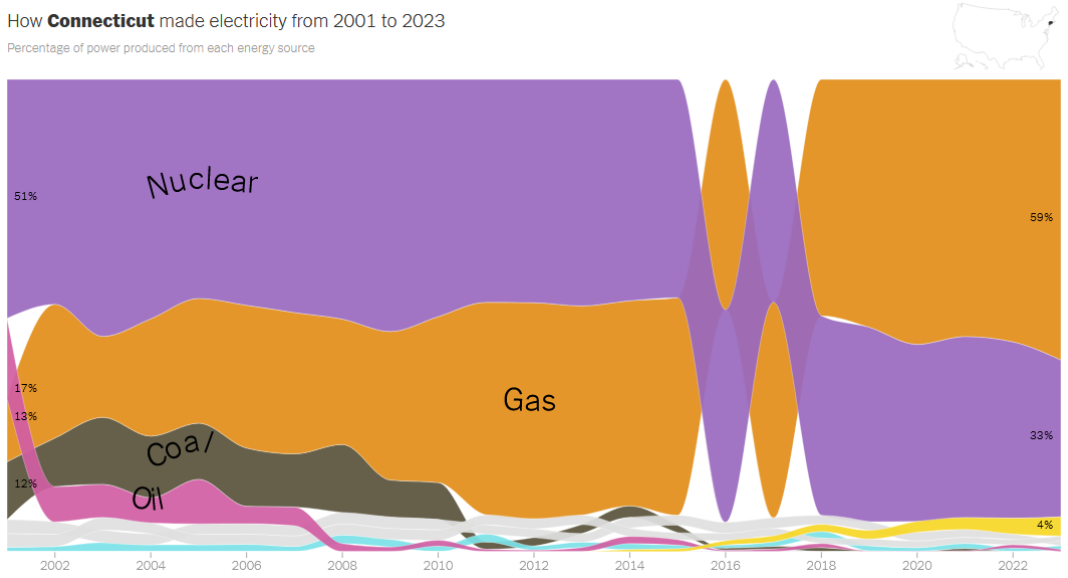


RAWSEP View the generality that can be stated from these figures is that Natural Gas is the number one energy source for electricity generation across the United States, surpassing Coal since 2016. Another change is that Coal is only the top electricity generator in 10 United states now, down from 32 United states 22 years ago in 2001. When coal burning industrial plants are replaced with wood burning industrial plants however as stated above, since the CO2 and PM2.5 pollution from wood burning is 2.8 times higher than the CO2 and PM2.5 pollution from coal burning, the net effect of switching from coal to wood is higher pollution, greater adverse health effects to humans and faster progression to climate change while generating electricity.

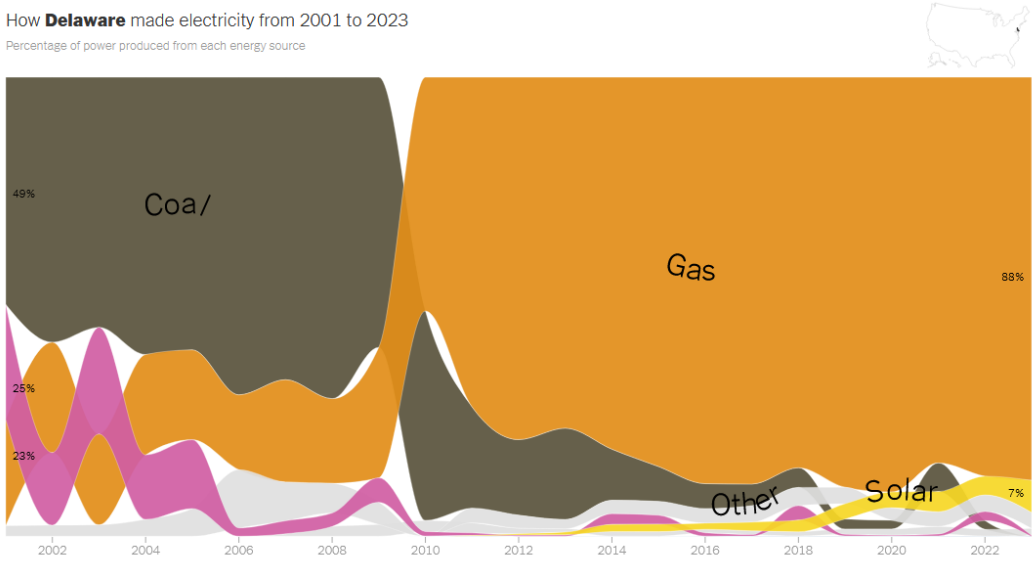
Why is an organization named Residents Against Wood Smoke Emission Particulates concerned with electricity generation? The answer is that electricity is part of a clean future. Another part of the Inflation Reduction Act is rebates for Heat Pumps that in 2024 work down to 40 degrees below zero and also function as air conditioners. Heat Pumps run on electricity and immediately lower monthly heating

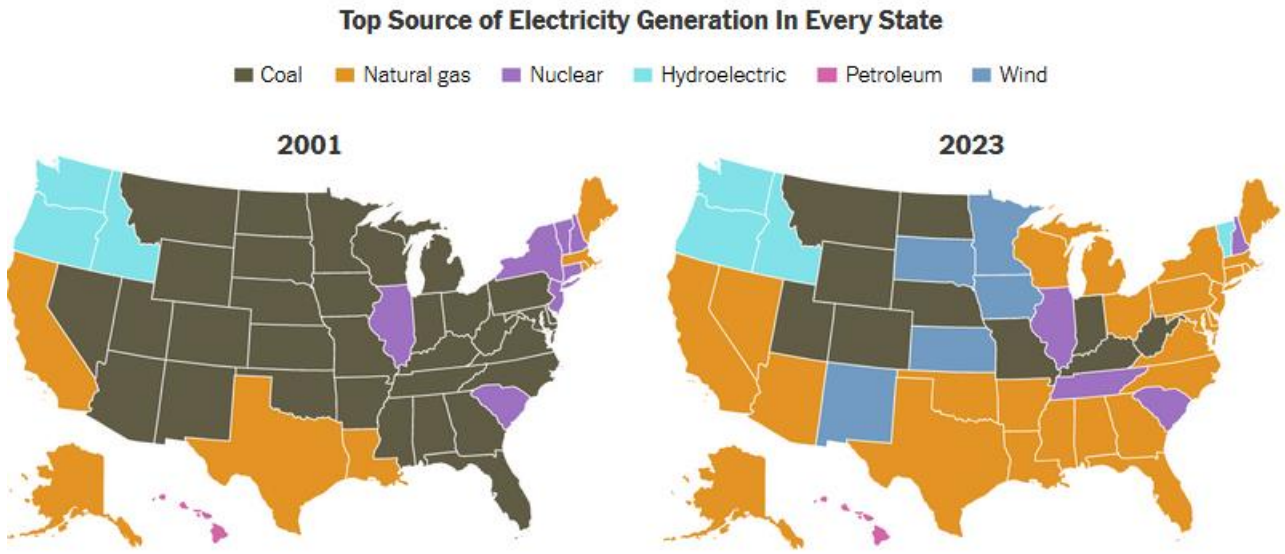


Source: U.S. Energy Information Administration



bills. Heat Pump rebates are rolling out at different times in different United states. For example Wisconsin will roll out Heat Pump rebates next month in September 2024 with rebates up to $8,000 based on a sliding income scale, so that they will be available for current indigent indoor residential wood burners at almost no cost when the wood burners hand in their polluting sources of home heating in exchange for clean energy Heat Pumps. Using a Heat Pump with Electricity from a grid that is sourced by the cleanest possible energy source will make a real impact on cleaning the air, and slowing climate change that we all experience in the form of wildfires and polluting wildfire smoke in 2024. Prevent what is preventable and practice preventive health care at the same time by using Heat Pumps instead of indoor residential wood burning. The best case scenario is to use electricity for Heat Pumps from a clean energy source. From the article below. Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization. America isn't making electricity the way it did two decades ago. How the United States made electricity from 2001 to 2023

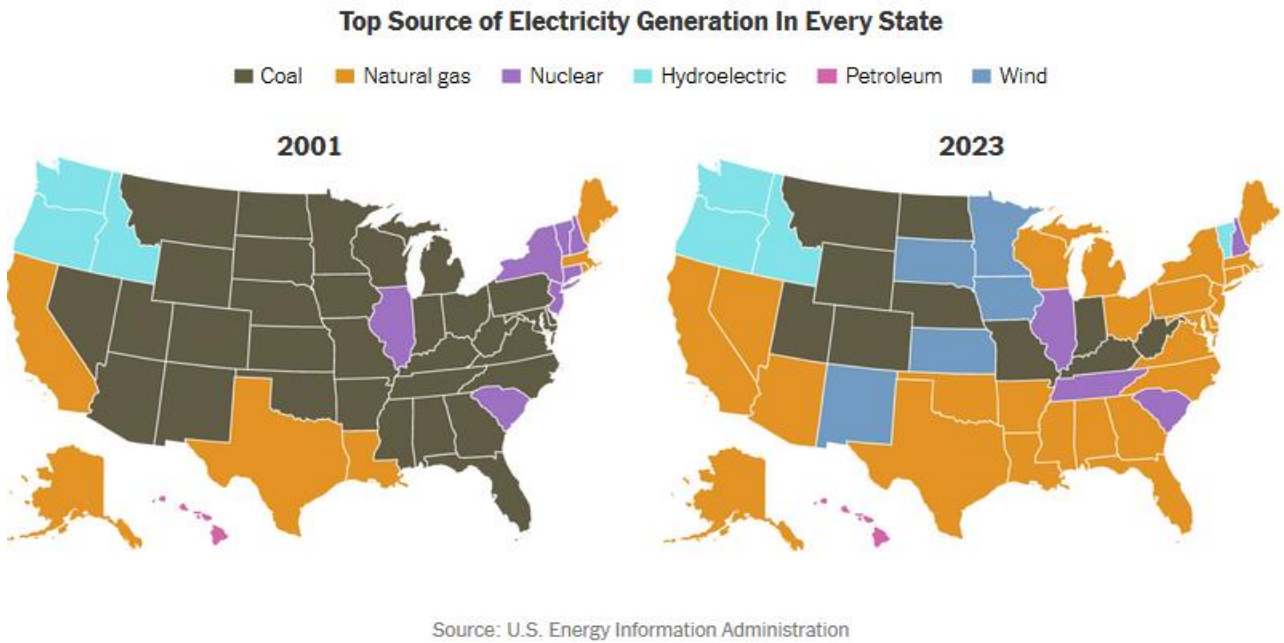


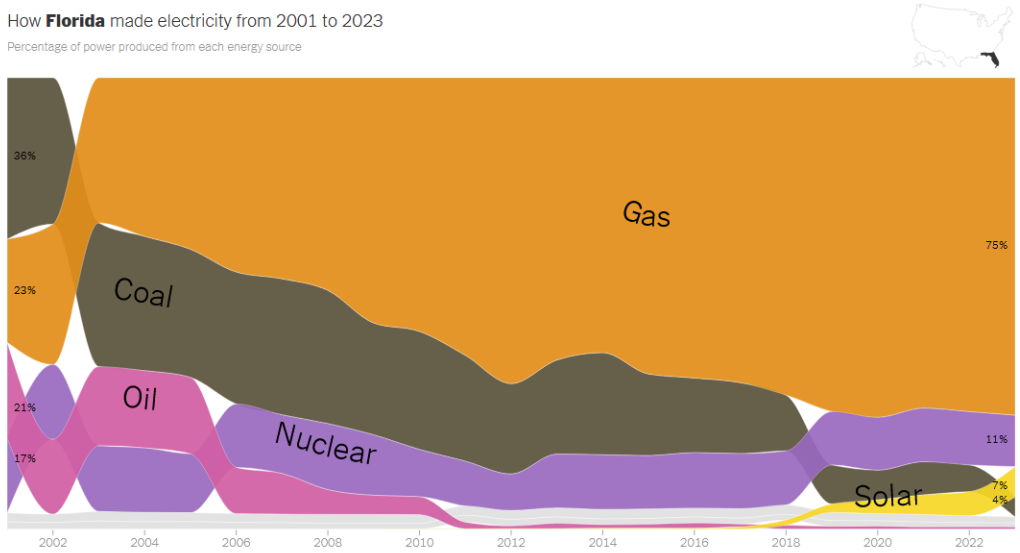


Source: U.S. Energy Information Administration

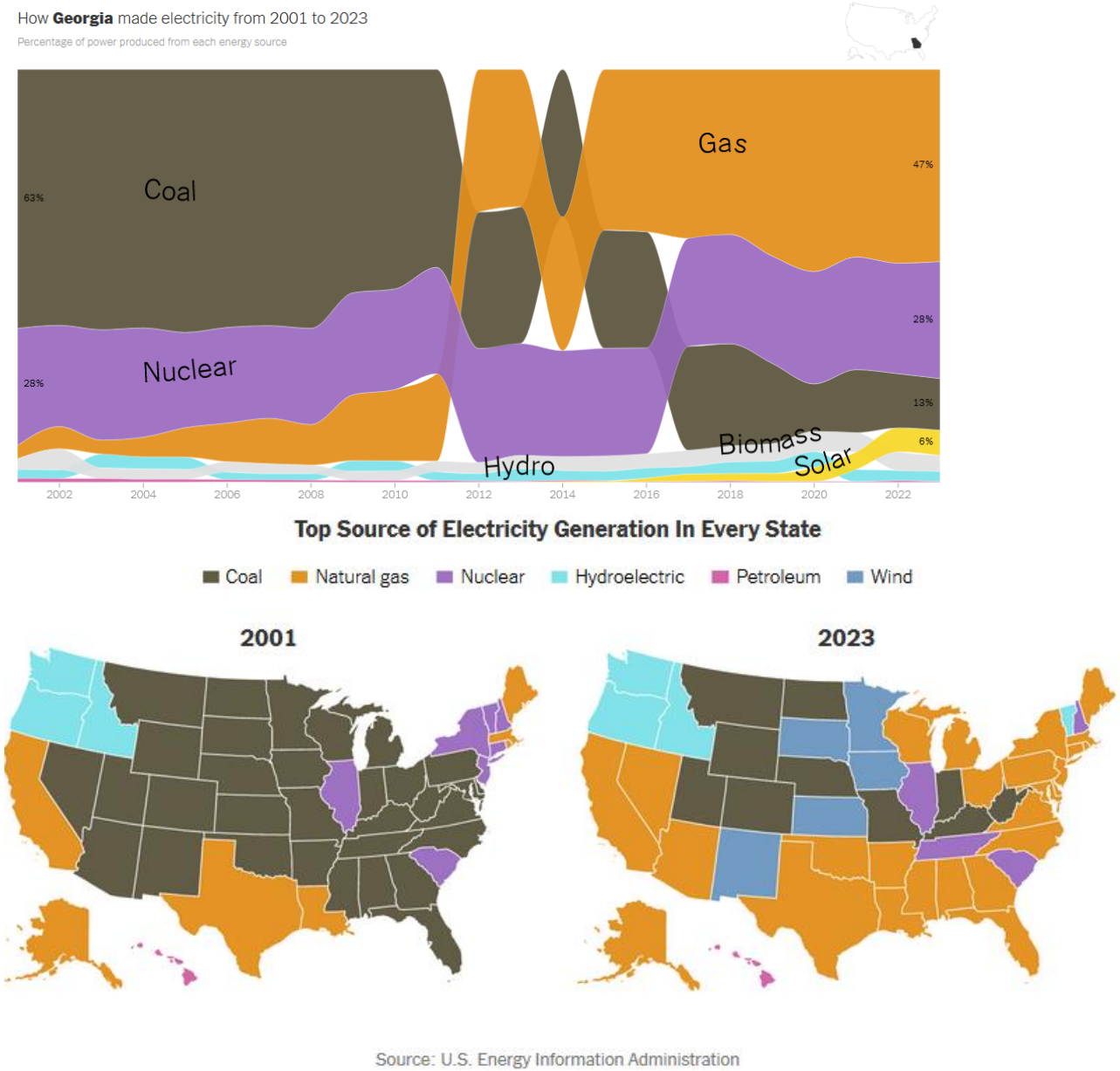
Percentage of power produced from each energy source 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022 CoalGasNuclearHydroelectricWindPetroleumSolar 51%17%21%6%16%42%18%6%10%6%

Natural gas surpassed coal as the country's top source of power in 2016, and renewables like wind and solar have grown quickly to become major players in the U.S. power system. But every state has its own story. In Nevada, natural gas became the top source of electricity generation in 2005, earlier than in many other places. More recently, solar power has surged there. Wind has taken off in Iowa over the past two decades, beating out coal in 2019 to become the state's largest source of power generation. Even in Wyoming, where coal still dominates, alternative sources of power have made steady gains. Fossil fuels still generate the majority of America's electricity, but the shift from coal to natural gas and renewable power has helped reduce planet-warming carbon dioxide emissions and other harmful pollution. Last year, coal was the top electricity fuel in 10 states, down from 32 states in 2001. Natural gas largely took





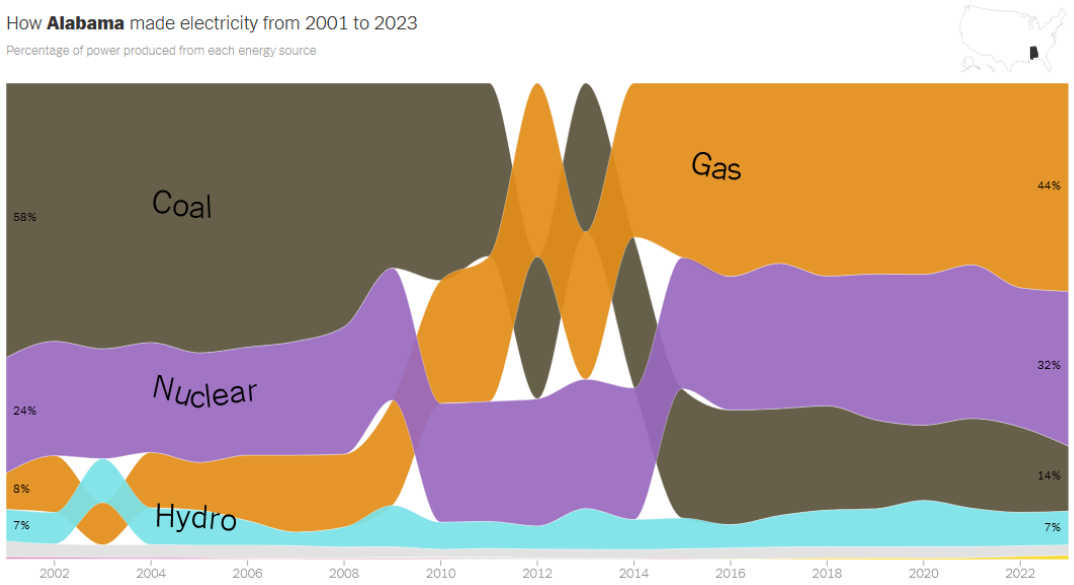
over during that time, but wind also emerged as a leading power source across the Midwest. Top Source of Electricity Generation In Every State. Coal Natural gas Nuclear Hydroelectric Petroleum Wind 2001 2023 Source: U.S. Energy Information Administration Still, experts say there is a long way to go if the country wants to zero out emissions from the power sector to fight climate change, a goal set by President Biden. Switching from coal to gas “gets you part of the way there,” said a professor at the Climate School at Columbia University, because burning natural gas for power produces fewer carbon dioxide emissions than burning coal. But fewer emissions is not the same as zero emissions, she added. “Many more technologies, including renewables, need to be built quickly to get us all the way to our climate goals,” she said. We charted how electricity generation has changed in every state so far, from 2001 to 2023, using data from the United States Energy Information Administration. Find your state below: Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization.



Ep56WRA1 of 10 How Alabama made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearHydro 58%8%24%7%14%44%32%7%

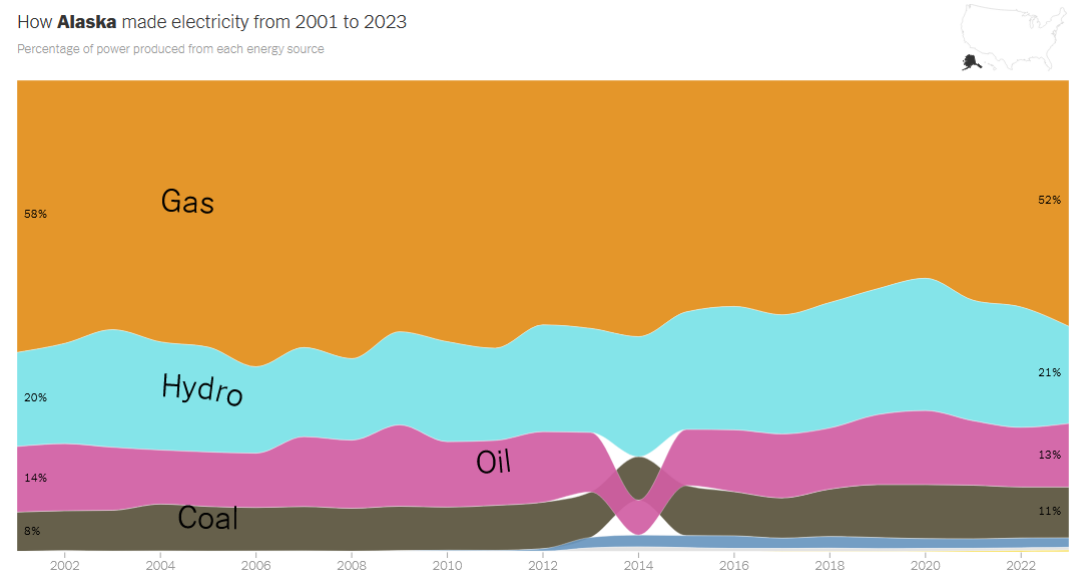
RAWSEP View: In Alabama Natural Gas is the top electricity source. Hydro is the top renewable energy source. If wood burning is considered carbon free in Alabama because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Alabama replaced coal burning with wood burning based on that scientifically debunked theory then on paper Alabama might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning. Alabama is an energy exporter.



Ep56WRA2 of 10 How Alaska made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasHydroOil 8%58%20%14%11%52%21%13%

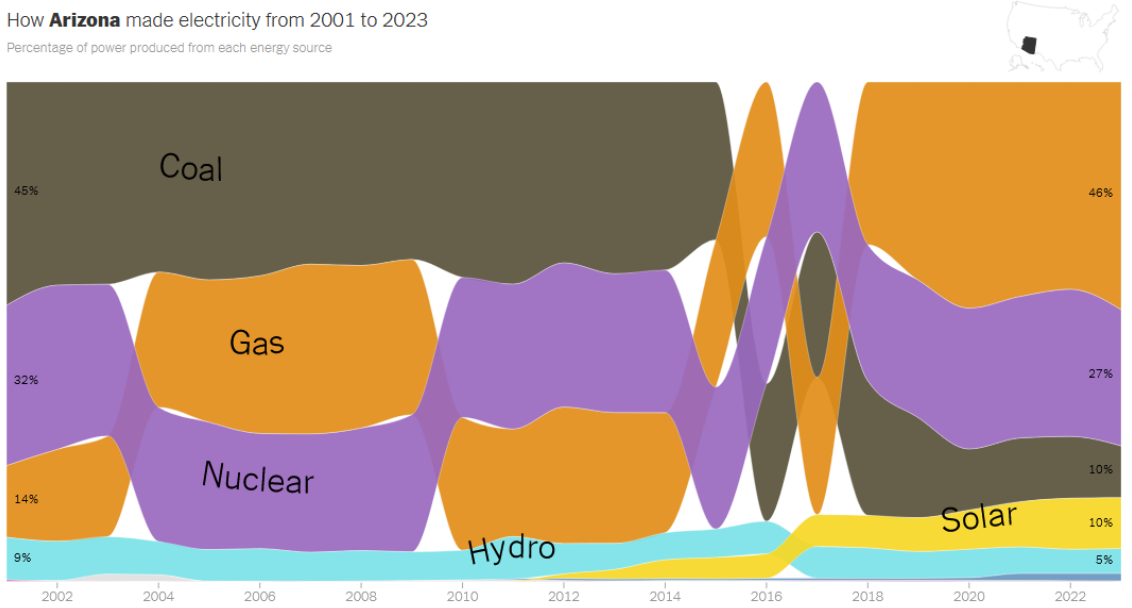
RAWSEP View: In Alaska Natural Gas is the top electricity source. There is some use of wind power. Alaska is not an energy exporter nor an energy importer. Wood burning is not mentioned in this article although wood burning is a significant source of air pollution in many areas of Alaska. If wood burning is considered carbon free in Alaska because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Alaska replaced coal burning with wood burning based on that scientifically debunked theory then on paper Alaska might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning.



Ep56WRA3 of 10 How Arizona made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearHydroSolar 45%14%32%9%10%46%27%5%10%

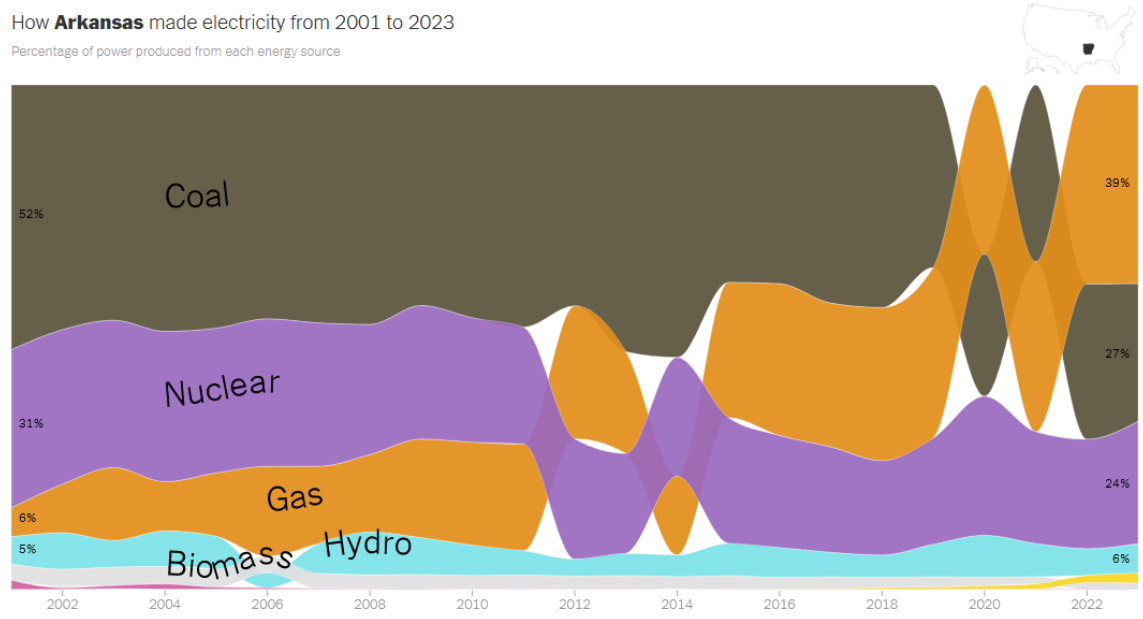
RAWSEP View: In Arizona Natural Gas is the top electricity source at 46 percent. Nuclear power is also a large source of energy. Arizona Public Service set a voluntary goal of getting 65 percent of its electricity from carbon-free sources by 2030. If wood burning is considered carbon free in Arizona because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Arizona replaced coal burning with wood burning based on that scientifically debunked theory then on paper Arizona might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning.



Ep56WRA4 of 10 How Arkansas made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearHydroBiomass 52%6%31%5%27%39%24%6%

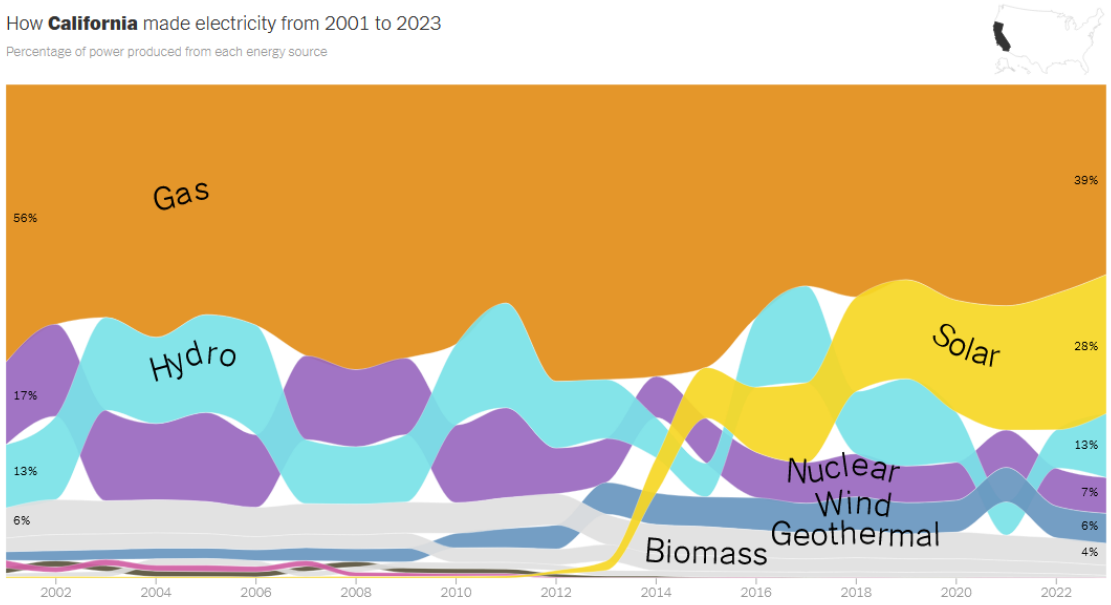
RAWSEP View: In Arkansas Natural Gas is the top electricity source since 2022. Arkansas is an energy exporter. If wood burning is considered carbon free in Arkansas because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Arkansas replaced coal burning with wood burning based on that scientifically debunked theory then on paper Arkansas might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning.



Ep56WRA5 of 10 How California made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
GasNuclearHydroWindGeothermalBiomassSolar 56%17%13%6%39%7%13%6%4%28%

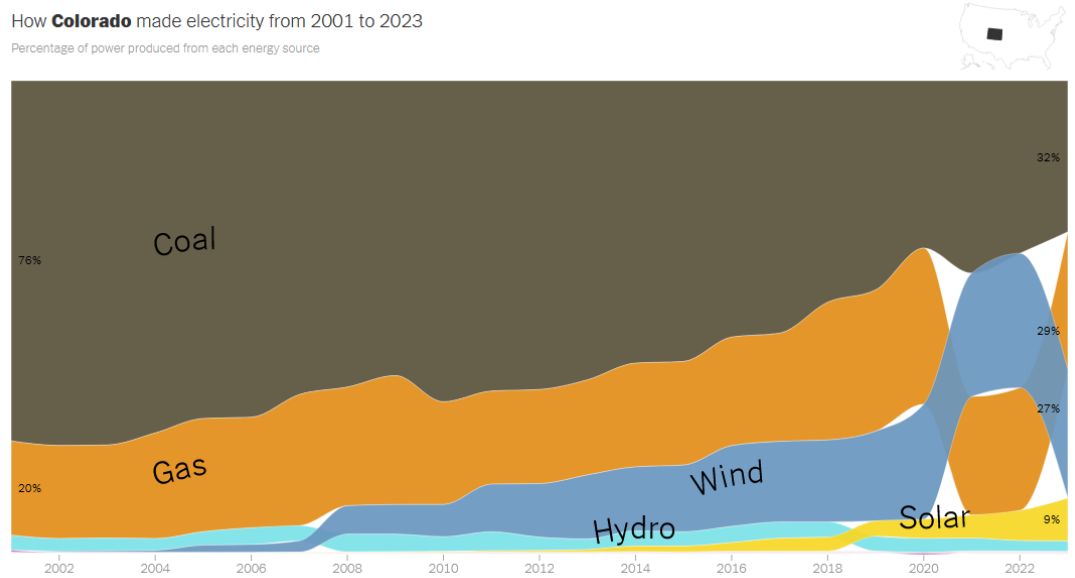
RAWSEP View: In California Natural Gas is the top electricity source since 2001. This article does not mention wood burning in California. If wood burning is considered carbon free in California because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if California replaced coal burning with wood burning based on that scientifically debunked theory then on paper California might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning. California imports energy.



Ep56WRA6 of 10 How Colorado made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasHydroWindSolar 76%20%32%29%27%9%

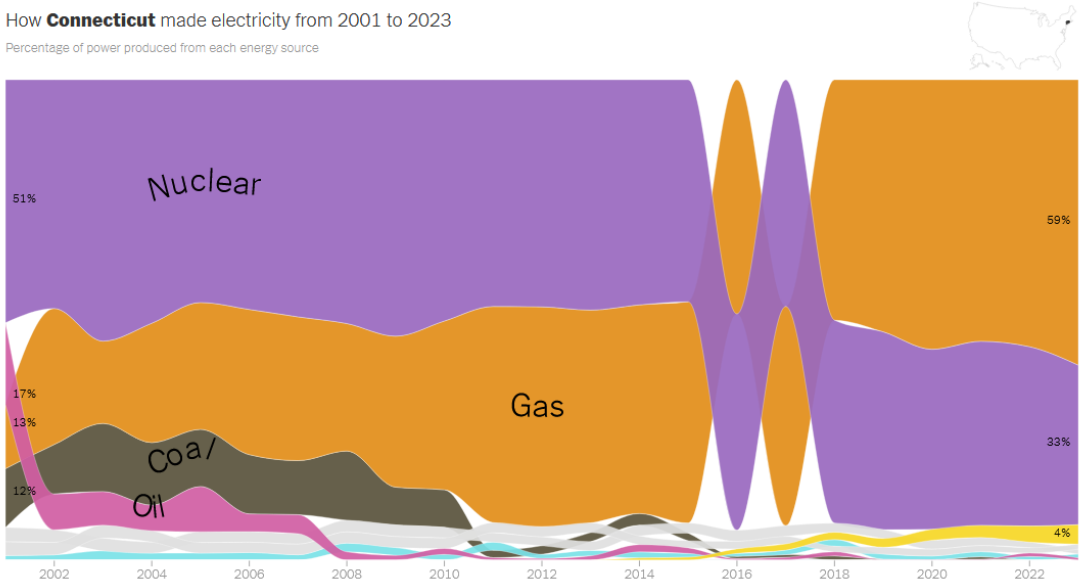
RAWSEP View: In Colorado Coal is the top electricity source since 2001. Wind power is the third largest source of energy in Colorado behind natural gas. This article does not mention wood burning in Colorado. If wood burning is considered carbon free in Colorado because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Colorado replaced coal burning with wood burning based on that scientifically debunked theory then on paper Colorado might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning. Colorado imports energy.



Ep56WRA7 of 10 How Connecticut made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearOil 12%13%51%17%59%33%4%

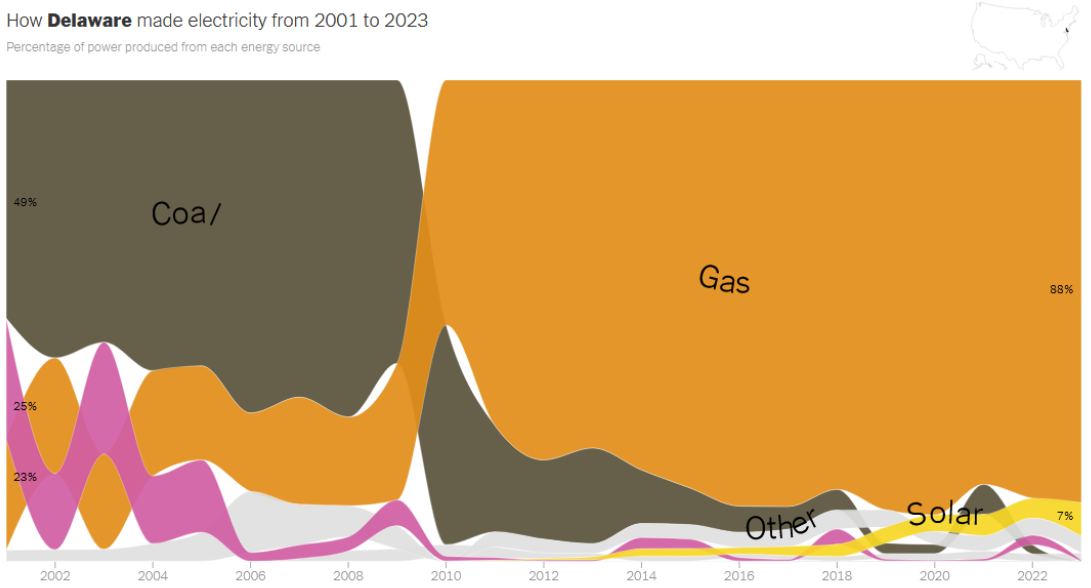
RAWSEP View: In Connecticut Natural Gas is the top electricity source since 2001. Nuclear power is a substantial energy source in Connecticut. This article does not mention wood burning in Connecticut. If wood burning is considered carbon free in Connecticut because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Connecticut replaced coal burning with wood burning based on that scientifically debunked theory then on paper Connecticut might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning.



Ep56WRA8 of 10 How Delaware made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasOtherSolar 49%23%25%88%7%

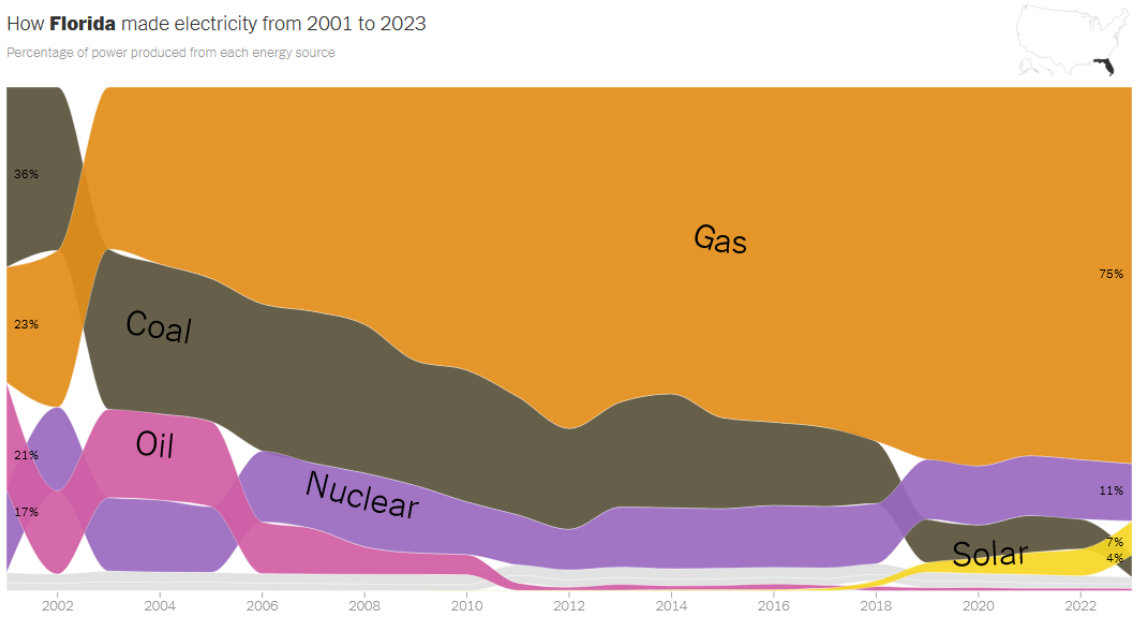
RAWSEP View: In Delaware Natural Gas is the top electricity source since 2010. Solar supplies ten percent of Delaware energy. This article does not mention wood burning in Delaware. If wood burning is considered carbon free in Delaware because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Delaware replaced coal burning with wood burning based on that scientifically debunked theory then on paper Delaware might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning. Delaware imports energy.



Ep56WRA9 of 10 How Florida made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearOilSolar 36%23%17%21%4%75%11%7%

RAWSEP View: In Florida Natural Gas is the top electricity source since 2003, supplying 75% of Florida energy since 2023. In 2024, Florida lawmakers passed a bill that cuts support for renewable energy projects and makes it easier to build natural gas infrastructure. This article does not mention wood burning in Florida. If wood burning is considered carbon free in Florida because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Florida replaced coal burning with wood burning based on that scientifically debunked theory then on paper Florida might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning. Florida is the second-largest producer of electricity nationwide, after Texas, but still imports a small amount of power from neighboring states to meet consumer demand



Ep56WRA10 of 10 How Georgia made electricity from 2001 to 2023

Percentage of power produced from each energy source
2002 2004 2006 2008 2010 2012 2014 2016 2018 2020 2022
CoalGasNuclearHydroBiomassSolar 63%28%13%47%28%6%

RAWSEP View: In Georgia Natural Gas is the top electricity source for most of the last decade, with nuclear power in second place. Georgia is the only state to bring new nuclear capacity online in recent years: Two new reactors that opened in 2023 and 2024. Georgia is also still expanding fossil fuel power. This article does not mention wood burning in Georgia. If wood burning is considered carbon free in Georgia because of the scientifically debunked theory of Carbon Neutrality of Wood Burning and if Georgia replaced coal burning with wood burning based on that scientifically debunked theory then on paper Georgia might seem to be meeting carbon free goals while in reality producing more air pollution than with coal burning.