WASHINGTON — In the strongest action ever taken in the United States to combat climate change, President Obama will unveil on Monday a set of environmental regulations devised to sharply cut planet-warming greenhouse gas emissions from the nation’s power plants and ultimately transform America’s electricity industry.

The rules are the final, tougher versions of proposed regulations that the Environmental Protection Agency announced in 2012 and 2014. If they withstand the expected legal challenges, the regulations will set in motion sweeping policy changes that could shut down hundreds of coal-fired power plants, freeze construction of new coal plants and create a boom in the production of wind and solar power and other renewable energy sources.

As the president came to see the fight against climate change as central to his legacy, as important as the Affordable Care Act, he moved to strengthen the energy proposals, advisers said. The health law became the dominant political issue of the 2010 congressional elections and faced dozens of legislative assaults before surviving two Supreme Court challenges largely intact.

“Climate change is not a problem for another generation, not anymore,” Mr. Obama said in a video posted on Facebook at midnight Saturday. He called the new rules “the biggest, most important step we’ve ever taken to combat climate change.”

The most aggressive of the regulations requires the nation’s existing power
plants to cut emissions 32 percent from 2005 levels by 2030, an increase from the 30 percent target proposed in the draft regulation.

That new rule also demands that power plants use more renewable sources of energy like wind and solar power. While the proposed rule would have allowed states to lower emissions by transitioning from plants fired by coal to plants fired by natural gas, which produces about half the carbon pollution of coal, the final rule is intended to push electric utilities to invest more quickly in renewable sources, raising to 28 percent from 22 percent the share of generating capacity that would come from such sources.

In its final version, the rule retains the same basic structure as the draft proposal: It assigns each state a target for reducing its carbon pollution from power plants, but allows states to create their own custom plans for doing so. States have to submit an initial version of their plans by 2016 and final versions by 2018.

But overall, the final rule is even stronger than earlier drafts and can be seen as an effort by Mr. Obama to stake out an uncompromising position on the issue during his final months in office.

The anticipated final climate change regulations have already set off what is expected to be broad legal, legislative and political backlash as dozens of states, major corporations and industry groups prepare to file lawsuits challenging them.

Senator Mitch McConnell of Kentucky, the Republican majority leader, has started an unusual pre-emptive campaign against the rules, asking governors to refuse to comply. Attorneys general from more than a dozen states are preparing legal challenges against the plan. Experts estimate that as many as 25 states will join in a suit against the rules and that the disputes will end up before the Supreme Court.

Leading the legal charge are states like Wyoming and West Virginia with economies that depend heavily on coal mining or cheap coal-fired electricity. Emissions from coal-fired power plants are the nation’s single largest source of carbon pollution, and lawmakers who oppose the rules have denounced them as a “war on coal.”
“Once the E.P.A. finalizes this regulation, West Virginia will go to court, and we will challenge it,” Patrick Morrisey, the attorney general of West Virginia, said in an interview with a radio station in the state on Friday. “We think this regulation is terrible for the consumers of the state of West Virginia. It’s going to lead to reduced jobs, higher electricity rates, and really will put stress on the reliability of the power grid. The worst part of this proposal is that it’s flatly illegal under the Clean Air Act and the Constitution, and we intend to challenge it vigorously.”

Although Obama administration officials have repeatedly said states will have flexibility to design their own plans, the final rules are explicitly meant to encourage the use of interstate cap-and-trade systems, in which states place a cap on carbon pollution and then create a market for buying permits or credits to pollute. The idea is that forcing companies to pay to pollute will drive them to cleaner sources of energy.

Mr. Obama tried but failed to push through a cap-and-trade bill in his first term, and since then, the term has become politically toxic: Republicans have attacked the idea as “cap and tax.”

But if the climate change regulations withstand legal challenges, many states could still end up putting cap-and-trade systems into effect. Officials familiar with the final rules said that in many cases, the easiest and cheapest way for states to comply would be by adopting cap-and-trade systems.

The rules take into account the fact that some states may refuse to submit plans, and on Monday, the administration will also unveil a template for a plan to be imposed on such states. That plan will include the option of allowing a state to join an interstate cap-and-trade system.

The rules will also offer financial benefits for states that choose to take part in cap-and-trade systems. The final rules will extend until 2022 the timeline for states and electric utilities to comply, two years later than originally proposed. But states that begin to take actions to cut carbon pollution as early as 2020 will be rewarded with carbon reduction credits — essentially, pollution permits that can be sold for cash in a cap-and-trade market.
Climate scientists warn that rising greenhouse gas emissions are rapidly moving the planet toward a global atmospheric temperature increase of 3.6 degrees Fahrenheit, the point past which the world will be locked into a future of rising sea levels, more devastating storms and droughts, and shortages of food and water. Mr. Obama’s new rules alone will not be enough to stave off that future. But experts say that if the rules are combined with similar action from the world’s other major economies, as well as additional action by the next American president, emissions could level off enough to prevent the worst effects of climate change.

Mr. Obama intends to use the new rules to push other countries to commit to deep reductions in their own carbon emissions before a United Nations summit meeting in Paris in December, when a global accord to fight climate change is expected to be signed.

Mr. Obama’s pledge that the United States would enact the climate change rules was at the heart of a pact that he made last year with President Xi Jinping of China, committing their nations, the world’s two largest carbon polluters, to substantially cut emissions.

“It’s the linchpin of the administration’s domestic effort and international effort on climate change,” said Durwood Zaelke, president of the Institute for Governance and Sustainable Development, a research organization. “It raises the diplomatic stakes in the run-up to Paris. He can take it on the road and use it as leverage with other big economies — China, India, Brazil, South Africa, Indonesia.”

While opponents of the rules have estimated that compliance will cost billions of dollars, raise residential electricity rates and slow the American economy, the administration argues that the rules will save the average American family $85 annually in electricity costs and bring additional health benefits by reducing emissions of pollutants that cause asthma and lung disease.

The rules will be announced at a White House ceremony on Monday and signed by Gina McCarthy, the Environmental Protection Agency administrator. While the ceremony is scheduled to take place on the White House’s South Lawn, officials said it might be moved indoors to the East Room after forecasters predicted that the weather would be too hot.