

PUBLISHED

UNITED STATES COURT OF APPEALS
FOR THE FOURTH CIRCUIT

No. 18-1684

STATE OF SOUTH CAROLINA,

Plaintiff – Appellee,

v.

UNITED STATES OF AMERICA; UNITED STATES DEPARTMENT OF ENERGY; RICK PERRY, in his official capacity as Secretary of Energy; NATIONAL NUCLEAR SECURITY ADMINISTRATION; LISA E. GORDON-HAGERTY, in her official capacity as Administrator of the National Nuclear Security Administration and Undersecretary for Nuclear Security,

Defendants – Appellants.

Appeal from the United States District Court for the District of South Carolina, at Aiken.
J. Michelle Childs, District Judge. (1:18-cv-01431-JMC)

Argued: September 27, 2018

Decided: January 8, 2019

Before NIEMEYER, KING, and WYNN, Circuit Judges.

Vacated and remanded by published opinion. Judge Wynn wrote the opinion, in which Judge Niemeyer and Judge King joined.

ARGUED: Andrew Alperin Rohrbach, UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C., for Appellants. Randolph R. Lowell, WILLOUGHBY & HOEFER, PA, Columbia, South Carolina, for Appellee. **ON BRIEF:** Chad A. Readler, Acting Assistant Attorney General, Mark B. Stern, Daniel Tenny, Civil Division,

UNITED STATES DEPARTMENT OF JUSTICE, Washington, D.C.; Sherri A. Lydon,
United States Attorney, OFFICE OF THE UNITED STATES ATTORNEY, Columbia,
South Carolina, for Appellants.

WYNN, Circuit Judge:

The State of South Carolina brought this action to enjoin the United States of America and other Defendants¹ (collectively, “the United States”) from terminating the construction of a mixed-oxide fuel nuclear processing facility located at the Savannah River Site in South Carolina. South Carolina alleges that the United States Department of Energy unlawfully failed to (1) prepare a supplemental Environmental Impact Statement analyzing the long-term storage of plutonium in the state; and (2) follow statutory waiver provisions for terminating construction of the facility. We conclude that South Carolina has not established standing to pursue either of these claims. Accordingly, we vacate the preliminary injunction imposed by the district court.

I.

Following the collapse of the Soviet Union and the end of the Cold War, the United States of America and the Russian Federation began a worldwide nuclear nonproliferation effort that included developing plans for the safe disposition of nuclear weapons material. As part of this nonproliferation pact, the Department of Energy began studying the effects of various nuclear waste storage and disposal strategies. In its initial 1996 study, the Department of Energy prepared an Environmental Impact Statement in accordance with Section 4332 of the National Environmental Policy Act (“NEPA”), 42

¹ The other Defendants are the United States Department of Energy; Rick Perry, in his official capacity as Secretary of Energy; the National Nuclear Security Administration; and Lisa E. Gordon-Hagerty, in her official capacity as Administrator of the National Nuclear Security Administration.

U.S.C. § 4321 *et seq.*, analyzing the potential environmental consequences associated with the long-term storage of weapons-grade plutonium and highly enriched uranium prior to disposition. The Environmental Impact Statement addressed storage of these materials for a period of up to fifty years.

Ultimately, the Department of Energy determined that the best approach to nuclear waste disposal was a dual strategy involving (1) immobilization of a portion of the surplus plutonium in glass or ceramic; and (2) irradiation of the remaining plutonium in mixed oxide fuel (the “MOX process”). Both strategies would convert the surplus nuclear material into forms that would meet the National Academy of Science’s Spent Fuel Standard, meaning that the material would be “inaccessible and unattractive for weapons” use. J.A. 78.

In 1997, the Department of Energy announced its intention to build a new mixed oxide fuel fabrication facility (the “MOX facility”) to dispose of some of the nuclear material using the MOX process. Following completion of a supplemental Environmental Impact Statement and a Record of Decision in January of 2000, the Department of Energy announced that the MOX facility would be located at the Savannah River Site along South Carolina’s border with Georgia. The facility’s original production goals included disposition of up to thirty-three metric tons of nuclear material using the MOX process and immobilization of up to seventeen metric tons of additional nuclear material. As part of its supplemental Environmental Impact Statement, the Department of Energy continued to look at the environmental impacts of long-term plutonium storage.

In 2002, the Department of Energy decided to drop the immobilization portion of the disposition strategy, leaving the MOX process as the sole plutonium disposal method. That same year, Congress directed the Secretary of Energy to submit a plan for the construction and operation of the MOX facility at the Savannah River site. Pub. L. No. 107-314, § 3182 (2002), *subsequently codified* as 50 U.S.C. § 2566. Congress further authorized the Secretary to take corrective actions if the construction timetable and operation schedule for the MOX facility were not being met. Additionally, Congress also required that in the event the MOX facility failed to achieve its production goals, the Department of Energy remove plutonium shipped to South Carolina for processing. *See* 50 U.S.C. § 2566(c), § 2566(e). Finally, as part of its findings, Congress mentioned the economic benefit that the MOX facility would bring to the State of South Carolina, noting that the economic benefit would not be fully realized unless the facility was built. *See* Pub. L. No. 107-314 at § 3181.

Three years later, in 2005, the Department of Energy began transferring plutonium to the Savannah River Site for conversion, and in 2007, construction began on the MOX facility. The original cost estimate for construction of the facility was \$4.8 billion, with completion anticipated in 2016. And the original production goal estimate for the facility was to have thirty-four metric tons of defense plutonium processed no later than January 1, 2019. 50 U.S.C. § 2566(a)(2)(B).

These original estimates proved grossly inaccurate due to delays and cost overruns in the construction of the MOX facility. The Department of Energy now estimates cost

for construction of the facility to be \$17.17 billion, with completion now anticipated to be in 2048, over thirty years beyond the original estimated schedule.

Since 2014, the Department of Energy has sought to terminate the MOX program and pursue an alternative method of plutonium disposal known as “Dilute and Dispose,” which it contends is less costly, faster, and safer. Under the Dilute and Dispose method, nuclear material would be “downblended” with inhibitor materials to reduce the plutonium content to less than ten percent by weight. Upon completion of the downblending process, the material would then be shipped from the Savannah River Site to the Waste Isolation Pilot Plant near Carlsbad, New Mexico, for permanent disposal.

Thus far, Congress has continued to fund construction of the MOX facility and has, to date, restricted the Department of Energy from utilizing MOX-related appropriations to begin termination of the program. To that end, in 2017, Congress enacted a statute providing that the Secretary of Energy “shall carry out construction and project support activities relating to the MOX facility.” Pub. L. 115-91, § 3121(a), 131 Stat. 1283, 1892.

However, Section 3121(b) of that statute allows the Secretary of Energy to discontinue construction of the MOX facility if certain conditions have been met. Specifically, the Secretary of Energy must submit to the Congressional defense committees:

(A) the commitment of the Secretary [of Energy] to remove plutonium intended to be disposed of in the MOX facility from South Carolina and ensure a sustainable future for the Savannah River Site;

(B) a certification that—

- (i) an alternative option for carrying out the plutonium disposition program for the same amount of plutonium as the amount of plutonium intended to be disposed of in the MOX facility exists, meeting the requirements of the Business Operating Procedure of the National Nuclear Security Administration entitled “Analysis of Alternatives” and dated March 14, 2016 (BOP-03.07); and
 - (ii) the remaining lifecycle cost, determined in a manner comparable to the cost estimating and assessment best practices of the Government Accountability Office [“GAO”], as found in the document of the Government Accountability Office entitled “GAO Cost Estimating and Assessment Guide” (GAO-09-3SP), for the alternative option would be less than approximately half of the estimated remaining lifecycle costs of the mixed oxide fuel program; and
- (C) the details of any statutory or regulatory changes necessary to complete the alternative option.

§ 3121(b)(1).

Additionally, in exercising his authority to discontinue construction of the MOX facility, the Secretary of Energy

- (1) shall concurrently submit to the Committees on Appropriations of both Houses of Congress the lifecycle cost estimate used to make the certification under section 3121(b) of such Act; and
- (2) may not use funds provided for the Project to eliminate such Project until the date that is 30 days after the submission of the lifecycle cost estimate required under paragraph (1).

Pub. L. No. 115-141, § 309(c), 132 Stat. 348, 530 (2018).

Pursuant to these provisions, on May 10, 2018, the Secretary of Energy submitted a letter to the Chairman of the House Armed Services Committee that purported to execute the authority of the Secretary of Energy under Section 3121(b) to discontinue construction of the MOX facility. The Secretary of Energy certified, *inter alia*, that (1)

the Department of Energy is committed to removing plutonium from South Carolina; (2) an alternative option for carrying out the plutonium disposition, the Dilute and Dispose method, exists and has a lifecycle cost of less than approximately half of the remaining lifecycle cost for the MOX program; (3) the Department of Energy estimated the cost of the Dilute and Dispose approach in a manner compatible with the best practices of the GAO; and (4) the Department of Energy is committed to ensuring a sustainable future for the Savannah River Site. The Secretary of Energy further reported that the Department of Energy expected the total cost of disposition via the Dilute and Dispose method to be \$19.9 billion, compared to \$49.4 billion for the total cost of construction of the MOX facility and conversion of all the plutonium into MOX fuel.

In accordance with the Secretary of Energy's letter, the Department of Energy and the National Nuclear Security Administration issued a Partial Stop Work Order on May 14, 2018, ending all new contracts and hiring related to the MOX program. The Department of Energy further indicated its intent to issue a Full Stop Work Order and begin winding down the MOX program, including terminating employees currently working on the project, on or about June 11, 2018.

On May 25, 2018, before the Department of Energy issued a full stop work order, South Carolina brought this action in the United States District Court for the District of South Carolina and moved for a preliminary injunction barring the federal government from terminating the MOX program. In its complaint, South Carolina asserted that the United States (1) violated NEPA by failing to prepare a supplemental Environmental Impact Statement covering a period of more than fifty years and (2) failed to satisfy

Section 3121(b) because of the alleged insufficiency of the Secretary of Energy's certifications.²

On June 7, 2018, the district court granted South Carolina's motion for preliminary injunction. The district court first found that South Carolina had standing due to environmental risks associated with long-term storage at the Savannah River Site, which abuts property owned by South Carolina. As to the merits, the district court held, in pertinent part, that South Carolina was likely to succeed on the merits of its NEPA claim and its claim that the Secretary of Energy's certifications were insufficient. The district court further found that South Carolina would be irreparably harmed absent a preliminary injunction and that the balance of equities tilted in South Carolina's favor. Thus, the district court enjoined the federal government from ceasing construction of the MOX facility and issuing the full stop work order. The United States timely appealed.

After careful review, we dispositively hold that South Carolina failed to establish standing and therefore we do not reach the district court's determination on the merits of this matter.

² South Carolina further claimed that the United States violated 50 U.S.C. § 2567 by failing to consult with the governor before deciding to terminate the MOX facility. The district court held that South Carolina failed to establish that that claim was likely to succeed on the merits, and therefore that claim is not before this Court.

II.

A.

On appeal, the United States contends that the district court erred in concluding that South Carolina established standing to pursue the two claims that serve as the basis of the district court’s preliminary injunction order—the NEPA claim and the claim premised on the alleged insufficiency of the Secretary’s certifications. The standing doctrine derives from “the Constitution’s limitation on Article III courts’ power to adjudicate ‘cases and controversies.’” *Frank Krasner Enters. v. Montgomery Cty.*, 401 F.3d 230, 234 (4th Cir. 2005) (quoting *Allen v. Wright*, 468 U.S. 737, 750–51 (1984), *abrogated on other grounds by Lexmark Intern., Inc. v. Static Control Components, Inc.*, 572 U.S. 118 (2014)). Standing implicates the court’s subject matter jurisdiction. *Long Term Care Partners, LLC v. United States*, 516 F.3d 225, 230 (4th Cir. 2008).

Here, South Carolina, as plaintiff, bears the burden of establishing standing to assert each of its claims. *See id.*; *see also Lewis v. Casey*, 518 U.S. 343, 359 n.6 (1996) (“[A] plaintiff who has been subject to injurious conduct of one kind [does not] possess by virtue of that injury the necessary stake in litigating conduct of another kind, although similar, to which he has not been subject.” (internal quotation marks omitted)). We review the question of whether South Carolina possesses standing *de novo*. *Frank Krasner Enters.*, 401 F.3d at 234.

To establish Article III standing, “a plaintiff must show (1) it has suffered an ‘injury in fact’ that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the challenged action of

the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.” *Friends of the Earth, Inc. v. Laidlaw Env'tl. Servs. (TOC), Inc.*, 528 U.S. 167, 180–81 (2000). The United States contends South Carolina failed to show it has suffered an injury-in-fact sufficient to give rise to Article III standing.

To satisfy the injury-in-fact requirement, a plaintiff must establish a “realistic danger of sustaining a direct injury.” *Peterson v. Nat’l Telcoms. & Info. Admin.*, 478 F.3d 626, 632 (4th Cir. 2007) (quoting *Babbitt v. United Farm Workers Nat’l Union*, 442 U.S. 289, 298 (1979)). “[W]hile it is true ‘that threatened rather than actual injury can satisfy Article III standing requirements,’ . . . not all threatened injuries constitute an injury-in-fact.” *Beck v. McDonald*, 848 F.3d 262, 271 (4th Cir. 2017) (quoting *Friends of the Earth, Inc. v. Gaston Copper Recycling Corp.*, 204 F.3d 149, 160 (4th Cir. 2000) (en banc)). “Rather, as the Supreme Court has ‘emphasized repeatedly,’ an injury-in-fact ‘must be concrete in both a qualitative and temporal sense.’” *Id.* (quoting *Whitmore v. Arkansas*, 495 U.S. 149, 155 (1990)). The requirement that an alleged injury be palpable and imminent ensures that the injury “is not too speculative for Article III purposes.” *Id.* (quoting *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 564–65 n.2 (1992)).

On appeal, South Carolina contends that it has suffered an injury-in-fact sufficient to support standing because “[South Carolina] is harmed by being rendered the permanent repository of weapons-grade plutonium as a result of [the Department of Energy’s] decision to terminate the MOX Facility without first complying with NEPA or following the congressional mandates of § 3121.” Appellee’s Br. at 15–16. According to

South Carolina, this “results in increased radiation exposure to the public, increased risks of nuclear-related accidents, and an increased threat of action by rogue states or terrorists seeking to acquire weapons-grade plutonium.” *Id.* at 14. But this alleged injury is too speculative and thus, does not give rise to a concrete injury-in-fact sufficient to support either of South Carolina’s claims.

The Supreme Court has repeatedly held that an alleged harm is too “speculative” to support Article III standing when the harm lies at the end of a “highly attenuated chain of possibilities.” *Clapper v. Amnesty Int’l USA*, 568 U.S. 398, 410 (2013); *see also, e.g., Beck*, 848 F.3d at 275 (holding that plaintiffs, who received treatment at a medical center that suffered a data breach and alleged that they were at risk of experiencing identity theft, failed to establish standing because their theory of injury rested on an “attenuated chain of possibilities”).

Illustratively in *Clapper*, the Supreme Court considered a challenge to Section 702 of the Foreign Intelligence Surveillance Act, which “authoriz[es] the surveillance of individuals who are not ‘United States persons’ and are reasonably believed to be located outside the United States.” 568 U.S. at 401. The plaintiffs—a group of “attorneys and human rights, labor, legal, and media organizations”—alleged that their work demanded that they “engage in sensitive international communication with individuals who they believe are likely targets of surveillance under” Section 702, rendering it reasonably likely that the government would target and intercept the plaintiffs’ communications. *Id.* at 401, 406.

The Supreme Court held that the plaintiffs failed to establish a concrete injury-in-fact based on the possibility that their communications would be intercepted, explaining that a series of hypothetical events would have to occur before the government would intercept any particular plaintiff's communications. *Id.* at 1148–50. The Court held that among other steps, the government would have to decide to invoke its Section 702 authority to target a non-U.S. person with whom a plaintiff communicated, a panel of federal judges would have to “conclude that the Government’s proposed surveillance procedures satisfy [the statute’s] many safeguards and are consistent with the Fourth Amendment,” and the government would have to succeed in intercepting one of the target’s communications with the plaintiff. *Id.* Thus, the Court held that that the “highly attenuated chain of possibilities, d[id] not satisfy the requirement that threatened injury must be certainly impending.” *Id.* at 1148 (citation omitted).

Applying *Clapper*, this Court reached a similar conclusion in *Beck*, in which a putative class of veterans who received medical treatment at a veterans’ medical center alleged that they had been injured when two sets of records were stolen from the center. 848 F.3d at 262, 267. Although none of the named plaintiffs alleged any actual or attempted misuse of the personal information contained in their stolen records, they alleged that they suffered cognizable injuries-in-fact because they faced “(1) [an] increased risk of future identity theft, and (2) the costs of protecting against the same.” *Id.* at 273. We concluded that both alleged injuries were too speculative to confer standing. *Id.* at 275–77. As to the alleged increased risk of identity theft, in particular, we explained that plaintiffs’ theory of injury required us to “assume that the thie[ves]

targeted the stolen items for the personal information they contained” and that the thieves would “then select, from thousands of others, the personal information of the named plaintiffs, and attempt successfully to use that information to steal their identities.” *Id.* at 275. “This ‘attenuated chain’ cannot confer standing,” we held. *Id.* We likewise rejected the plaintiffs’ costs of mitigation theory of standing as a “repackaged” version of their first theory of standing, amounting to an effort to recoup “costs they incurred in response to a *speculative threat*.” *Id.* at 276 (emphasis added) (quoting *Clapper*, 568 U.S. at 416).

Here, South Carolina’s theory of standing—that it will become “the permanent repository of weapons-grade plutonium” and all the environmental, health, and safety risks that entails, Appellee’s Br. at 15–16—rests on a similarly “highly attenuated chain of possibilities,” *Clapper*, 568 U.S. at 410. Between now and 2046—when the analysis in the current Environmental Impact Statement governing the risks associated with long-term storage of weapons-grade nuclear material at the Savannah River Site expires—the Department of Energy has twenty-eight years to identify an alternative method for disposing of the nuclear material or otherwise removing it from South Carolina. The Secretary of Energy already has certified that one potential alternative to the MOX program exists, the Dilute and Dispose method. And the Department of Energy may identify and develop other methods during that twenty-eight-year period. Or the Department of Energy may decide to transfer the plutonium out of South Carolina to another location.

Furthermore, Congress has put in place contingency plans for the removal of plutonium shipped to the Savannah River Site to forestall the indefinite storage of plutonium in South Carolina. A federal statute requires that, by 2022, all additional plutonium transferred into South Carolina to the MOX facility, but not processed, must be removed. 50 U.S.C. § 2566(c)(2). Notably, because the Department of Energy already has failed to meet certain statutory time limits for disposing of nuclear material at the site, South Carolina has successfully brought suit pursuant to the Administrative Procedure Act to enforce these congressionally mandated deadlines via a mandatory injunction. *See id.* § 2566(c)(1) (requiring removal of one metric ton of plutonium no later than January 1, 2016); *South Carolina v. United States*, 243 F. Supp. 3d 673 (D.S.C. 2017), *aff'd*, 907 F.3d 742 (4th Cir. 2018) (ordering the Department of Energy to remove one metric ton of plutonium within two years).

In sum, for South Carolina’s alleged injury—becoming “the permanent repository of weapons-grade plutonium,” Appellee’s Br. at 15–16—to occur: (1) the proposed Dilute and Dispose method must fail; (2) the Department of Energy must fail to identify an alternative method for disposing of the nuclear material; and (3) the Department of Energy must breach its statutory obligation to remove the nuclear material from South Carolina, Congress must repeal that obligation, or the courts must refuse to enforce that obligation. At this juncture, before the Department of Energy has even had an opportunity to finish analyzing the Dilute and Dispose method, this “chain of possibilities” is too speculative to give rise to a sufficiently concrete injury-in-fact.

That several of the links in this “chain of possibilities” the State’s standing theory contemplates require our coordinate branches to either breach or abandon their existing commitments to ensure timely removal of the nuclear material at the Savannah River Site further weighs against treating the South Carolina’s alleged injury as conferring standing. As *Clapper* recognized, the standing doctrine is “built on separation-of-powers principles” and “serves to prevent the judicial process from being used to usurp the powers of the political branches.” 568 U.S. at 408 (citations omitted); *see also Allen v. Wright*, 468 U.S. at 752 (1984) (“[Article] III standing is built on a single basic idea—the idea of separation of powers.”). To confer standing on South Carolina at this juncture based on an alleged injury—becoming the permanent repository of nuclear material—that the political branches already have made written and legally binding commitments to forestall would improperly “usurp the powers of the political branches.” *Clapper*, 568 U.S. at 408.

The “highly attenuated chain of possibilities” that must occur for South Carolina to become the permanent repository of nuclear material also sets this case apart from this Court’s decision in *Hodges v. Abraham*, 300 F.3d 432 (4th Cir. 2002), upon which South Carolina principally relies.

Like the instant case, *Hodges* dealt with the storage of plutonium at the Savannah River Site. *Id.* at 436. In 2002, the Department of Energy issued a Record of Decision authorizing the immediate shipment of six metric tons of plutonium from a nuclear facility in Colorado to the Savannah River Site. *Id.* The Governor of South Carolina sought to enjoin shipment of the plutonium into South Carolina, alleging that the

Department of Energy's *existing* Environmental Impact Statement, and its supplemental analyses to the Environmental Impact Statement, related to storage of plutonium at the Savannah River Site violated NEPA in several ways. *Id.* at 445. This Court held that the Governor adequately alleged an injury-in-fact to support his NEPA claims because the South Carolina owned property adjacent to the Savannah River Site. *Id.* “[T]he Governor, in his official capacity, is essentially a neighboring landowner, whose property is at risk of environmental damage” as a result of the Department of Energy’s shipment of plutonium to the Savannah River Site and storage of that plutonium there, we explained. *Id.*

Here, unlike in *Hodges*, South Carolina does not argue that its injury, as a neighboring landowner, is attributable to the *current* storage of nuclear material at the Savannah River Site or the inadequacy of the Environmental Impact Statement pursuant to which the nuclear material is *currently* stored—a question that *Hodges* already resolved in the federal government’s favor. *Id.* at 446–49. Rather, South Carolina contends it is injured because the termination of the MOX program renders it the *permanent* repository of the nuclear material when the Department of Energy has not issued an Environmental Impact Statement analyzing the environmental impact of the storage of the material at the Savannah River Site *beyond the year 2046*, the year when the existing Environmental Impact Statement’s analysis terminates, or, allegedly, satisfies its statutory obligations in terminating the MOX program. There is a meaningful distinction between the alleged *immediate* environmental injuries associated with storing plutonium at the Savannah River Site, which were at issue in *Hodges*, and the alleged

future adverse environmental impacts on South Carolina as a neighboring landowner if the Department of Energy continues to store the plutonium at the Savannah River Site *decades in the future*. That distinction is particularly meaningful because, as explained above, numerous contingencies must occur in order for the plutonium to remain in South Carolina after 2046, the year when South Carolina’s alleged injury will mature.

In sum, the single theory of injury³ that South Carolina relies on to support both of its claims is too speculative at this juncture to support Article III standing. The district court, therefore, was without jurisdiction to enter its preliminary injunction premised on those two claims.

B.

For reasons similar to those that lead us to find that South Carolina lacks standing, we also find that the two claims at issue fail on ripeness grounds. Like standing, the ripeness doctrine “originates in the ‘case or controversy’ constraint of Article III.” *Scoggins v. Lee’s Crossing Homeowners Ass’n*, 718 F.3d 262, 269 (4th Cir. 2013) (citations omitted). “Analyzing ripeness is similar to determining whether a party has standing.” *Miller v. Brown*, 462 F.3d 312, 319 (4th Cir. 2006). “Although the phrasing makes the questions of who may sue and when they sue seem distinct, in practice there is an obvious overlap between the doctrines of standing and ripeness.” *Id.* (quoting Erwin

³ Because South Carolina has advanced only one theory of injury to support the two claims before this Court—that South Carolina is harmed by becoming the permanent repository of weapons-grade nuclear material—we cannot and do not take any position on whether other theories of injury would presently confer standing on South Carolina to support either of the two claims before us on appeal.

Chemerinsky, *Federal Jurisdiction* § 2.4 (4th ed. 2003). As with standing, ripeness is a question of subject matter jurisdiction. See *Sansotta v. Town of Nags Head*, 724 F.3d 533, 548 (4th Cir. 2013) (citation omitted).

The question of whether a claim is ripe “turns on the ‘fitness of the issues for judicial decision’ and the ‘hardship to the parties of withholding court consideration.’” *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 201 (1983) (citation omitted). In the context of claims challenging agency actions, like the two at issue, the purpose of the ripeness doctrine is “to prevent the courts, through avoidance of premature adjudication, from entangling themselves in abstract disagreements over administrative policies, and also to protect the agencies from judicial interference until an administrative decision has been formalized and its effects felt in a concrete way by the challenging parties.” *Abbott Labs. v. Gardner*, 387 U.S. 136, 148–49 (1967), *abrogated on other grounds by Califano v. Sanders*, 430 U.S. 99 (1977).

To be fit for judicial review, a controversy should be presented in a “clean-cut and concrete form.” *Miller*, 462 F.3d at 319 (citation omitted). This occurs when the action is “final and not dependent on future uncertainties or intervening agency rulings.” *Franks v. Ross*, 313 F.3d 184, 195 (4th Cir. 2002) (citation omitted). On the other hand, just as a plaintiff cannot assert standing based on an alleged injury that lies at the end of a “highly attenuated chain of possibilities,” *Clapper*, 568 U.S. at 410, a plaintiff’s claim is not ripe for judicial review “if it rests upon contingent future events that may not occur as anticipated, or indeed may not occur at all.” *Scoggins*, 718 F.3d at 270 (quoting *Texas v. United States*, 523 U.S. 296, 300 (1998)).

The two claims that South Carolina advances before this Court rest on the premise that South Carolina will be the permanent repository of the weapons-grade nuclear material currently stored at the Savannah River Site. But, numerous “contingent future events,” *id.*, must occur before South Carolina becomes the *permanent* repository of the nuclear material, *see supra* Part II.A. In particular, the Dilute and Dispose method must prove unworkable. The Department of Energy must fail to identify an alternative method of disposal and breach its commitment to dispose of the waste. And Congress or the courts must set aside or refuse to enforce the statutory mechanisms currently in place to ensure timely removal of the nuclear material. All of these “future uncertainties,” *Franks*, 313 F.3d at 195, lead us to conclude that the two claims at issue are not ripe for review at this time—at least as presented by South Carolina. Accordingly, the ripeness doctrine provides an additional basis for our holding that the district court was without jurisdiction to enter the preliminary injunction.

III.

In sum, the only theory of injury advanced by South Carolina—that South Carolina will be the permanent repository of the nuclear material currently stored at the Savannah River Site—rests upon a “highly attenuated chain of possibilities,” *Clapper*, 568 U.S. at 410, and “contingent future events that may not occur as anticipated, or indeed may not occur at all.” *Scoggins*, 718 F.3d at 270. In such circumstances, we must conclude that South Carolina lacks Article III standing to advance the two claims that serve as the basis of the district court’s injunction and that those two claims are not ripe for review.

That the two claims are not currently justiciable does not mean that they never will be so. If uncertainty as to several links in the chain of possibilities is resolved, then South Carolina's alleged injury may move from the speculative to the concrete, and therefore the two claims also may become ripe for review. But until that uncertainty is lifted, the Constitution demands that we withhold judicial review.

Accordingly, we vacate the preliminary injunction imposed by the district court and remand the case for further proceedings not inconsistent with this opinion.

VACATED AND REMANDED