BEFORE THE UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

People and Nature First Arizona PHS, LLC, Chilchinbeto Pumped Storage Project	)	Project No. P-15419
	)	Tó Nizhóní Áni Diné Citizens Against Ruining our Environment Black Mesa Trust Center for Biological Diversity Motions to Intervene

Tó Nizhóní Áni, Diné Citizens Against Ruining our Environment, Black Mesa Trust, Center for Biological Diversity

MOTION TO INTERVENE RE: PROJECT NO. P-15419

I. INTRODUCTION

On May 26, 2026, the Federal Energy Regulatory Commission (FERC) issued a NOTICE OF PRELIMINARY PERMIT APPLICATION ACCEPTED FOR FILING AND SOLICITING COMMENTS, MOTIONS TO INTERVENE, AND COMPETING APPLICATIONS ("Notice")

regarding an application from Nature and People First Arizona PHS, LLC ("NPFA") for a proposed project called the Chilchinbeto Pumped Storage Project ("proposed Project") (P-15419).

In accordance with the Notice and Rule 214 of the Commission's Rules of Practice and Procedure, 18 CFR § 385.214, Tó Nizhóní Áni ("TNA"), Diné Citizens Against Ruining our Environment (Diné C.A.R.E."), Black Mesa Trust, and the Center for Biological Diversity (the "Center"), and hereby timely move to intervene and become parties in the proceeding for the proposed Project P-15419.

II. COMMUNICATIONS

All correspondence, communications, pleadings and other documents relating to this proceeding should be served upon the following persons:

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III. IDENTIFICATION OF PARTIES

1. Tó Nizhóní Áni

Tó Nizhóní Áni (TNA), "Sacred Water Speaks," is a Diné-led nonprofit organization established in 2001. In 2005 TNA led efforts to end the industrial depletion of the Navajo Aquifer, Black Mesa's only source of potable water, from Peabody Western Coal Company. TNA's work is rooted in protecting the waters of Black Mesa while bringing power back to Indigenous communities impacted by coal—Tó bee iiná, "water is life."

2. Diné Citizens Against Ruining our Environment

Diné C.A.R.E. is an all-Navajo, intergenerational environmental justice non-profit organization comprised of grassroots community members active on Navajo Nation lands, including the Four Corners region of Arizona, New Mexico, and Utah. Diné C.A.R.E.'s mission is to advocate for traditional Diné teachings by protecting and providing a voice for all life within and beyond the Four Sacred Mountains. Diné C.A.R.E. promotes regenerative and sustainable uses of natural resources consistent with the Diné philosophy way of life. Since the late 1980s, Diné C.A.R.E. has worked with Navajo communities affected by energy extraction projects to demand environmental protection and sustainable development practices, bringing systemic changes in tribal politics and making the grassroots voices evident in the realm of energy development.

3. Black Mesa Trust

Founded in 1998, the mission of Black Mesa Trust is to safeguard and preserve the water sources on Black Mesa, which is a cultural, ecological landscape and repository of history and memory of Hopi people whose ancestors were the first people to settle on Black Mesa over a thousand years ago.

4. Center for Biological Diversity

The Center for Biological Diversity is a national, nonprofit conservation organization with more than 1.6 million members and online activists dedicated to the protection of endangered species and wild places. Among the species we work to protect are many that may be affected by the proposed Project, including the federally threatened Mexican spotted owl and humpback chub, and the federally endangered Colorado pikeminnow, California condor, razorback sucker, bonytail, and Navajo sedge.

The Intervenors support the development of renewable energy and needed energy storage to support that development, which is a critical component of efforts to reduce greenhouse gas emissions and avoid the worst consequences of global warming. Like any project, proposed energy storage projects must be thoughtfully planned to minimize impacts to people and the environment. In this case, the proposed Project is predicated on volumes of water that are not available to applicants. Further, on and around Black Mesa, where the proposed Project is located, people and the environment have already suffered decades of impacts from coal exploitation, and the proposed Project, if built, would exacerbate this harm. While the Intervenors strongly support the development of renewable energy production and needed energy storage, we do not support projects, such as the proposed Chilchinbeto Pumped Storage Project, that are plainly infeasible, incompletely presented, that threaten further harm to the people, land, water, and imperiled species, and that continue a history of paternalism and resource colonialism by (1) failing to consult with and gain consent of

effected Tribes and communities prior to seeking federal permits, and (2) exporting electricity and revenues derived from the industrialization of Navajo and traditional Hopi land and water.

IV. INTERESTS OF PARTIES

The proposed Project would be situated atop, along, and below the northeastern escarpment of Black Mesa near Kayenta, Arizona, in an area that has for decades been exploited for coal production. Coal development has displaced people and land uses, destroyed land, caused pollution, and depleted regional aquifers and springs. Black Mesa contains occupied habitat of the federally threatened Mexican spotted owl. The Project describes two potential water sources: the San Juan River and Coconino or C-Aquifer. Either water source would have significant impacts on connected hydrology, including the Colorado River downstream of its confluence with the San Juan River, and the Navajo or N-Aquifer, which overlies the C-Aquifer. The N-Aquifer has seen precipitous decline, alongside its connected springs, at the hand of decades of coal exploitation. There is strong local and regional opposition to further industrial use of aquifers beneath Black Mesa. The San Juan River contains occupied critical habitat endangered Colorado pikeminnow, southwestern willow flycatcher, and threatened razorback sucker. It contains occupied habitat for threatened yellow-billed cuckoo. The Projects' two proposed aquifer sources, which go unnamed in the applications, discharge at seeps, springs and hanging gardens potentially occupied by threatened Navajo sedge. If the proposed Project is constructed and operated, it will further industrialize and destroy terrestrial ecosystems on Black Mesa, further displace people and existing land uses, and further industrialize and deplete water from the San Juan River, and/or Black Mesa aquifers, potentially harming springs, imperiled and other species, and people alike.

Since its formation more than two decades ago, TNA has led efforts to end the industrial depletion of aquifers beneath Black Mesa, including the Navajo Aquifer, Black Mesa's only source of

potable water. The same aquifers that TNA has for decades worked to safeguard from additional industrial development are now targeted for depletion by the proposed Project at issue in this motion. No other entity represents TNA's interests in these proceedings, and its participation would be in the public interest.

Since the late 1980s Diné C.A.R.E. has engaged in frontline battles to protect our lands from resource extraction and its destructive effects on land, water, air, and the health of Diné communities. Diné C.A.R.E. has been engaged on coal plant and coal mining pollution issues for over 20 years. Current campaigns include coal retirement, just and equitable energy transition, coal ash mitigation, addressing harms caused by nuclear waste and uranium mining, and fracking related to helium, oil, and gas throughout the reservation. Diné C.A.R.E.'s long-term goals include seeking equity in the transition of coal-impacted and oil and gas impacted Navajo communities who are facing facility and operation closures, by advocating for the restoration and reclamation of impacted lands, water quality, and cultural resources. No other entity represents Diné C.A.R.E.'s interests in these proceedings and its participation would be in the public interest.

Black Mesa Trust was formed in 1998 to address wasteful use of our pristine water, taken from the Navajo Aquifer to slurry coal 275 miles to Laughlin, Nevada through a 15-inch pipeline. This wasted over 50 billion gallons of water, which could have sustained the Hopi population of 10,000 for over 300 years into the future. In August 2019, the last load of coal left Black Mesa. Finally, after of 30 years of fighting Peabody Western Coal Co. and U.S. Office of Surface Mining, Reclamation and Enforcement, Black Mesa Trust will achieve the goal and objective of saving drinking water for future generations by ending coal mining. Black Mesa Trust can now focus our energy on reclaiming lands harmed by destructive mining practices that destroy medicinal plants, trees, archaeological and burial sites of our ancestors. No other entity represents Black Mesa Trust's interests in these proceedings and

its participation would be in the public interest.

The Center for Biological Diversity has worked for decades for the protection and conservation of endangered species and their habitats in the Four Corners Region and on and near Black Mesa. Those species include the endangered Colorado pikeminnow, California condor, and southwestern willow flycatcher, and the threatened razorback sucker, Mexican spotted owl, yellow-billed cuckoo, California condor, and Navajo sedge. The Center has worked to protect species that may be affected by the proposed Projects including, for example, by petitioning to secure Endangered Species Act protections for the southwestern willow flycatcher, Mexican spotted owl, and yellow-billed cuckoo, through legal action to secure adequate flows for endangered fish in the Colorado River system, and through legal action to protect California condor from lead poisoning. No other entity represents the Center's interests in these proceedings and the Center's participation would be in the public interest.

FERC's May 27, 2026 Notice of Preliminary Permit Acceptance and Solicitation of Comments and Motions to Intervene ("Notice") describes proposed facilities and components as consisting of: (1) a 300-acre upper reservoir with a storage capacity of 10,000 acre-feet at a water surface elevation of 7,590 feet above mean sea level ("msl"); (2) a 300-acre lower reservoir with a storage capacity of 10,000 acre-feet at a water surface elevation of 6,100 feet above msl; (3) a 30-foot-diameter, 12,000-foot-long concrete lined power conduit to the powerhouse; (4) a subterranean 130-foot-wide, 290-foot-long, 200-foot-high, powerhouse with four 335,000-horsepower pump/turbines and four 250,000 kilowatt generators; (5) a lower power conduit consisting of four 16-foot-diameter, 500-foot-long, draft tube tunnels discharging into a lower reservoir; (6) a potential new transmission line to be determined out of four alternatives including: a) a 108-mile, 240-kilovolt ("kV') line, b) a 113-mile, 220-287-kv line, c) a 16.7-mile, 220-287-kV line, or d) a 42.4-mile 500-kV line; and (7) appurtenant facilities. The proposed Project would have an estimated annual generation of 3,120,750 megawatt-hours ("MW") (3,120.8

gigawatt-hours). Notice at 1.

As detailed below, the proposed Project application lacks sufficient information regarding the proposed sites and facilities, water availability, energy use, transmission, and generation, or environmental justice impacts to sufficiently inform the public or the Commission for purposes of considering a preliminary permit. In many cases, information is lacking, or information that is provided is plainly false, misleading, and/or inaccurate. In other cases, the application describes project components or requirements that are plainly infeasible. In all cases, the application entirely lacks any discussion of environmental justice context and consequences; in an area already afflicted by decades of coal mining exploitation, this is a fatal oversight. For these and other reasons listed below, FERC should rescind its Notice and the preliminary application should be denied.

V. STATEMENT OF POSITION

A. FERC Should Rescind its Notice and Deny the Application Because the Project Continues a Harmful History of Resource Exploitation on Black Mesa

The history of exploitation of Navajo resources for outside corporations and the benefit of non-Tribal communities is long and sordid. This proposed Project is set up to follow in the same historical arc, and FERC should deny the NPFA's application to prevent a repetition of further industrial development and resource colonialism.

In the early 20th century, geologists discovered massive quantities of commercial-grade coal and uranium on Navajo and Hopi lands, setting in motion the wheels for corporate interests to extract both the minerals and the wealth attached to it, in many cases through underhanded tactics. Decades of mining destroyed tens of thousands of acres and depleted vital groundwater sources. In the process, the

Navajo and Hopi were paid far below market value for royalties, land leases, and water, short-changing the Tribes likely by hundreds of millions of dollars or more.

Just as with coal and uranium, the proposed Project will enable private, non-Tribal parties to extract natural resources from Tribal land and to export energy and significant profits off of Tribal land, leaving Tribal communities to bear the environmental, health, and social costs of that extraction while receiving disproportionately little economic benefit, facing relocations and relinquishment of grazing permits, and having limited or no sovereign control over whether, where, or how that extraction occurs. This history should not be repeated.

B. FERC Should Rescind its Notice and Deny the Application Because Applicants Failed to Consult with Hopi Tribe

NPFA's application, submitted to FERC on Dec. 19, 2025, includes requirements for notifying agencies, parties and communities that would be impacted by development of the proposed Project. Under 18 CFR § 4.321(a)(2)(v), an applicant must identify "All Indian tribes that may be affected by the project." NPFA's application lists only the Navajo Nation as an affected Tribe; it excludes the Hopi Tribe, which also occupies substantial portions of Black Mesa and which relies on the same aquifers and/or surface water sources the proposed Project identifies in its application and aims to exploit to fill its reservoirs. Any impact to these waters will thus have a direct impact on the Hopi Tribe, including cultural resources and practices that are deeply rooted in seeps and springs and could be severely compromised by groundwater depletions. NPFA's application failed to identify the Hopi Tribe.

By failing to identify the Hopi Tribe as an entity "that may be affected by the project," it also is likely that NPFA failed to meet the requirements of 18 CFR § 4.321(a)(3)(i)(B), which mandates "a good faith effort to give notification by certified mail of the filing of the application" to the Hopi Tribe.

Our organizations understand that the Hopi Tribe maintains deep ancestral and living cultural connections to the Black Mesa landscape, springs, wildlife, and ancestral sites. Because the Applicant failed to notify or consult with the Hopi Tribe regarding the proposed Project development on or near Black Mesa, FERC should rescind the Notice and deny the application.

C. FERC Should Rescind its Notice Because it Mischaracterizes Tribal Land as "Federal Land Managed by the Navajo Nation"

FERC should rescind its May 27th Notice because it mischaracterizes Tribal land, federal land, and tribal sovereignty. The Notice states that the "proposed project would occupy federal land managed by the Navajo Nation." This mischaracterization relegates Tribes to a custodial role on the federal land, analogous to an executive branch federal land management agency, which Tribes are not. It belies and omits foundational tenets of sovereignty that define the legal relationships and obligations between the United States and Tribes. It overlooks that, while the U.S. holds bare title to land as a trustee, the Navajo Nation holds beneficial and equitable ownership structure in its tribal land, a structure originating from General Allotment Act of 1887 (25 U.S.C. § 331 et seq., since amended) and the Indian Reorganization Act of 1934, 25 U.S.C. § 5108 (formerly § 465), which authorizes the Secretary of the Interior to acquire and hold land in trust "for the purpose of providing land for Indians." The United States' fiduciary "trust responsibility" to federally recognized tribes originates in treaties, statutes, and the historical dependency of tribes on federal protection, a duty the Supreme Court first described as resembling "that of a ward to his guardian" in *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 17 (1831), and later characterized as imposing "the most exacting fiduciary standards" on the government's conduct, *Seminole Nation v. United States*, 316 U.S. 286, 297 (1942). This trust duty becomes judicially enforceable — including for money damages under the Tucker Act, 28 U.S.C. § 1491 — when a

specific treaty, statute, or regulation imposes concrete fiduciary obligations regarding tribal trust assets, as established in *United States v. Mitchell*, 463 U.S. 206 (1983) (*Mitchell II*), and reaffirmed in cases like *United States v. Navajo Nation*, 537 U.S. 488 (2003), and *United States v. Jicarilla Apache Nation*, 564 U.S. 162 (2011). FERC's mischaracterization also belies inherent sovereignty, as discussed in Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832); United States v. Wheeler, 435 U.S. 313 (1978) (tribal sovereignty is "inherent," not delegated), and belies Tribal regulatory jurisdiction over Tribal land, as discussed in Merrion v. Jicarilla Apache Tribe, 455 U.S. 130 (1982) (tribal taxing power is an inherent attribute of sovereignty, not a delegated federal power). In these and other ways, FERC's May 27th Notice belies fundamental doctrines of Tribal sovereignty; for this reason, it should be rescinded.

D. Intervenors Incorporate by Reference the Navajo Nation Department of Justice's December 30th, 2022 Motion to Intervene on Docket No. P-I 5233-000, P-15234, and P-15235

Intervenors acknowledge the letter to applicants and Denis Payr from Veronica Blackhat, Assistant Attorney General for the Navajo Nation, which is included as "Appendix C – Navajo Nation Consultation" in the Chilchinbeto FERC application. The letter expresses "support for Arizona PHS, LLC ("Applicant") reapplying for a preliminary permit from the Federal Energy Regulatory Commission ("FERC") to study the feasibility of its proposed pumped storage project on lands entirely within the Navajo Nation, Chilchinbeto Chapter, in Navajo County, Arizona ("Project… subject to the terms and limitations of the Land Withdrawal Designation and only for the Project proposed in the Chilchinbeto Chapter and formerly knowns as Black Mesa – East."

Because the Project bears resemblance to, would entail impacts similar to, and is located in the same general vicinity as NPFA's previously denied preliminary permit applications for Docket No. P-15233-000, P-15234, and P-15235, we hereby incorporate by reference the Navajo Nation Department of Justice (NNDOJ) Dec. 30th, 2022 Motion to Intervene on proceedings relating to that project. (*See*

20221230-5301 Motion to Intervene P-15235). NNDOJ's 2022 Motion to Intervene enumerated many problems with P-15233, 15234, 15235 that are or may be relevant to Project now before FERC. These include but are not limited to:

- Applicant's failure to seek the consent of the Navajo Nation or procure the required clearances and permits for preliminary biological investigations or construction of the Project;

the Project may adversely impact the use of these lands by the Navajo Nation and its members;

- the Project may adversely impact the water rights of the Navajo Nation or the use of the waters of the Colorado River and San Juan River systems, and two unnamed aquifers and their sources;
- the Project may adversely impact the wildlife and plant resources of the Navajo Nation, including but not limited to the habitat of Mexican Spotted Owls and Golden Eagles;
- the Project may adversely impact Colorado River and San Juan River fish resources of the Navajo Nation including but not limited to the habitat of Humpback Chub, Razorback, Sucker, Colorado Pikeminnow, Roundtail Chub, and Bluehead Sucker; and
- the Project may adversely impact the cultural resources of the Navajo Nation.

Interveners incorporate by reference these and other problems enumerated in Navajo Nation Department of Justice's 2022 Motion to Intervene on Docket Number P-15233, 15234, 15235 .

Regardless of the position taken by the Navajo Nation regarding consultation, regarding NPFA's reapplication for a preliminary permit, the direct impacts highlighted in the Nation's motion on the previous dockets remain unchanged. Because of the significant nature of these impacts, FERC should rescind the Notice and deny the application because applicants failed to consult with the Hopi Tribe.

E. The Commission Should Deny NPFA's Preliminary Permit Application Because the Application is Incomplete, Misleading, and Infeasible

The Commission's regulations (18 C.F.R. § 4.81(b)(1) & (d)), require that all preliminary permit applications provide the physical composition, dimensions, general configuration, and, where applicable, age and condition, of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, that would be part of the project and maps of the proposed Project. Here, the application's description of the proposed Project and facilities lacks sufficient information for the Commission or the public to understand what is being proposed. In many cases, as descried below, some of the information is contradictory, false, or depicts plans or plan components that would be plainly impossible to build and therefore can and will not "be part of the project."

1. The Application is Misleading Because it Falsely Alleges RDC Support for the Project

As discussed more extensively in comments provided by TNA, Diné C.A.R.E., and Black Mesa Trust, the application implies support from the Resources and Development Committee of the Navajo Nation Council ("RDC") for the proposed Project. Rather than providing support for the project itself, the meeting notes cited in and appended to the application reflect RDC's approval for hearing a presentation and receiving a written report about the project. The Applicant's misrepresentation of meeting notes to imply RDC support of the project to FERC is problematic. This should compel FERC to rescind the Notice and deny the application.

2. The Application is Misleading, Incomplete, Infeasible, and Contains False Information Pertaining to Electricity Transmission Lines

The application should be rejected because it contains false information with regard to the alleged NTUA 500-kV line to Shiprock. There is no NTUA 500-kV line to Shiprock. There are no 500-kV lines to Shiprock at all. The application also contains false information with regard to the alleged

NTUA “220-287-kV” line to the north and northeast of the proposed Project. There is no NTUA “220-287-kV” line to the north and northeast of the proposed Project (though there is a non-NTUA 220-kV line from Glen Canyon-Kayenta-Shiprock).

Additionally, options A-C for transmission presented by the application for connecting its proposed Project to the grid all involve 230-kV facilities, which would be too small to handle 1040-MW (1000-MW hydro plus 40-MW from reservoir coverings). Option D, the 42-mile 500 kV line, would require a new substation at its point of connection to the existing Four Corners-Moenkopi line. That line had a rating of 1550 MW as of 2018. It has a maximum thermal rating of a little over 2200 MW. It is completely unclear if there is enough current available capacity on that line to handle another 1040 MW of flow. There is already a pending request to Arizona Public Service Co. (“APS”) to interconnect a 400-MW project to that line, which has not yet been fully reviewed or approved, and the proposed Chilchinbeto project would fall behind that one in APS' interconnection queue. The application fails to disclose or discuss how the Project will limit or eliminate transmission space for other proposed or potential future renewable energy projects in the same general area, such as Applicant’s own proposed Project near Kayenta (see October 2025 presentation by the Applicant in Kayenta).

3. The Application is Incomplete Absent Community and Tribal Consultation and Consent

As referenced above, the Commission should deny the applications for lack of consultation and consent of impacted communities and Tribes, including communities located along transmission routes, and including, as discussed earlier in this comment, the Hopi Tribe, whose living history and culture are deeply intertwined with Black Mesa. Decades of coal mining on Black Mesa have harmed people and

the environment. This harm continues today. It includes displacement of people and land uses, pollution, destruction of land, wildlife habitat, and cultural values, destruction of ancestral sites and burials, and the depletion of aquifers, wells, and springs. The coal mining that caused this harm was imposed on Black Mesa communities absent consultation and consent and despite vigorous protest and objection. The proposed Project, with further industrialization of Black Mesa's land and water, threatens to continue and worsen these harms. Just as with coal and uranium mining, applicants continue a history of paternalism and environmental injustice by seeking federal approvals without first consulting and obtaining consent of Black Mesa and other communities whom the proposed Project would impact. FERC should deny the preliminary permit application for Applicants' and FERC's failure to consult with and obtain consent from communities and families that would be impacted by the Project. This includes communities or families located on or near the 42.4-mile transmission line for Alternative D shown in Form 587, including but not limited to the following line locations:

a. Township 35N, Range 23E, Section 27: Rough Rock School

b. 35N, 23E, section 28: Rough Rock community

c. 34N, 24E, section 20: Communities or families that use Nez Springs

d. 33N, 24E, section 17: Communities or families that use this spring

e. 36N, 21E, section 22: Communities and families that use Chilchinbeto Spring

4. The Application is Misleading, Incomplete, Infeasible, and Contains False Information Relating to Reservoirs

The application's descriptions of reservoirs are incomplete, inaccurate, and would be impossible to build. The application provides proposed area, elevation, and storage volumes for reservoirs and maps

purporting to show their proposed locations. From this data, the proposed average depths of the reservoirs can also be determined, which are approximately 33 feet. However, the application does not identify the locations, heights, widths, or construction materials that will be required to impound these reservoirs. These omissions are significant because the Applicants appear to be proposing reservoirs that would require vary large impoundment structures and require substantially more water supplies than they claim. No topographic maps are provided in the application but comparing application maps to USGS topographic maps shows that the reservoirs would span difficult or impossible topographic roughness and hundreds of feet of elevation gradients. An application containing such impossible-to-exist proposals should be rejected out of hand, not "studied" for up to four years.

a. Upper Reservoir

The application states that the upper reservoir will span 300 acres at a mean elevation of 7,590 ft., with a storage capacity of 10,000 acre-feet at a maximum elevation of 7,595 ft (Application, Ex. 1, p. 2 of 6). That corresponds to an average depth of 10,000 acre-feet/300 acres = 33 feet. Yet overlaying the applicant's map (Application at pdf p. 96 of 105) over the USGS 7.5' topographic map shows elevations that range from a low of 7560-7600' to a high point of 7776' near the northern edge of the proposed upper reservoir, suggesting maximum depths on the order of seven times greater than indicated in the application. The application contains no acknowledgment of this large topographic variation and the resultant need to either build tall impoundment structures (since the lowest elevations occur at or near the perimeter of the proposed reservoir) or somehow remove large amounts of material to lower the height of what would otherwise be tall islands inside the reservoir. There is also no indication of where roads would need to be constructed outside the requested project limit to provide access for the necessary construction machinery to create the upper reservoir.

b. Lower Reservoir

The application states that the lower reservoir will span 300 acres at a mean elevation of 6,100 feet and with a storage capacity of 10,000 acre-feet at a maximum elevation of 6,105 feet, including power conduit volume (Application, Ex. 1, p. 2 of 6). Based on the dimensions for the power conduits given in the application, they could contain approximately 200 acre-feet of water if full, leaving up to 9800 acre-feet to be stored in the lower reservoir. That corresponds to an average depth of 9800 acre-feet/300 acres = 33 feet. Yet overlaying the Applicant's map (Application at pdf p. 96 of 105) over the USGS 7.5' topographic map shows that the southern edge of the proposed lower reservoir would be at or near Aasiyii Wash at an elevation near or below 6040 feet, while a hill would rise up inside the reservoir to an elevation of 6360+ feet, a bit south-southeast of where the proposed reservoir boundary crosses the intersections of townships 2, 3, 10, and 11. As with the upper reservoir, and as previously demonstrated in the since-rejected 2022 application in the same area, the Applicant does not appear to have ever looked at a topographic map.

The application claims the lower power conduits would be only 500 feet long, and the Applicant's map shows the terminus of those 500-foot conduits would be at the western edge of the lower reservoir, inside section 10 of the 36N, 20E township. Looking at the topographic map, the elevation at that point is approximately 6200 feet, and a hill marked as elevation 6244 feet lies to the east. If the lower reservoir is to have a maximum elevation of 6105 feet, as Applicant claims, the lower power conduits will have to be much longer than 500 feet.

c. Water requirements for reservoirs

The application may understate the amount of water required to fill 300 acre-reservoirs, by neglecting the fact that the very uneven topography of the area will result in average reservoir depths greater than 33 feet. More importantly, it totally ignores the water requirements to keep the reservoirs filled. In comments on the 2022 application in the same area, the Center for Biological Diversity estimated annual evaporation losses of 3.4-4.5 feet per year per acre.[1] For two reservoirs with a combined surface area of 600 acres, those evaporation rates equate to 2040-2700 acre-feet per year. More recently, the Applicant, in a presentation to residents of Kayenta, described another proposed Project to be located just a few miles north of the proposed Chilchinbeto project, with 500-600 acres of reservoirs, and estimated evaporative losses at 2500 acre-feet per year, within the 2040-2700 acre-feet per year range estimated by Center.

Evaporative losses in excess of 2000 acre-feet per year, for a project intended to remain in service for decades, would dwarf the initial filling volumes. Over a projected lifetime of a century (see Applicant presentation in Kayenta, October 2025), replacing evaporative losses would require an additional 204,000-270,000 acre-feet of water, over and above the initial 10,000 acre-feet. The application neither acknowledges the water requirement for project operations nor discusses where this water would be obtained. It also ignores losses to groundwater, which would be substantial if the reservoirs did not have an impermeable lining (which would be likely infeasible given the topography_.

[1] These evaporation rates were based on the same methodology used by the U.S. Bureau of Reclamation. See https:/usbr.gov/uc/envdocs/reports/ArizonaPortionoftheUpperColoradoRiverBasin-ConsumptiveUsesandLossesReports/AZreport2002final.pdf, estimating 4.5 feet per year of evaporation from stock ponds in northeast Arizona; alternatively, see www.usbr.gov/uc/water/crsp/studies/24Month10.pdf (for October 2022) showing Lake Powell evaporation in WY2021-22 of 203,000 acre-feet, during a year when reservoir surface area averaged very close to 60,000 acres, for an evaporation rate of 3.4 feet per year per acre.

d. Solar generation at the reservoirs

In its prior application, the Applicant proposed covering the upper and lower reservoirs with solar cells to reduce evaporative losses. The Center pointed out that, among other problems, this would require transmission facilities from the upper reservoir down to the powerplant, facilities for which there was no provision in the application. Perhaps having learned from their previous error, the application this time proposes to cover only the lower reservoir with solar cells (Application, p. 1). Since it would not be possible to cover the entire lower reservoir with solar cells, lest they be left high and dry during drawdown, this proposal would offset well under half of the 2000+ acre-feet of evaporative losses from the proposed Project. Thus, the requirements for makeup water would still exponentially exceed, over the life of the project, the initial reservoir-filling water need.

Even if the proposed Project covered only one reservoir with solar cells, it would still need a method to deliver the output of the solar generation. At an average of 1 MW per 7.2 acres, and assuming 90% of the reservoir area covered in solar cells, the Applicant would need to deliver 90%*300 acres/(7.2 acres/MW) = 38 MW of solar generation to the grid, over and above the 1000 MW from the main project. The application does not acknowledge this additional component of the proposed Project but will need to size its proposed transmission facilities to accommodate it.

e. Reservoir sizing

The proposed reservoir sizing and project purpose (long-term storage) may be inconsistent. The proposed head (1470 feet), flow rate (10,000 cubic feet per second, “cfs”), and reservoir capacities (10,000 acre-feet each) would require fully draining the upper reservoir to support 12 hours of generation, and would require more than 12 hours to refill, meaning daily cycling would probably be

impossible. Even without daily cycling, generating for 12 hours at maximum output would require emptying the upper reservoir, which implies major cavitation risks to the penstock. This will require studies during any preliminary permit period.

5. The Application is Incomplete and Misleading for Failing to Discuss the Unavailability of Water Resources

The proposed Project cannot operate without water, yet the application omits discussion of water unavailability. According to the application, the proposed Project would require about 10,000 acre-feet of water to fill the proposed reservoirs. According to the Applicant (per a October 25, 2026 Applicant presentation in Kayenta) an additional approximate 2500 acre-feet per year would be needed to maintain reservoir levels thereafter given loss to evaporation and seepage. The application discusses two sources of potential water: The San Juan River, and the C-Aquifer (Coconino Aquifer). As discussed below, decades of coal development have already depleted regional aquifers at Black Mesa while use of already over-allocated Colorado River and San Juan River water is facing sharp cuts owing to climate-driven flow declines and a persistent supply-demand gap. Scores of peer-reviewed studies show that future water availability will further decrease as regional warming and aridification worsen. Previous attempts to develop C-Aquifer water on Black Mesa have proven economically infeasible, and there is strong community opposition to further industrial development of groundwater on Black Mesa after decades of dewatering for coal industrialization. In short, neither of the two potential water sources identified in the application contain water that is available or financially or socially feasible for the projects. Thus, the application is predicated on water that is not available. The application's failure to disclose or even discuss the threshold problem of water unavailability, and its failure to provide any evidence otherwise, renders it incomplete and misleading.

6. The Application is Incomplete and Misleading for Failure to Identify Available San Juan (and Colorado) River Water

The application lists "the San Juan River" as a potential water source but fails to identify any available water from the river. The application fails to identify any legal right of applicants to water from the river. The San Juan River and the Colorado River, to which the San Juan is a tributary, are already over allocated, meaning legal rights to water exceed actual river flows. In addition to over allocation, regional warming and aridification are also driving precipitous flow declines and, in turn, emergency reductions in water use. As warming and aridification worsen, so too will flow declines, and likely also gaps between supply and demand. Thus, there is no extra water available from San Juan River or the Colorado River and declining flows will worsen water scarcity in the future.[2] The application's failure to identify any available water from the San Juan River, despite naming it as a potential water source, renders the application incomplete and misleading. The application is predicated on a presumption of using that is not available.

7. The Application is Incomplete for Failure to Identify or Discuss River Water Transmission

While the application lists "the San Juan River" as potential a water source, it fails to identify or describe how water would be transported from the river to the Project. The minimum distance from the proposed Project to the river is more than 45 miles. The application is silent on whether or how water

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[2] *See, e.g.,* Wheeler et al. 2022. "What will it take to stabilize the Colorado River?" Science, 377 (6604), • DOI: 10.1126/science.abo4452 Available online at https://www.science.org/doi/10.1126/science.abo4452

would or could be transported across this distance and which land owners or managers would be involved in such a scheme to move the water. This is a fatal omission to the application's completeness.

8. The Application's Overall Presumption of an Available Water Supply is False

The application blithely claims that the proposed Project will be able to obtain at least 10,000 acre-feet of water to fill the proposed reservoirs. This assumes that when the lower reservoir is full, the upper reservoir would be completely drained, and vice versa. But if either reservoir is constructed without filling in the canyons it traverses, it will actually contain much more than 10,000 acre-feet of storage. Thus, the total initial water requirements for the Project could be well over 10,000 acre-feet. Yet the applications fail to provide any evidence of real-world water availability from the Colorado River, the San Juan River, or regional aquifers. As outlined above, the presumed availability of water from these sources is false, rendering the applications incomplete and misleading. Because the project cannot operate without water, FERC should deny the permit applications to avoid wasting tax dollars and stakeholder resources on an evaluation of a project that, for lack of water, cannot be implemented.

9. The Application Is Incomplete for Failure to Discuss Water Availability in the Context of Regional Warming and Aridification

The application is incomplete for failing to discuss the problem of declining water availability for the project in the context of climate change and regional aridification. As temperatures continue to rise because of fossil fuel development, greenhouse gas pollution, and climate change, regional aridification in the Colorado River Basin will continue to worsen, Colorado River and San Juan River flows will continue to decline, and gaps between water supply and demand will further constrain river water availability. Scores of scientific studies show observed and predicted future flow declines resulting from climate change and aridification in the Colorado River Basin. One study by Dr. James

Overpeck and Brad Udall states:

> *Between 2000 and 2014, annual Colorado River flows averaged 19% below the 1906–1999 average, the worst 15-year drought on record. At least one-sixth to one-half (average at one-third) of this loss is due to unprecedented temperatures (0.9°C above the 1906–1999 average), confirming model-based analysis that continued warming will likely further reduce flows…. [R]ecent climate model-based temperature projections indicate that continued business-as-usual warming will drive temperature-induced declines in river flow, conservatively −20% by midcentury and −35% by end-century, with support for losses exceeding −30% at midcentury and −55% at end-century… [P]rojected precipitation increases likely will not suffice to counter fully the robust, thermodynamically induced drying. Increasing risk of severe water shortages is expected.*[3]

These findings are affirmed by more massive cuts to Colorado River releases in the intervening years due to low flow. This year, both Lake Mead and Lake Powell are at historic low levels.[4]

The application's failure to consider or even mention the water availability in the context of global warming and regional aridification is a fatal omission that is central to the project's feasibility.

10. Failure to Otherwise Acknowledge the Historical, Climatological, and Geophysical Realities that Limit or Preclude Project Feasibility Render the Application Incomplete,

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[3] Udall, B. and J. Overpeck (2017), Twenty-first century Colorado River hot drought and implications for the future, Water Resour. Res.,53, 2404–2418, doi:10.1002/2016WR019638. Available at: https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016WR019638

[44] *See, e.g.,* Colorado River's two big lakes drop to lowest water levels on record, July 25, 2026 https://tucson.com/news/local/environment/article_c052b4af-2fd9-40bb-90cc-32d04ee02c7f.html

Misleading, and Inaccurate

As stated earlier, NPFA's preliminary permit application requires the use of tribal water resources and has targeted two potential sources from which to acquire it: (1) the groundwater aquifers beneath Black Mesa and (2) the San Juan River. However, NPFA has not acknowledged the historical, climatological, geohydrological realities that dramatically limit the availability of these resources or the feasibility of their acquisition. The following comment section summarizes the historical and geohydrological setting that make further industrial development of Black Mesa's water resources, in the face of ongoing climatological conditions, a reckless *elective* objective.

a. Summary of Findings

American Scientists on Global warming impacts in the Southwest. NPFA's Chilchinbeto PSH Project is proposed for a region that has already been subjected to more than 50 years of industrial groundwater withdrawals, is now considered to be the most "climate challenged" region in all North America, and where the impacts from anthropogenic global warming have generated conditions leading to mega-drought and the aridification of the west.

Arizona scientists on state groundwater management. Scientists from the state's three major universities – the University of Arizona, Northern Arizona University, and Arizona State University – are advising the state's water managers to reduce reliance upon groundwater withdrawals and implement aggressive groundwater conservation measures. The warming and drying environment is reducing groundwater in storage, even without human withdrawals.

The D-Aquifer after fifty years of withdrawals. Peabody's pumping from the N-Aquifer required the development of wells that pierced the overlying D-Aquifer; no withdrawals from the D-Aquifer, or

leakage from the D- into the N-Aquifer, were supposed to occur. However, after fifty years of operations, Peabody acknowledged it had pumped water from the D-Aquifer causing water-level declines in the mine area of 200 to 500 feet and, at the distant Hopi Villages, declines of 10 to 20 feet have been attributed to Peabody's pumping.

The N-Aquifer after fifty years of withdrawals. After more than five decades of industrial withdrawals from the N-Aquifer, there are robust, statistically significant data demonstrating strong correlations between Peabody's groundwater pumping and declining water-levels, declining discharge from springs and to streams, and declining water quality throughout the N-Aquifer. Concurrently, there are no correlations between these signals and tribal withdrawals or regional precipitation rates.

The C-Aquifer. To date, the USGS and other hydrologists have generated at least seven groundwater models of the C-Aquifer to study the impacts from future pumping scenarios during increasing demands and a warmer and dryer future. Their simulation results demonstrate significant water-level declines. The USGS recommends implementing enhanced conservation practices and to target alternative water sources for future need and conclude that, given historic and current industrial and municipal groundwater withdrawals from the C-Aquifer, any new industrial pumping is likely to cause significant drawdown in the aquifer and new conservations efforts should be implemented.

Misleading statements about the "closed loop" system. NPFA's explicitly states that its Chilchinbeto PSH Project will not lose water because it is a "closed loop" system. However, a "closed loop" PSH system simply means that it will not be connected to a naturally flowing body of water, like a river or stream, but to a man-made source, like a pond. In two locations, NPFA explicitly states that "water is not lost" because it is a "closed loop" system. NPFA is misleading the public into thinking the project is more sustainable than it is. To the contrary, in the project's first 50 years of operations it will lose more

than 135,000 acre-feet of water.

Water Losses: Evaporation. The Chilchinbeto project will require at least 125,000 acre-feet of water to replenish evaporative losses over its first 50 years of operations. This volume of groundwater is nearly equivalent to 40 years of Peabody withdrawals from the N-Aquifer. However, this assumption is based upon *average conditions* throughout the period: average temperature, average precipitation, average UV index, average wind speed, average evaporation rates, which are not realistic conditions in a warming and drying environment.

Water Losses: Leakage. NPFA has not acknowledged how C-Aquifer groundwater that will be kept in new reservoir ponds will be prevented from leaking back into the porous sandstone. Without a leak-proof lining in the storage reservoirs, a vast amount of water will be lost annually to leakage, vastly increasing the water required to replenish evaporative losses alone.

Water Rights: An Unrealistic Promise. NPFA states that its PSH Project will assist the Navajo Nation in acquiring new water rights, "PSH Project will bringing water to the community. It helps the Navajo Nation build water rights thanks to the thoughtful increased water use of C-Aquifer… Water use creates water rights." Such statements are either woeful ignorant of the law or, more realistically, they are intentionally misleading the Navajo people into believing they'll benefit from something they already have.

The Tragedy of the Commons. The assertion that "water use creates water rights" fosters a the "Tragedy of the Commons". The statement implies that if the Navajo Nation doesn't maximize their use of the C-Aquifer, they'll lose the rights they have to it. This use-it-or-lose-it mentality stimulates all water users to maximize their use before water-levels drop and it becomes too expensive to pump, hurting all users in the end.

The San Juan River. NPFA appears to be ignorant of the history and current condition of Colorado River water resources and the plausibility of acquiring rights to that resource. Its overestimated flow has and continues to be overallocated among current users, and all of the users in the lower-basin states have stated that they want more water from the river, not less. There is no water available in the San Juan River, a tributary of the Colorado River, and current users are having to reduces their shares. NPFA has not explained how they would transport this water from the San Juan which is more than 40 miles away.

b. Background & Setting: Global Warming, Aridification, and Mega-Drought

While NPFA's application for a preliminary permit for its Chilchinbeto Pumped Storage Project acknowledges that Black Mesa has endured more than five decades of industrial groundwater exploitation by Peabody Western Coal Company's Black Mesa-Kayenta Mine Complex, it has characterized its proposed Project in the context of *sustainable* water resources development while failing to acknowledge the contexts of anthropogenic global warming (AGW), Mega-Drought, and the Aridification of the western United States.

By failing to situate its proposed Project in the context of the warming and drying southwest, NPFA misleads Black Mesa communities and FERC with outdated, scientific-sounding generalizations that imply Black Mesa's environmental conditions will contribute to the sustainability of the project.

Projected impacts effecting the US Southwest from AGW are expected to be among the most severe in all of North America; most of these impacts are already occurring and are attributable to human-caused greenhouse gas emissions.

In fact, the Southwest is believed to be the most "climate challenged" region throughout all North America, and understanding this is essential if tribal groundwater resources are to be protected throughout the future[5].

There is high confidence that temperatures in the Southwest will continue to increase substantially through the twenty-first century, with more warming in the summer and fall than in the winter and spring.

- Average annual temperature will continue to increase by as much as 9 degrees by 2099
- Seasonal temperatures will continue to increase. The largest projected increases will occur in summer/fall; the average low temperature in winter/spring will increase. The length of freeze-free seasons is expected to increase average annual precipitation will decrease
- Flows in rivers will decrease (less surface-water will be available for human consumption)
- Droughts will become more intense – over greater spatial areas and for longer duration.
- Average annual precipitation will decrease in some areas (and may increase in others)
- Severe precipitation events may not occur more frequently, but the severity of flood events may increase

These conditions have already been observed throughout the Southwest. Historically, water managers have relied upon the principle of **stationarity** – the concept that natural systems fluctuate within reliable conditions of upper and lower extremes in a given region: average high and low temperatures, precipitation, evaporation rates, etc. However, given the profound weather shifts induced

[5] Garfin, G., A. Jardine, R. Merideth, M. Black, and S. LeRoy (2013). *Assessment of Climate Change in the Southwestern United States: A Report Prepared for the National Climate Assessment*. A report by the Southwest Climate Alliance, Washington DC: Island Press.

by AGW, natural resource managers can no longer rely upon stationarity as a guiding principle for natural resource management[6].

For the period 2000–2018, the Colorado River Basin was 2°F warmer than the average temperature of the twentieth century. By 2015, scientists believed the probability of a **megadrought** was a near certainty by 2050. By April 2020, climate scientists concluded the Southwest was already in the grips of the first AGW-induced megadrought; a new era of megadrought had emerged[7].

Currently in the US Southwest, drought can no longer be thought of as an extreme but temporary period of dryness. Rather, the condition of a warmer and drier landscape is expected to be more permanent than temporary, and climate scientists warn that this **aridification** of the Southwest, not drought, is the contingency that should guide all future planning and decision-making in natural resource management (CRRG 2020).

c. The Tri-University Recharge and Water Reliability Project Report for the ADWR

In July 2026, The University of Arizona, Northern Arizona University, and Arizona State University released their comprehensive report on water management, groundwater recharge, and water reliability strategies in Arizona. The report considered all groundwater resources throughout the state,

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[6] Milly, P. C. D., Julio Betancourt, Malin Falkenmark, Robert M. Hirsch, Zbigniew W. Kundzewicz, Dennis P. Lettenmaier, and Ronald J. Stouffer. (2008). Stationarity Is Dead: Whither Water Management? *Science*: 319 (5863), 573-574. [DOI:10.1126/science.1151915]

[7] Cook, B., T.R. Ault, and J.E. Smerdon. 2015. "Unprecedented 21st Century Drought Risk in the American Southwest and Central Plains." *Science Advances*. 1.1: e1400082. http://advances.sciencemag.org/content/1/1/e1400082.full.

Williams, A. Park; Cook, Edward R.; Smerdon, Jason E.; Cook, Benjamin I.; Abatzoglou, John T.; Bolles, Kasey; Baek, Seung H.; Badger, Andrew M.; Vivneh, Ben. 2020. *Large contribution from anthropogenic warming to an emerging North American megadrought.* Science 368(6488):314-318.

including the highlands of Black Mesa on the Colorado Plateau ecoregion. The following introduction and summary come from this report[8].

> "The state of Arizona is the sixth largest state in the US, covering almost 114,000 square miles. Much of the state is considered arid to semi-arid, but some watersheds in the state average over 20 inches of annual precipitation. Although Indigenous people lived in harmony with the available water resources for millennia and developed sophisticated irrigation and farming systems, the need for increasing access to water in the Southwest has been a constant theme at least since the John Wesley Powell expedition explored the Grand Canyon in 1869. Statesmen and politicians have promoted ways to enhance Arizona's water supplies through deliveries from the Gila, Salt and Verde Rivers, and the Colorado River, since the beginning of the 20th century, ultimately leading to the completion of the Salt River Project, serving the Phoenix area, and the Central Arizona Project (CAP), which serves three counties (Maricopa County, Pinal County, Pima County) in the center of the state…
>
> "After a century of litigation and legislative agreements, collectively called the "Law of the River," Arizona's allocation of CAP water is the lowest priority on a river that is already notoriously overallocated due to incorrect historical conclusions about average flows. In addition, climate change impacts are reducing the flow in the river over time, in large part due to increasing temperatures affecting snowpack and surface runoff. Another component of the diminished flow of the Colorado River is reduced groundwater-supported base flow

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[8] Jacobs, K., Gupta, N. & Hinkley, M. (Eds.). (June 2026). *Arizona Tri-University Recharge and Water Reliability Project Report to the Arizona Department of Water Resources*. See: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ccass.arizona.edu/sites/default/files/2026-06/ATUR-Report.pdf.

associated with over-pumping the aquifers in the basin. The combination of over-allocation and reduction in average flows has resulted in the major Colorado River reservoirs, lakes Powell and Mead, being at the lowest levels since the reservoirs were initially filled. This means that Arizona is no longer able to take its full allocation of CAP water, and deliveries within the state have been significantly curtailed. There is no obvious relief in sight, and negotiations over the management of the river are still ongoing as of this writing. Even in the event of a few good water years, which could at least partially refill the reservoirs, the Colorado River will not be the fully reliable source of water supplies it was once hoped to be…

"Meanwhile, for the more than three-fifths of the state that has no access to Colorado River water, a combination of climate change and other factors are significantly impacting natural recharge processes. Soil moisture is decreasing, groundwater levels are declining, rangeland and riparian (stream-related) environments are experiencing degradation, and forested areas have been burning at unprecedented rates. In addition, the lack of water use management and regulation in these areas means that they have been targeted by large water users - including large-scale agricultural producers - and groundwater depletions are accelerating, leading to litigation as well as the recent establishment of several new management areas…

"Between January 2023 and June 2026, approximately 40 faculty members, graduate and undergraduate students, and postdoctoral scholars contributed to this effort. The project provided a valuable opportunity for these participants to work as an interdisciplinary team to address complex scientific challenges in a real-world context…"

Summary of the report's findings that are relevant to Black Mesa's groundwater resources:

- Arizona has been subjected to a mega-drought exceeding 26 years.
- Arizona's groundwater use has exceeded natural recharge since the 1940s.
- Annual Colorado River flow was overestimated, and its supplies are over-allocated, with Arizona having the lowest priority so its share is reduced before all others.
- Climate change is further reducing the flow of the river. Diminished snowpack, increased temperatures, and reduced groundwater-supported base flow threaten river reliability.
- Groundwater levels are declining statewide, especially outside of the Active Management Areas (AMAs, the counties comprising metropolitan Arizona).
- High elevation areas (e.g. the Mogollon Rim and Colorado Plateau) are projected to experience substantial decreases in winter precipitation, affecting all water resources.
- Spatial analysis for 2021–2099 reveals significant decreases in high-elevation precipitation impacting runoff and recharge.
- In Arizona, over 95% of annual precipitation is lots to evapotranspiration (ET). ET rates are highest in high-elevation regions where precipitation is greatest. High ET rates support ecosystems but limit water availability for recharge.
- Some areas experience *net water loss* where ET exceeds precipitation.
- Less than 3% of precipitation converts to recharge statewide.
- Precipitation intensity influences recharge, but excessive intensity causes surface runoff.
- Groundwater storage has declined from 2000 – 2020, consistent with satellite data, mainly due to climate warming, decreased recharge, and over-pumping.
- All models indicate that climate factors like warming and precipitation variability significantly reduce groundwater storage, EVEN WITHOUT HUMAN USE.
- Climate models project increased autumn precipitation but higher temperatures will increase evaporative demand, reducing runoff and recharge.
- Future water availability is threatened by decreasing snowpack, altered runoff timing, and climate variability.
- Water infiltrating in high recharge areas may take days to hundreds of years to reach aquifers.
- Land disturbances like wildfires, landscape changes, and industrial development affect water availability and recharge locations.

- The study's greatest uncertainties occurred at higher, mountainous, and local scales, particularly regarding precipitation and recharge.
- To conserve groundwater resources amid a warming and drying landscape, it is the time for water resource managers to design and implement recharge strategies considering a broad-based, collaborative approaches.
- Recharge statewide remains poorly understood. Development of new tools and better models to for increased recharge prediction accuracy is needed.

d. Global Warming Impacts in Southwestern Tribal Communities

"Impacts to Native American lands and communities are expected to be both early and severe due to their location and marginal environments." [9]

"Navajo elders tell of the increasingly arid conditions over the last half of the twentieth century that contributed to the declines in culturally significant crops, the flow of specific springs and seeps, and wildlife populations, such as eagles. Projected reductions in water supply reliability, coupled with water agreements that involve selling or leasing tribal water to neighboring communities, could place tribal water supplies at risk during sever shortages. As water supplies decrease and water demand increases, tribes are at risk of finding themselves committed to providing water to other entities, resulting in situations in which, in the words of one elder, "Water sold must be delivered, regardless of the

[9] Garfin, G., A. Jardine, R. Merideth, M. Black, and S. LeRoy (**2013**). *Assessment of Climate Change in the Southwestern United States: A Report Prepared for the National Climate Assessment*. A report by the Southwest Climate Alliance, Washington DC: Island Press.

S. Reece and G. Owen (**2025**). *Responding to Increased Aridity in the U.S. Southwest. The Climate Assessment for the Southwest, Progress Report*. June 1, 2024 – May 31, 2025. CLIMAS, Tucson AZ.

condition of the selling reservation. In this worst-case scenario, the Community will have to breach its contracts for the survival of its people." [10]

Research performed and updated by *The Climate Assessment for the Southwest*[5, 6] reinforces the conclusions of previous assessments: Native American communities of the U.S. Southwest face greater vulnerability than other communities in the region because they are more closely connected to, and are trying to conserve, endangered cultural practices, cultural history, water rights, and socio-economic and political marginalization.

Very little data are available that quantify the changes that are occurring or that establish baseline conditions for many tribal communities. Additional data are crucial for understanding impacts on tribal lands for resource monitoring and scientific studies. The scant data that are available indicate that some tribes may already be experiencing climate change impacts. At Black Mesa and its surrounding area, the hotter and drier conditions occurring with increasing severity over space and time will result in the following:

Longer periods of time for groundwater aquifers to recharge. Greater drought frequency and intensity over greater periods of time results in less water available for natural recharge. Even though flood events may be more severe in some areas, aquifers can only recharge a limited amount of water over a

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[10] Gonzalez, P., G.M. Garfin, D.D. Breshears, K.M. Brooks, H.E. Brown, E.H. Elias, A. Gunasekara, N. Huntly, J.K. Maldonado, N.J. Mantua, H.G. Margolis, S. McAfee, B.R. Middleton, and B.H. Udall (**2018)**. *Southwest,* in *Impacts, Risks, and Adaptations in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1101-1184. Doi: 10.7930/NCA4.2018.CH25. On the Web: https://nca2018.globalchange.gov/chapter/25/

limited amount of time, no matter the amount of precipitation that falls at any one time; precipitation that exceeds an aquifer's rate of natural recharge will simply flow downstream as run-off.

Increasing the volume of groundwater pumped from aquifers. Given that current annual rates of groundwater withdrawals already exceed the rate of annual recharge, increasing community withdrawals will likely increase the rate groundwater decline (increasing withdrawals + decreasing precipitation = faster water-level decline).

Land cover / vegetation cover change, such as plant die-off and invasive woody-plant encroachment, may increase wildfires and outbreaks of forest pests and disease.

Given these realities, now is the time to increase conservation measures and initiate new recharge enhancement efforts so that Black Mesa's valuable groundwater resources can be protected for the future's increasing demand from Navajo and Hopi communities. However, NPFA is proposing to renew industrial groundwater pumping for electricity generation that will be consumed in distant metropolitan areas throughout the Southwest.

e. Proposed Water Sources

The Application states:

> "The Source of water supply for the project will be either remote river water resources, locally available groundwater resources, or a combination of the two, with rights of use to be owned or acquired by the applicant. Two potential water supply sources have been identified for the project, including the San Juan River and the C Aquifer. Studies will be conducted to develop a thorough understanding of the hydrogeology and important groundwater / surface water relationships, including recharge routes, discharge,

groundwater mobility, variability of the San Juan River baseflows, and other criteria pertinent to groundwater / surface water interaction within the system, including evaluation of potential impacts to river flows… Impacts of the project on water quality are not anticipated but will be assessed to confirm." (NPFA 2026)[11]

i. **Proposed Watern Source: Black Mesa's Groundwater Aquifers** (Figure 1).

A summary of Black Mesa's groundwater aquifers and their current conditions following five decades of coal-energy groundwater exploitation, and a newly proposed PSH project, follows.

The Alluvial Aquifer. The aquifers nearest the surface – the unconfined alluvial and Wepo aquifers – have been subjected to fifty years of open pit surface-coal mining activities and were essentially destroyed throughout the mining area which is in the same hydrological zone as the proposed storage project. Natural springs, seeps, ponds, and washes that once covered the mine area have been replaced with water catchment ponds to prevent poor quality water from flowing downstream, reconstructed washes, vegetative monocultures, and a largely treeless landscape.

[11] Nature and People First Arizona (2026). *Application for Preliminary Permit: Chilchinbeto Pumped Storage Project.* Submitted to the Federal Energy Regulatory Commision, Washington DC.

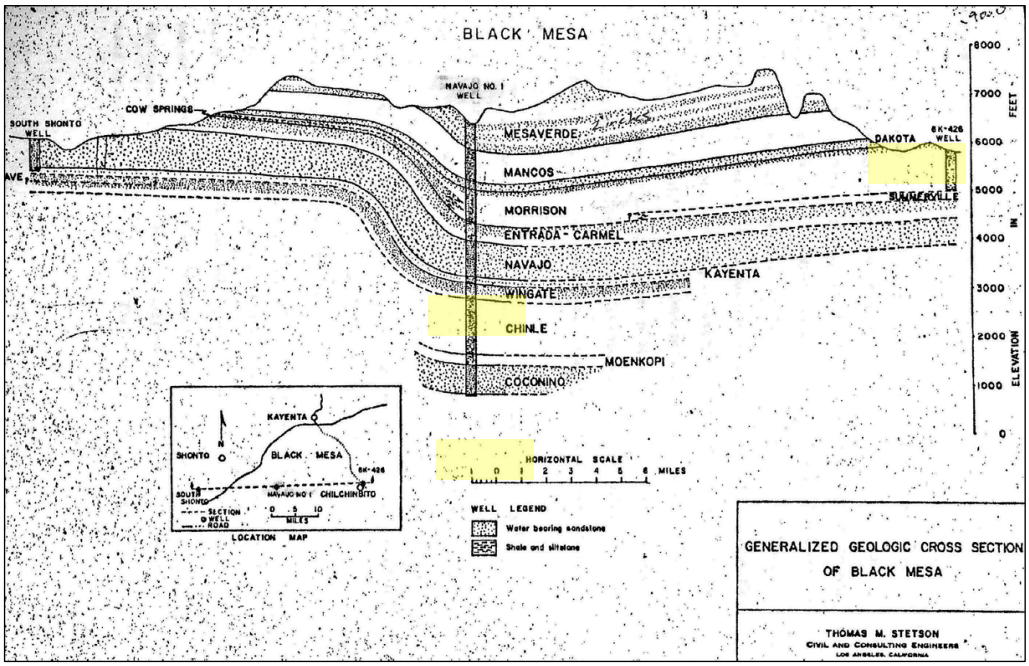

Figure 1. Cross-section of Black Mesa and its groundwater aquifers[12].

The Dakota Sandstone Aquifer (D-Aquifer). In the mid 1960s, prior to coal mining activities, Peabody's hydrology consultants[8] determined that industrial pumping from the D-aquifer, just below the alluvial aquifers, would not be feasible because D-Aquifer drawdown could cause subsidence, earth fissures, groundwater degradation, decreased stream flow, and decrease spring discharge near the Hopi villages and elsewhere on Black Mesa. However, it is notable that Peabody did in fact withdraw groundwater from the D-Aquifer throughout the mining period. OSMRE's 2017 *Cumulative Hydrologic Impact Assessment*[13] acknowledged that an undetermined but not insignificant volume of groundwater was

[12] Stetson, T.M. 1966. *Feasibility of Obtaining a Groundwater Supply from Black Mesa, Arizona*. Conducted by Stetson Engineers Inc., Los Angeles, CA., for Peabody Coal Company.

[13] OSMRE 2017. *Cumulative Hydrological Impact Assessment of the Peabody Western Coal Company Kayenta Mine Complex*. United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement, Western Region. Washington DC.

pumped from the D-Aquifer for mining activities throughout the life of the mine.

While no volume of D-Aquifer water has been estimated, Peabody and OSMRE have acknowledged that mining withdrawals from the D-Aquifer caused water level declines in the mine area between 200 and 500 feet. At the more distant Hopi villages, Peabody's groundwater model determined that declines of 10 to 20 feet should be attributed solely to mining activities.

In short, wells that were intended to withdraw groundwater from the N-Aquifer were drilled through the D-Aquifer, *inevitably*, creating an open channel from which poorer quality D-Aquifer water leaked into the N-Aquifer, and from which D-Aquifer water was withdrawn and used for mining activities.

The Navajo Sandstone Aquifer (N-Aquifer). Below the D-aquifer, the N-Aquifer is the ONLY source of potable water for the Hopi Tribe and for members of the Navajo Nation who reside on Black Mesa. Because 90% of N-Aquifer water is between fifteen thousand and ninety thousand years old, it is categorized as "fossil groundwater", replenishable only on geological timescales.

Requiring wells at a depth of at least 3,600 feet, Peabody consultants determined that the mine *could* sustainably withdraw 2,000 gallons per minute from the N-aquifer, equal to approximately 3,200 acre-feet of groundwater per year (AF/Y), and that the mine would never withdraw more than that amount in any single year throughout the life of the mine. This volume of annual groundwater withdrawals was claimed to be inconsequential, and that its impacts on Black Mesa's groundwater system to be negligible. However, once mining activities were fully operational in 1972, Peabody's withdraws from the N-aquifer averaged approximately 4,400 AF/Y throughout the life of the mine. Mine withdrawals were reduced in 2006 to approximately 1,200 af/y until 2019 when withdrawals were

reduced to about 400 AF/Y. From 1965 through 2021, the coal mine withdrew approximately 156,000 AF.

Between 1972 and 2005, Peabody was the largest annual user of groundwater from the N-Aquifer and had a far greater impact than either Peabody or OSMRE acknowledged. Robust, statistically significant evidence has been demonstrated showing strong correlations between the rate of Peabody's groundwater withdrawals and water level decline, declining discharge from springs, and declining water quality throughout the N-aquifer. Concurrently, there are no correlations between any of these signals and the rate of tribal/municipal groundwater withdrawals or regional precipitation rates.

Moreover, despite continued claims by Peabody, OSMRE, and the Navajo Nation Department of Water Resources, there continues to be poor understanding of the basic components of the N-Aquifers water-budget components: storage, discharge, recharge, and chemical quality.

Storage: Estimates for the volume of groundwater stored in the N-aquifer range from 10 million-acre feet (MAF) in 1966, to 180 MAF in 1983, and then 290 MAF in 1997, and finally 400 MAF in 1999. However, the 400 MAF estimate was asserted by Peabody following more than twenty years of pumping and unexpected impacts observed throughout the aquifer. To arrive at this volume the D-aquifer was integrated into the N-aquifer and renamed "The N-aquifer system". To date, the USGS continues to use its 290 MAF estimate. *Storage remains poorly understood*.

Discharge: Discharge from an aquifer (from springs or into streams, which can be accurately measured and subsequently estimated) is the most important component of an aquifer to understand to create accurate groundwater models and understand their dynamics. However, Peabody's groundwater model did not attempt to measure or even estimate discharge from the N-aquifer. *Discharge remains poorly understood*.

Recharge: Without knowledge of discharge from the N-aquifer, recharge has to be estimated based on numerous assumptions (not actual data). To date, estimates range from 2,500 acre-feet per year to 235,000 acre-feet per year. *Recharge remains poorly understood*.

Chemical quality: there are no pre-industrial development data for chemical quality of the N-aquifer. However, while quality of N-Aquifer groundwater has decreased throughout the life of the mine, because pre-development data do not exist, it is impossible to ascertain how much of this decrease has been caused by mining. *Change in chemical quality remains poorly understood*.

After five decades of industrial groundwater pumping, it became clear that Black Mesa's groundwater aquifers were hydrologically connected with leaking occurring due to (1) N-Aquifer wells that pierced the overlying D-Aquifer that were screened and allowing poorer quality D-Aquifer water into the N-Aquifer, and (2) pumping induced leakage occurring where the intervening formations were thin.

Despite what Peabody and federal regulators promised the Navajo Nation, the N-aquifer is not recovering as quickly as originally claimed it would, discharge from springs and to streams continues to decline, and understanding of its basic components remain poorly understood.

The Coconino Sandstone Aquifer (C-Aquifer). The deepest aquifer considered for mining operations, and now considered for the Chilchinbeto PSH Project, is the C-Aquifer, beneath the N- and D-Aquifers (Figure 1). The C has an areal extent exceeding 27,000 mi^2 and a total volume of groundwater in

storage of 400 million acre-feet. Natural recharge to is approximately 290,000 acre-feet per year[14].

The time it takes for water to infiltrate and recharge the C-Aquifer varies from less than 200 years near the Mogollon Rim in the southern extent to many thousands of years in the north near the Arizona-Utah border.

Current Understanding of the C-Aquifer: Groundwater Models. Many groundwater models and water budgets of the C-Aquifer have been developed[15] but all have concentrated on groundwater dynamics in the southern and western reaches, where the larger communities of Flagstaff, Holbrook and Winslow are situated and where numerous proposals to increase withdrawals near the Leupp area have been investigated.

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[14] Hart R.J., Ward, J.J., Bills, D.J., and Flynn, M.E., 2002. *Generalized hydrogeology and groundwater budget for the C-Aquifer, Little Colorado River Basin, and part of the Verde and Salt River Basins, Arizona and New Mexico*: US Geological Survey Scientific Investigations Report 2002-4026, 45 p.

[15] Hart R.J., Ward, J.J., Bills, D.J., and Flynn, M.E., 2002. *Generalized hydrogeology and groundwater budget for the C-Aquifer, Little Colorado River Basin, and part of the Verde and Salt River Basins, Arizona and New Mexico*: US Geological Survey Scientific Investigations Report 2002-4026, 45 p.

Southwest Groundwater Consultants. 2003. *Report of Findings for the assessment of western Navajo-Hopi water supply needs, alternatives, and impacts*; HDR Engineering for US Bureau of Reclamation, v. 10 p.

Leake, S.Q., Hoffman, J.P., and Dickinson, J.E., 2005. *Numerical groundwater change model of the C-Aquifer and effects of groundwater withdrawals on stream depletion in selected reaches of Clear Creek, Chevelon Creek, and the Little Colorado River, Arizona*; US Geological Survey Scientific Investigations Report 2005-5277, 39 p.

S.S. Papadapolous and Associates. 2005. *Groundwater flow model of the C-Aquifer in Arizona and New Mexico: Consulting report prepared for the Salt River Project on behalf of, and for the Use of the Mohave Generating Station co-owner*s, 121 p.

Bills, D.J., Flynn, M.E., and Monroe, S.A., 2007. *Hydrogeology of the Coconino Plateau and Adjacent areas, Coconino and Yavapai Counties, Arizona,* US Geological Survey Scientific Investigations Report 2005-5222, 101 p.

AMEC Geometrix 2012. Final groundwater modeling impact analysis, City of Flagstaff groundwater sustainability study, Coconino County, Arizona: Consulting report prepared for the city of Flagstaff.

Pool D.R., 2016. Simulation of groundwater withdrawal scenarios for the Redwall-Mauv and Coconino Aquifer systems of northern and central Arizona: US Geological Survey Scientific Investigations Report 2016-5115, 38 p.

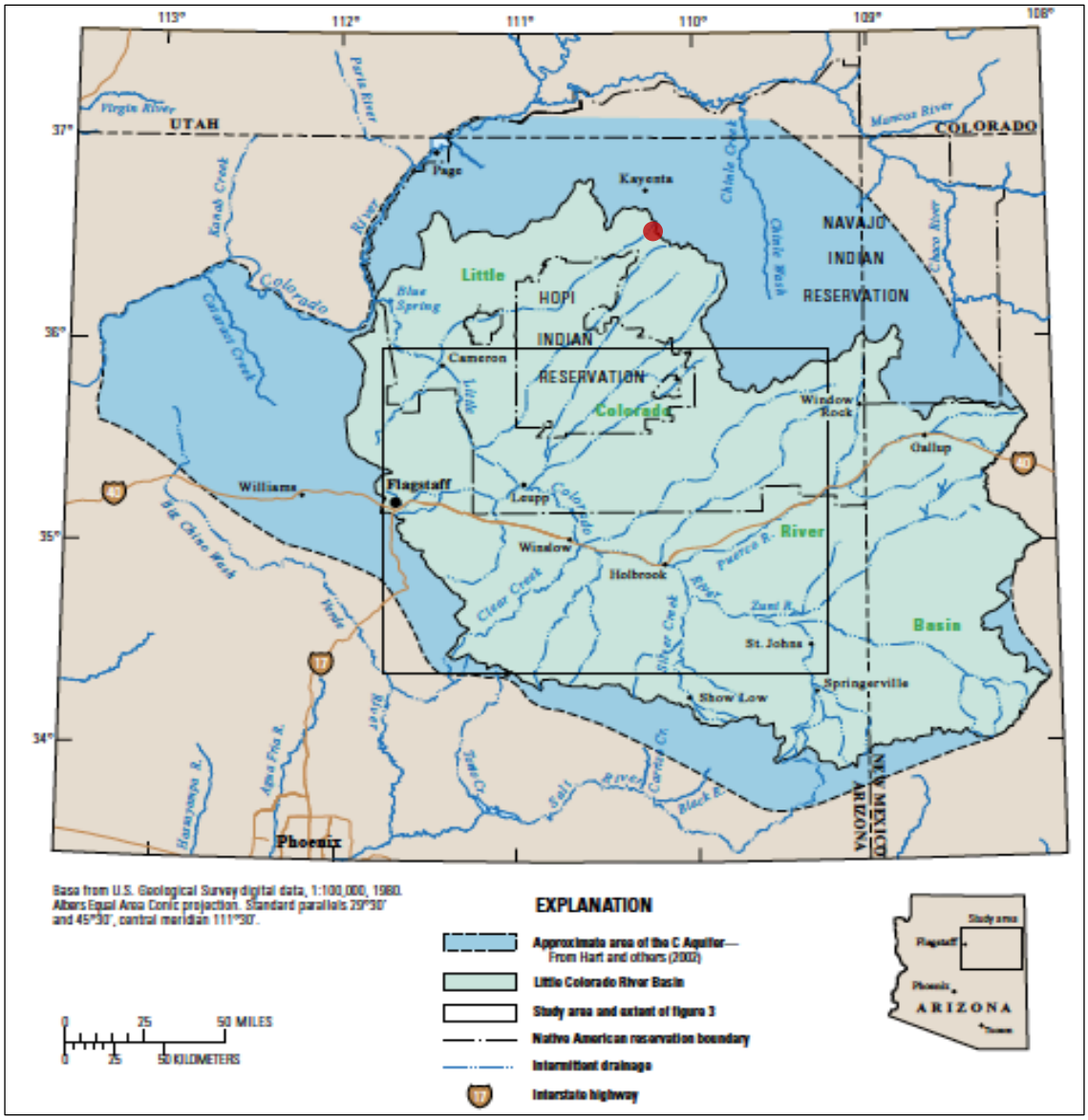

Figure 2. Map of the C-Aquifer (blue), the Little Colorado River Watershed (green), and the approximate location of the Chilchinbeto PSH Project added (red dot; from USGS 2021[16]).

Hart et al. (2002) compiled existing C-Aquifer data in the Little Colorado River Basin and parts

[16] Jone, C.J.R., and Robinson, M.J., 2021. *Groundwater and Surface-Water Data from the C-Aquifer Monitoring Program, Northeastern Arizona, 2012-2019*: U.S. Geological Survey Open-File Report 2021-1051, 34 P., https://doi.org/10.3133ofr20211051.

of the Verde and Salt River Basins to produce a generalized budget. Southwest Groundwater Consultants (2003) developed a collaborative report for the Bureau of Reclamation assessing water supply needs of the western part of the Hopi tribal lands and the Navajo Nation. Leake et al. (2005) created a three-dimensional groundwater model to simulate effects of proposed withdrawals from the C-Aquifer near Leupp and included impacts for the flow of the Little Colorado River (LCR). S.S. Papadopulous (2005) also developed a model simulating increasing withdrawals from the Leupp area. Bills et al. (2007) revised previous water-budget data for the C-Aquifer and added the complex relationship between it and the underlying R-M Aquifer. Amec Geomatrix Inc. (2012) was commissioned by the city of Flagstaff as part of its groundwater sustainability study and to update the city's Designation of Adequate Water Supply with the Arizona Department of Water Resources. Pool et al. (2016) developed the Northern Arizona Regional Groundwater Flow Model to evaluate groundwater levels and discharge to streams and springs.

Collectively, the model simulations demonstrated the following:

1. Most discharge from the C-Aquifer occurs as leakage into the underlying RM-Aquifer that empties into the Colorado River from springs in the Grand Canyon.

2. Model simulations focusing on population growth and increasing withdrawal demands all suggested that enhanced conservation practices be employed and use alternative water sources than the C-aquifer.

3. Increased withdrawals near Leupp showed substantial affects to groundwater discharge into Chevelon creek and Clear Creek, tributaries of the LCR, and the LCR itself.

4. One model (Pool et al. 2016) ran a scenario with no major changes in groundwater use except

for an increase in demand due to population growth and found that, by the year 2100, water levels declined by more than 100 feet near Flagstaff, 10 to 50 feet near Leupp and Red Gap Ranch, and 5 feet for the rest of the model area.

*Future Studies: Third Party Consultants***.** The application states, "Studies will be conducted to develop a thorough understanding of hydrogeology and important groundwater/surface-water relationships, including recharge routes, discharge, groundwater mobility, variability of Colorado and San Juan River baseflows, and other criteria pertinent to groundwater/surface-water interaction within the system, including evaluation of potential impacts to river flows… Impacts of the project on water quality are not anticipated but will be assessed to confirm."[17]

The application further states, "Identification of aquatic habitats that might be influenced by the project, including wetlands, seeps and springs, and other water sources. For each habitat identified, the Applicant will assess the condition, size, existing use by vegetation and wildlife, and potential effect of the project, and options for protection, mitigation, and enhancement measures."

According to the EPA[18], "Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season"**.**

Finally, and particularly notable, the application asserts, "The Applicant believes that there are no jurisdictional wetlands within the project boundary… In the case that wetlands are discovered during

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[17] Nature and People First Arizona (2026). *Application for Preliminary Permit: Chilchinbeto Pumped Storage Project.* Submitted to the Federal Energy Regulatory Commission, Washington DC.

[18] **See EPA 2022:** https://www.epa.gov/wetlands/what-wetland

field explorations, the utmost care will be taken to avoid or mitigate impacts due to drilling, test pit excavations, and other activities. Any potential long-term wetlands impacts will be addressed with procedures approved by resource agencies."

Obviously, there are many wetlands on and surrounding the Black Mesa physiographic province, and many of these wetlands provide culturally significant resources to both the Navajo Nation and Hopi Tribe.

Along with the many groundwater models that have been developed, more interpretive studies of the C-aquifer have been performed by the USGS and other organizations than can be addressed here. However, NPFA continues to assert that new studies will be performed to determine the economic and ecological feasibility for the Project, but they have not acknowledged the vast literature that exists. While we acknowledge that new studies will be needed, we also recognize that most hydrological and environmental consultants are paid to perform investigations and generate reports that favor optimistic development projections, impacts that are negligible, and non-existent hazards. To ensure transparency, all future studies pertaining to NPFA's Project should be performed in collaboration with the USGS, the federal agency that has more knowledge of Black Mesa's hydrological systems than any other.

NPFA Misleading Public: The Closed-Loop PSH Project. When using the phrases "open-loop" and "closed-loop" systems to describe PSH projects, it is very important to understand that, in a scientific context, describing a system as an open or closed system means something completely different.

In a scientific context, an open system is one that exchanges matter and energy with the surrounding environment. For example, an uncovered, boiling pot of water on a stove is an open system: heat enters the pot from a burner and subsequently releases matter into the environment as steam. A

closed system may exchange energy with its surrounding environment, but it does not exchange matter; the matter stays constant. For example, a sealed water bottle left in the sun absorbs heat through the plastic and warms the water inside, but no water vapor or liquid escapes back into the environment: this system is closed.

In contrast, an *Open-loop* PSH systems simply means that it maintains a continuous connection to a naturally flowing body of water, such as a river or ocean. A *closed-loop* PSH system uses water that is not connected to a naturally running body of water: it simply uses water from a man-made pond or reservoir. It is important to understand that this closed-loop system may add water to, or remove water from, the pond at any time. Being "closed" system in the PSH context is not the same as a "closed" system in a scientific context, and to use them as if they are interchangeable would be misleading.

NPFA's "closed loop" claims. NFPA developed a PowerPoint presentation to explain and describe its Chilchinbeto PSH project to affected communities, agencies, and government offices. It uses the phrase "closed loop" in the conventional PSH context to mean that it will use water from a pond it proposes to build and not from a naturally flowing river or stream. However, it also uses the phrase in a scientific context by stating, in bold print,

"It works on a closed loop (**water is not lost**)"[19]

Elsewhere in its presentation, NPFA compares Peabody's method of developing and using N-Aquifer groundwater to NPFA's proposed use of C-Aquifer groundwater. The graphic implies greater

[19] NPFA 2026. *Navajo Nation: Powering Prosperity as the Clean Energy Storage of the Southwest*, a presentation by Nature and People First Arizona to affected stakeholders of the Chilchinbeto Pumped Storage Hydropower Project.

sustainability than is possible (no emphasis added):

PSH IS THE EXACT OPPOSITE OF PEABODY MINING PROJECT:

PEABODY	PSH
WATER LOST IN SLURRY	*WATER IN CLOSED-LOOP* ***(NOT LOST)***[15]

Here, either NPFA is ignorant of the difference between the PSH context and the scientific context of the phrase *closed system*, or it is aware of the difference and intentionally misused the phrase to mislead all affected stakeholders into thinking the system is more sustainable than it is. Either possibility – ignorance or lack of integrity – should raise concern about NPFA's attempts to acquire rights to Black Mesa's scarce water resources.

Given that NPFA acknowledges, elsewhere, that 2,500 AF/Y of groundwater will need to be pumped from Black Mesa's aquifers to make up for evaporated pond water, it is believed that this was an intentional effort to mislead.

C-Aquifer Groundwater Users. Groundwater development of the C-aquifer has increased since the 1940s. Currently, Navajo, Hopi, Flagstaff, Winslow, Holbrook, and three regional power plants – Cholla Generating Plant in Joseph City, Coronado Generation Station near St. Johns, and Springerville Generation Station in Springerville – are users of C-aquifer water.

In 1966, Peabody consultants determined that it was *not* economically feasible to withdraw groundwater from the C-Aquifer for coal mining needs due to the cost of developing wells more than 5,600 feet deep and the energy cost of lifting groundwater from such depths.

The most recent estimate of total groundwater withdrawals from the C-Aquifer is from Hart

(2002) with an estimated 140,000 af/y for water-year 1995, with an assumed annual increase of 3-4% (if this assumption is correct, then current total withdraws would exceed 450,000 af/y).

Since 2005, the USGS has monitored the C-Aquifer, but only in its southern extent between St. Johns and Flagstaff, Arizona, along the Interstate-40 corridor (Figure 2) within the Little Colorado River Basin, to establish baseline groundwater and surface-water conditions and quantify physical and water-chemistry responses to stresses from pumping and climate. The monitoring program presents groundwater data that dates to the 1950s.

> *"The Coconino Aquifer (C aquifer) is a regionally extensive multiple aquifer system supplying water for municipal, agricultural, and industrial use in northeastern Arizona, northwestern New Mexico, and Southeastern Utah… [the] increase in groundwater withdrawals coupled with ongoing drought conditions increase the potential for substantial water-level decline within the aquifer."*[20]

Proposed annual withdrawals from the C-Aquifer. NPFA's project states that its closed loop reservoir system will require an initial 10,000 acre-feet of water from the C-Aquifer, and thereafter require another 2,500 af/y to make up for evaporation losses.

To clarify – NPFA's closed-loop system in which "water is not lost" – will lose 25% of the groundwater it uses every year and will be replenished annually by C-Aquifer water. This is 125,000

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[20] Jone, C.J.R., and Robinson, M.J., 2021. *Groundwater and Surface-Water Data from the C-Aquifer Monitoring Program, Northeastern Arizona, 2012-2019*: U.S. Geological Survey Open-File Report 2021-1051, 34 P., https://doi.org/10.3133ofr20211051.

acre-feet of C-Aquifer groundwater used to replenish evaporative losses after the system's first 50 years in operation, or 250,000 AF over the proposed 100 years of operations.

125,000 acre-feet of water over a fifty-year period is nearly the same amount of groundwater that Peabody Coal pumped from the N-Aquifer over the life of the mine. However, NPFA proposes to withdraw groundwater from the C-Aquifer in an area that is closer to the surface and is neared to locations where the aquifer is unconfined – having no upper confining layer and may be exposed at the surface. Such areas would be particularly susceptible to subsidence, earth fissures, and declining discharge from springs and to streams.

NPFA further asserts that this rate of annual withdrawals to replenish evaporation losses will be 0.0625% of total water volume, implying that impacts to the C-Aquifer will be negligible. Black Mesa residents have been listening to Peabody Coal and the regulatory agency OSMRE for nearly sixty years claim that Peabody's withdrawals from the N-aquifer were equivalent to withdrawing *a cup of water from a fifty-gallon drum*. The reality of groundwater pumping is that very small withdrawals may have very serious and extensive impacts given the location of the wells, the parameters of the aquifer, and the pumping history of the aquifer and its associated aquifers. Indeed, impacts from 50 years of Peabody pumping resulted in impacts to the hydrological system that were far greater and over var greater area than Peabody or OSMRE predicted.

Water Loss: Evaporation and Solar panels. NPFA further asserts that if the lower reservoirs is "covered" with solar panels, it will "minimize evaporation", requiring half as much groundwater (1,250 acre-feet per year) to replenish evaporative losses. These figures – both the total 2,500 af/y and the 1,250 af/y – are based upon assumptions that assume climatic averages: temperature, wind velocity, UV

index, dew point, precipitation, etc., and such estimates should be regarded with suspicion, especially in an environment that is warming and drying.

Water Loss: Leakage. Arguably more concerning that evaporative losses, NPFA fails to acknowledge how groundwater pumped and transferred into its two new reservoirs will be prevented from leaking back into the porous sandstone. Without a leak-proof lining in the storage reservoirs, a vast amount of water will be lost every year to leakage.

Because there are no covers to prevent evaporative losses, and there are no leak-proof linings to prevent leakage back into the groundwater, this open system will experience vast water losses every year.

Water Rights. Elsewhere in PFA's PowerPoint presentation for affected stakeholders, the organization implies that the Chilchinbeto PSH Project will assist the tribe in winning new rights to the C-Aquifer. The presentation states:

> "Water is not taken away from the community. On the contrary, PSH Project is bringing water to the community. It helps the Navajo Nation build water rights thanks to thoughtful increased water use of C-Aquifer."

The presentation continues, in larger print (no emphasis added):

> "More than 65% of the C-Aquifer is under the Navajo Nation. Yet less than 1% of the water used from the C-Aquifer is for the people of the Navajo Nation. 99% is used for power plants and big cities outside the nation (70% of Flagstaff water comes from the C-Aquifer). "Water use creates water rights"."

However, the Navajo Nation already has senior rights to the C-Aquifer. Federal reserved Tribal

water rights are defined and governed by a body of federal law that recognizes Tribes have unique property and sovereignty rights over water on their reservations. Because Native Americans have occupied land since time immemorial, Tribes often hold the highest priority water rights.

The Navajo Nation has substantial and enforceable rights to water, including access to the C-Aquifer, as part of the *Northeastern Arizona Indian Water Rights Settlement Agreement*. This agreement affirms the tribe's rights to various water sources, including the C-Aquifer, as one of the primary aquifers that provide groundwater to the Navajo Nation. The specific rights to the Coconino Aquifer are part of the broader water rights settlement, which guarantees substantial water allocations to the tribe. In short, NPFA's project will not help the Navajo Nation acquire nay new water rights. Curiously, however, NPFA seems to already understand this. Elsewhere in its presentation and application materials, NPFA states that the Navajo Nation's rights to water in the C-Aquifer are "unlimited".

The Tragedy of the Commons. The assertion that "Water use creates water rights" also fosters an environment that leads to the "Tragedy of the Commons". In a Tragedy of the Commons scenario, a valuable natural resource, like the water in a groundwater aquifer, is shared by multiple users – farmers, cities, industries, etc. If a water user recognizes that if they fail to use this resource, they will not collect any profits that would have come from their uses. Since a single user will receive 100% of the profit or other benefits (e.g., food for a year) while the water is available, they are incentivized to maximize their use of water available to them. Because other users recognize the water may run out, each user hurries to use as much as possible, making the water-levels decline faster than the aquifer naturally recharges. With all users incentivized to maximize their use before groundwater-levels drop and become too expensive to pump, the water is depleted in volume or quality, hurting all water users in the end.

ii. **Proposed Water Source: The San Juan River** (Figure 3)

NPFA has also identified that the San Juan River, crossing the northeastern extent of the Navajo Reservation, may be a possible source of the water supply needed for the Project.

> "The Source of water supply for the project will be either remote river water resources, locally available groundwater resources, or a combination of the two, with rights of use to be owned or acquired by the applicant. Two potential water supply sources have been identified for the project, including the San Juan River…"

NPFA appears to be ignorant to the history and current conditions of Colorado River water use, the "Law of the River", and the plausibility of acquiring new rights. It has been called the most overburdened river in the world, due to the historic over-estimation of annual flow, the over-allocation of the over-estimated flow, and the ongoing mega-drought and aridification of the West that further reduces the volume of water available to the 40 million people currently dependent upon it for water and electricity.

As a tributary of the Colorado River, the flow of the San Juan River is already a part of these overallocations. Moreover, the Bureau of Reclamation reported in 2012 that all states in the lower basin want to use more water from the river[21]. In short, there is no water in either the Colorado or San Juan

[21] United States Bureau of Reclamation. 2012. Colorado River Basin Water Supply and Demand Study. 34 p., U.S. Department of the Interior, Washington DC. Chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.usbr.gov/watersmart///bsp/docs/finalreport/ColoradoRiver/CRBS_Executive_Summary_FINAL.pdf

Rivers for new rights acquisitions; existing rights holders are having to cut their annual shares of the river's flow.

NPFA points to the 44,700 acre-feet per year of Colorado River water that the *Northeastern Arizona Indian Water Rights Settlement Agreement* allocated to the tribe, but NPFA would have to acquire rights to this water from the Navajo Nation and would require the some of the water users to forfeit their share.

Finally, water from the San Juan River would have to be transported by pipeline from the river to the lower reservoir location near Chilchinbeto, more than 40 miles away.

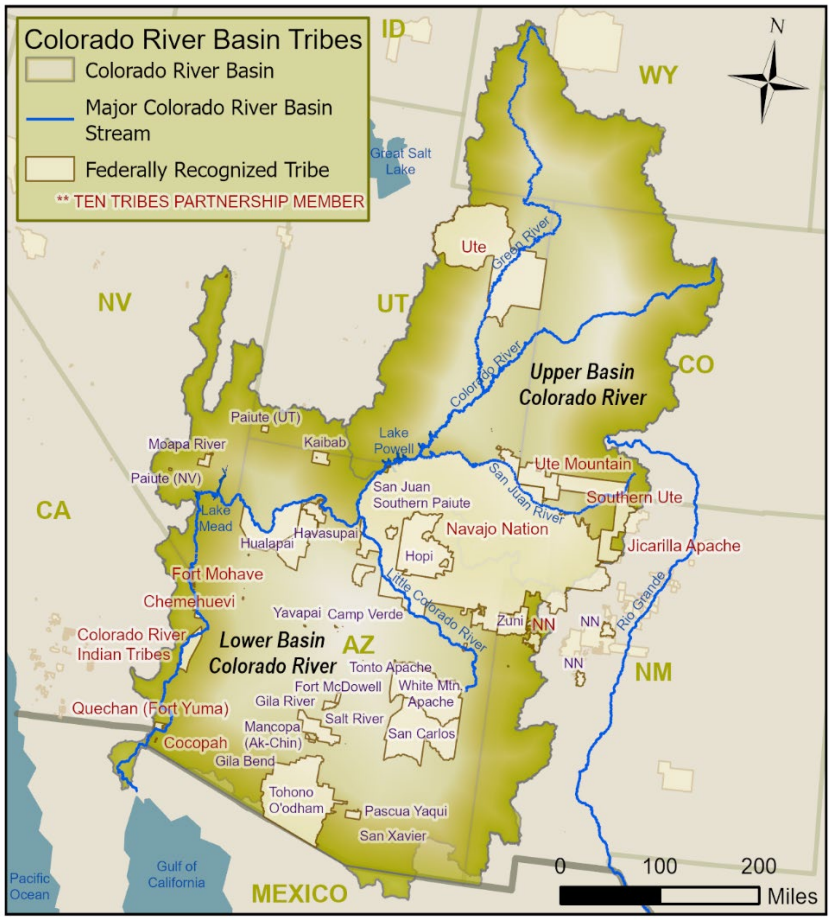

Figure 3. Map of the Colorado River Watershed and location of the San Juan River, northeast of the proposed Chilchinbeto PSH Project.

11. Application's Characterizations of Electricity Transmission Are Incomplete, Misleading, and Inaccurate

The proposed Project would need to deliver up to 1,038 MW to the Western U.S. grid, 1000 MW from the pumped storage project described in the applications and another 38 MW from the associated solar generation. The application suggests that all this power could be delivered via the existing 230 kV line between the Glen Canyon, AZ and Shiprock, NM substations, or by a new 230 kV line to Glen Canyon or Shiprock (application, transmission alternatives A, B, and C). Alternatively, the Applicant proposes to build a 500 kV tie-line to deliver project output south (transmission alternative D).

a. Shiprock-Glen Canyon Line (Transmission Alternative C) Can't Accommodate 1,038 MW and Can't Be Expanded

The existing line is rated for 400 MW, constrained by both the line thermal rating (422 MVA) and the existing phase-shifting transformer that is needed to prevent inadvertent flows from higher voltage lines in the region. Assuming flows from the project were sent both east and west, at 400 MW in each direction, and that there were no prior rights to use the line,[22] that would still mean the maximum generation that could be injected into the line would be 800 MW. That is well below the proposed 1,000 MW of pumped storage and the associated 38 MW of solar generation. Given that the existing line has

[22] Both assumptions are dubious; if they are false then the existing lines would be even more unusable for the proposed Projects.

been known to be fully used for over a quarter century,[23] the implication in the applications that it could deliver the output of the proposed Project is untethered from reality. The existing line was previously studied to see if its transfer capability could be increased by up to 500 MW. The conclusion was that, for a variety of reasons, it could not.[24] If its capacity cannot be increased by 500 MW, then it certainly cannot be increased by 1038 MW. The right-of-way for the existing 230 kV transmission line is only 125 feet wide. This is not wide enough for a second line in the same right of way. Thus, any new line will also need a new right of way, a fact that the applications ignores.

b. A new 230 kV line could not handle the proposed 1038 MW of new generation, so alternatives A and B in the application are likely not viable.

Even if a new transmission route could be established close to the existing Shiprock-Glen Canyon route (which is 183 miles long), it could not terminate at either the Shiprock or Glen Canyon substations. To carry over 1000 MW of power at 230 kV would require bundled conductors at close to 3000 amps, which is at or above the limit for 230 kV conductors. With the long distance and high temperatures between the proposed Project and either Shiprock or Glen Canyon substations, it is unlikely that a single 230 kV line could reliably carry the full project output, particularly on a hot summer day when demand for capacity would likely be at its maximum. It is also unclear – and the Applicant makes no effort to address – whether either the Glen Canyon or Shiprock 230 kV substations are capable of handling another 1038 MW of power flows.

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[23] "The capacity of Western's Shiprock-Kayenta-Glen Canyon 230kV line is now fully committed and Western is unable to provide any new long-term firm transmission service over the line." NTP DEIS, 1996, p. 1-4 (available online at https://www.energy.gov/sites/default/files/EIS-0231-DEIS-1996.pdf, pdf p. 32 of 542).

[24] https://www.oasis.oati.com/CRCM/CRCMdocs/SHR_NAV_TSR_Study_R4.pdf.

At Glen Canyon, there are two 230/345 kV transformers rated at 300 MVA each, a 230 kV line north to Sigurd, UT with a 387 MW line rating but only a 300 MW path rating (per WECC 2026 path rating catalog, path 79, Path TOT2B2), and the Glen Canyon-Shiprock line with a 400 MW rating, for a total export capacity from the Glen Canyon 230 kV substation of about 1300 MW. But the existing Glen Canyon Dam has an installed generating capacity of 1320 MW, and a current capacity (because of drought-caused reductions in Lake Powell) of about 800 MW. That means it would not be possible to deliver another 1038 MW to the Glen Canyon 230 kV substation while the dam is also generating, without overloading the outgoing transformers and/or transmission lines.

At Shiprock, there is a 230/345 kV transformer, a 230/115 kV transformer, a 230 kV line north to Lost Canyon, CO (rated at 442 MW), and the 400 MW Shiprock-Glen Canyon line. Here too, it is unclear that adding 1038 MW of new generation via a Chilchinbeto-Shiprock 230 kV line would be possible without overloading existing facilities, and the application does not even identify this as an issue, let alone resolve it.

c. **The Application's Characterizations of Electricity Transmission in Alternative D is Incomplete, Misleading, and Inaccurate**

Transmission Option D is a 42.4 mile 500 kV transmission line running southeast from the proposed Project to interconnect with the existing 500 kV Four Corners-Moenkopi line. The application is inaccurate with regard to the line right-of-way, incomplete with regard to the required interconnection, and misleading with regard to the impacts of this transmission option.

Right of way description is inaccurate and misleading

The application as filed says that the Transmission Option D would require "5,5630" (sic) acres

of tribal land, 1500 acres of Federal land, and a total of 7000 acres of land, for a length of 42.4 miles (application, Exhibit 1, pp. 3 and 5). The "5,5630" figure is of course inaccurate, but is also apparently incomplete, since it contains no map or other data indicating the basis for the numbers. If it were a simple typographical error, then the correct figure would be 5500 acres, based on 7000 total acres minus 1500 Federal acres. But the FERC staff, recognizing that the application was incomplete, requested clarification on March 5, 2026, which the Applicant provided in a letter to FERC on March 24, 2026.

The March 24 letter contains a new characterization of Transmission Alternative D that is blatantly inaccurate and thus is misleading as well. The March 24 letter reduces the claimed usage of Federal land from 1500 acres to zero and reduces the figure for Navajo land from (presumably) 5500 acres to 4696.1 acres. The claimed basis for these reductions is that the revised figures reflect a "25-foot-wide transmission line corridor, which significantly reduced the amount of federal land potentially occupied by the project."

First, a 25-foot-wide transmission corridor is utterly inadequate for a 500 kV transmission line. A more typical width is 200 feet. See, for example, the recent Arizona decision approving a 5-mile 500 kV tie-line from a generator to an existing 500 kV line, with a 200-300 foot "project Corridor" containing a 200-foot right-of-way.[25] Thus, the claim that Transmission Option D would require only a 25-foot corridor is both misleading and inaccurate. Second, the Applicant's numbers are self-contradictory. A 42.4 mile long corridor with a 25-foot right-of-way corridor would require 42.4 miles x 5280 feet/mile x 25 feet = 5,596,800 square feet. At 43,560 square feet per acre, that means Transmission Option D would need only 128.5 acres of land, not the 4696.1 acres claimed by the

[25] https://americas.rwe.com/-/media/RWE/RWE-USA/documents/forged-ethic-wind-energy-project/cec-application/CEC-225A.pdf

Applicant. So, the 25-foot right-of-way claim is completely inconsistent with the 4696.1-acre figure.

Second, if the revised 4696.1-acre figure is correct, it would represent a huge land grab by the Applicant. That amount of land for a 42.4-mile line corresponds to 4696.1/42.4 = 110.8 acres per linear mile of transmission line. That in turn corresponds to a right-of-way width of 110.8 acres/mile x 43560 square feet/acre x 1 mile/5280 feet = 913 feet wide. That is far more than any transmission line would ever need, even a 500 kV line. So, the 4696.1-acre figure submitted to FERC by the Applicant in March 2026 is both inaccurate and misleading, arrived at capriciously through unexplained math.

Interconnection description is incomplete

The Applicant's listing of the sections within which Option D would be located shows its southern terminus at Township 32N, Range 24E, township 28, a point approximately 10 miles west of the town of Chinle. The only thing at that location is the 500kV Four Corners-Moenkopi line belonging to APS. The application is incomplete, because it does not describe what facilities would be needed to interconnect to APS's line. At a minimum, a new 500 kV switching station would be needed. The application should be amended to include the needed interconnection facilities and the land area they would require. The application is misleading in that it fails to address the impact of such an interconnection, the requirements to make such an interconnection, and whether such an interconnection would even be possible. APS maintains a large queue of projects seeking to interconnect to its system. That queue already includes a 400 MW project seeking to interconnect to the Four Corners-Moenkopi line, a project which has not yet been fully reviewed or approved. The Applicant's project would fall behind that project in the APS queue. But the Four Corners-Moenkopi line had a rating of 1550 MW as of 2018. It has a maximum thermal rating of a little over 2200 MW if various constraints are dealt with. It is completely unclear if there is enough available capacity on that line to handle another 1438 MW of flow, 1038 MW from the Applicant and 400 MW from the project already in the APS queue.

Incomplete and thus misleading regarding transmission impacts

The application fails to disclose that its proposed transmission alternative D, particularly if built with the 900+-foot right-of-way implied by its acreage figures (see discussion above), would traverse through or near numerous sensitive locations. Those include:

Township 33N, Range 24E, section 17: unnamed spring

Township 34N, Range 24E, section 20: Nez Springs

Township 35N, Range 23E, section 27: Rough Rock School

Township 35N, Range 23E, section 28: Rough Rock community

Township 36N, Range 21E, section 16: Chilchinbeto community

Township 36N, Range 21E, section 22: Chilchinbeto Spring

12. The Commission Should Deny PNFA's Preliminary Permit Application Because the Proposed Project Would Cause Unmitigable Harm to Cultural Resources

The Commission should deny the permit application because construction and operation of the project would cause unmitigable harm to cultural resources and values on Black Mesa and across the project's footprint, including but not limited to historic and pre-historic habitations and burials, grazing lands, agricultural and hunting areas, religious sites, artifacts, trails, and other values. In many cases, construction and operation of the project, including land excavation activities, would involve wholesale unmitigable destruction of these sites and values. The Commission should deny the permit application to prevent these impacts entirely.

13. The Application is Incomplete and Misleading as Relates to Wildlife and Biodiversity

Construction and operation of the project would industrialize land on and below Black Mesa, destroying and replacing native vegetation and wildlife habitat with industrial facilities. It would have

the effect of killing and displacing plants and animals that now occupy the project area owing to excavation, blasting, operation of heavy machinery, vehicle traffic, and operation of generators, lights, and other facilities. Construction and operation of the facility would cause short and long-term visual and auditory disturbances to animals, it would introduce and facilitate the spread invasive species, and it would increase the risk of human-caused wildfires that could spread across large swaths of Black Mesa. Aquifer pumping could dry seeps and springs that provide habitat and water for rare, imperiled, and other plants and wildlife.

Understanding and avoiding these and other impacts, and understanding the proposed Project's potential compatibility with applicable federal and Navajo Nation Law, requires specific, complete, and accurate baseline ecological information about ecosystems, plants and animals in and around the project area. For lack of such information, the application is incomplete. But these deficiencies go beyond incomplete disclosures; some rise to the level of misleading omissions because they conceal specific, known risks – such as impacts to wildlife species included on the federal Endangered Species Act and Navajo Endangered Species List – and launder those risks in the application's commitments for future procedure. This subverts an understanding by the public and agencies of the project's potential impacts and compatibility with land use and wildlife law and policy, and it conceals otherwise obvious problems that may complicate or preclude the application's design and actual feasibility. The Commission should deny the application for incompleteness and repeated misleading omissions.

a. The Application Lacks a Basic Description of Biological Communities

The application should describe the biotic communities of Black Mesa – the vegetation types, plants, and animals that inhabit the area. It should describe how the extreme elevational relief and

geographic position of the project area provide for a high diversity of biotic communities in a relatively small area. It should describe rare and special status species, and wildlife species of particular cultural importance. It should describe available water sources, like seeps and springs, that wildlife use, and it should describe unusual or rare vegetation types, like mixed conifer forest and riparian areas, that provide unique habitats. But the application provides none of this. Instead of providing a clear baseline characterization, it is incomplete and misleading because it omits even a basic overview of the biotic communities and biological diversity on and near Black Mesa, as may be impacted by construction and operation of the proposed Project. A study plan of this scope, for a project of this footprint, should provide clear baseline ecological characterization that employes publicly available data rather than deferring all habitat description to future ill-defined survey work.

For example, within only a five-mile radius of the proposed upper reservoir, which is an area too small to assess the project's potential impacts on biodiversity, there are 14 biotic communities or "land cover" types, as classified by the Southwest Regional Gap Analysis Project (SWReGAP), a multi-institutional cooperative effort to map and assess biodiversity for a five-state region (AZ, CO, NV, NM, UT) of the southwestern U.S. These land cover types[26] include Colorado Plateau Mixed Bedrock Canyon and Tableland, Colorado Plateau Pinyon-Juniper Woodland, Inter-Mountain Basins Big Sagebrush Shrubland, Inter-Mountain Basins Greasewood Flat, Inter-Mountain Basins Greasewood Flat, Inter-Mountain Basins Juniper Savanna, Inter-Mountain Basins Mixed Salt Desert Scrub, Inter-Mountain Basins Semi-Desert Grassland, Inter-Mountain Basins Semi-Desert Shrub Steppe, Inter-

[26] USGS National Gap Analysis Program. 2005. Southwest Regional GAP Analysis Project—Land Cover Descriptions. RS/GIS Laboratory, College of Natural Resources, Utah State University. Land Cover Descriptions are available at: https://rsgis-swregap.s3-us-west-2.amazonaws.com/public/docs/swgap_legend_desc.pdf

Mountain Basins Shale Badland, Invasive Perennial Grassland, Rocky Mountain Cliff and Canyon, Rocky Mountain Ponderosa Pine Woodland, and Southern Colorado Plateau Sand Shrubland.

A simple Google search by applicants would have revealed this and other publicly available information sufficient for the application to provide the public and FERC a basic characterization of the biotic communities and biological diversity on and near Black Mesa, which is a simple but necessary prerequisite to understanding the ecological context of the proposed Project and to informing the studies and surveys that may be necessary to begin to assess potential effects. A Google simple search would reveal peer-reviewed studies and federal and Navajo Nation agency records that provide further detail and context, such as the documented occurrence of federally threatened Mexican spotted owls in patches of mixed-conifer forests on Black Mesa. This lack of basic information not only starves the application of baseline context, it reflects a low standard of technical rigor that should preclude FERC's acceptance for the preliminary permit application.

b. The Application Fails to Name Any Plant or Animal Species and Fails to Discuss Endangered and Other Imperiled Species

The application is incomplete – and misleading by omission – because it fails to name any plant or animal species that occur on or near Black Mesa or provide even a basic overview of the special status and other plant and animal species that would be impacted by construction and operation of the proposed Project. Here again, a simple Google search by applicants would reveal peer-reviewed science and federal and Navajo Nation documents that provide detailed information about the plants and animals that occur, or may occur, on and near Black Mesa. Again, these deficiencies are not merely incomplete disclosures; several rise to the level of misleading omissions because they launder and shield specific, known risks – such as risks to species included on the federal Endangered Species Act and

Navajo Endangered Species List – with vague commitments to future procedure.

For example, the application fails to include any discussion of the species on the Navajo Endangered Species List (NESL)[27], which of those species may occur on and near Black Mesa, whether or how those species may be impacted by the proposed Project, what sort of surveys may be necessary to measure the presence and abundance of those species, and whether and how those surveys themselves could displace, disrupt, or otherwise harm those species. While the application makes no evidence to identify which NESL species may occur on Black Mesa and in the project area, a cursory cross-tabulation of NESL species with previous LaRue's 1994 avian survey of Black Mesa[28] shows 15 species of bird that are listed on the NESL that have been documented on Black Mesa (Table 1).

Table 1. Navajo Endangered Species List bird species with known occurrence on Black Mesa.

NESL Group	Taxon	Species	Comments
G3	Bird	Mexican Spotted Owl (*Strix occidentalis lucida*)	NNHP species account names Black Mesa explicitly as a habitat type; nest sites, molted feathers, roosting confirmed by LaRue and Navajo MSO Management Plan
G3	Bird	Golden Eagle (*Aquila chrysaetos*)	LaRue: sparse permanent resident
G3	Bird	Ferruginous Hawk (*Buteo regalis*)	LaRue: uncommon migrant, multiple records
G4	Bird	Northern Goshawk (*Accipiter gentilis*)	LaRue: fairly common winter resident; nests found in mixed-conifer
G4	Bird	Northern Saw-whet Owl (*Aegolius acadicus*)	LaRue: documented from single feather (1985), then 10 individuals in 1993
G4	Bird	Flammulated Owl (*Otus flammeolus*)	LaRue: uncommon summer resident; nest reported 1936
G4	Bird	Northern Pygmy-Owl (*Glaucidium gnoma*)	LaRue: uncommon permanent resident, mostly mixed-conifer
G4	Bird	Burrowing Owl (*Athene cunicularia*)	LaRue: single site record; seen just northeast of study area
G4	Bird	Belted Kingfisher (*Ceryle alcyon*)	LaRue: fairly common migrant at ponds

[27] Available at https://www.nndfw.org/nnhp/nnhp_nesl.pdf

[28] LaRue, C.T., *Birds of Northern Black Mesa, Navajo County, Arizona*, 54 Great Basin Naturalist 1 (1994), available at https://scholarsarchive.byu.edu/gbn/vol54/iss1/1.

G4	Bird	Yellow Warbler (*Dendroica/Setophaga petechia*)	LaRue: common fall migrant in tamarisk
G4	Bird	Hammond's Flycatcher (*Empidonax hammondii*)	LaRue: sparse migrant, two records
G4	Bird	Band-tailed Pigeon (*Patagioenas fasciata*)	LaRue: sparse transient
G4	Bird	Sora (*Porzana carolina*)	LaRue: sparse migrant, seven records
G4	Bird	Tree Swallow (*Tachycineta bicolor*)	LaRue: common migrant near ponds
G4	Bird	Gray Vireo (*Vireo vicinior*)	LaRue: fairly common summer resident; nest found

The application makes the same misleading omission with regard to fish. While the application affirmatively proposes the San Juan River as a water source alternative, it doesn't just fail to mention fish; it discusses this water source in purely engineering/hydrology terms (baseflow variability, impacts on Navajo communities using the C Aquifer) while staying silent on the fact that the same river segment carries federally designated critical habitat for four endangered fish species. This omission selectively presents one category of impact (hydrologic/socioeconomic) while omitting a legally material category (ESA-listed species and critical habitat) for the *same proposed action*. A decision-maker reading only the application would reasonably conclude the water-source choice is an engineering question with no independent endangered-species dimension, which is both false and misleading. We further discuss the San Juan River and its endangered fish in the next subsection.

A simple Google search by applicants would have revealed this and other publicly available information sufficient for the application to provide a basic characterization of the plant and animal species known to occur on and near Black Mesa, including special status species. This is a prerequisite to understanding the ecological context of the proposed Project and to informing the studies and surveys that may be necessary to begin to assess its potential effects. Given that LaRue's peer-reviewed survey, the Navajo Nation's own Mexican spotted owl management plan Management Plan, and the Navajo Nation’s published species accounts that describe this exact landscape — and given that the applicant already has Permission to Survey and a five-year Land Withdrawal Designation, implying that they've

had site access for at least two years — the failure to search and provide such relevant information is a blatent omission – a choice not to surface information that would complicate the application's risk profile.

c. Use of San Juan River Water Could Harm Federally Threatened and Endangered Species

Construction and operation of the proposed Project may destroy or adversely modify occupied and/or designated critical habitat for threatened and endangered species. Section 7(a)(2) of the Endangered Species Act requires Federal agencies, in consultation with and with the assistance of the Secretaries of the Interior and Commerce, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species (16 U.S.C. § 1536(a)(2)). The Act defines critical habitat as the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Act, on which are found those physical or biological features (1) essential to the conservation of the species and (2) which may require special management considerations or protection, as well as specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Act, upon a determination by the Secretary that such areas are essential for the conservation of the species (16 U.S.C. §1532(5)(A)). Conservation means to use and the use of all methods and procedures that are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary (16 U.S.C. §1532(3)).

The Project describes potential water sources as the San Juan River and the C-Aquifer. The San Juan River includes occupied critical habitat endangered Colorado pikeminnow and razorback sucker.

Further depletion of the San Juan River for the project would reduce water availability for these fish, their designated critical habitats, recovery programs and requisite river flows. Even under current conditions, water managers are unable to consistently meet the U.S. Fish and Wildlife Service's (FWS) recovery flow criteria in the San Juan River. Between 1998 and 2020, the minimum duration criteria of 10,000 cfs in the San Juan River Implementation Plan for endangered Colorado pikeminnow and razorback sucker were met in only three years, minimum duration criteria of 8,000 cfs were met in only two years, and minimum duration criteria for 5,000 cfs were met in only nine years. In each case, the San Juan River Implementation Plan calls for a larger number of years in which these flow thresholds are met than what has been observed. Declining flows, as would result from depletions from the proposed Project, also indirectly harm endangered fish. Lower flows reduce dilution and increase concentrations of heavy metals, selenium, salts, polycyclic aromatic hydrocarbons, pesticides, and other contaminants that harm endangered fish. By removing more water from the San Juan River, the proposed Project could destroy or adversely modify designated critical habitat for Colorado pikeminnow and razorback sucker, and could diminish or degrade critical habitat for southwestern willow flycatcher, and occupied habitat of the western yellow-billed cuckoo. The Commission should not issue a preliminary permit without consultation under the Endangered Species Act, which has not occurred. The Commission should therefore deny PNFA's preliminary permit applications.

d. The Application Fails to Address Wildlife Access to Springs and Water

The application is incomplete because it fails to discuss the location of springs and seeps, it fails to discuss the potential for the project's industrial aquifer depletion to dry those seeps and springs, and fails to name, analyze, or discuss which species of plants and wildlife may be impacted by such drying or by limited access to those water sources, as may otherwise result from the project. The Project's aquifer sources may discharge at seeps, springs and hanging gardens that are tens or more

miles from the project itself; these could include springs occupied by rare or threatened species, like Mexican spotted owl. Further depletion of regional aquifers for construction and operation of the proposed Projects would further deplete and dry seeps, springs, and hanging gardens upon which threatened Mexican spotted owl depends and other species depend. In the context of both an arid landscape and high cultural importance placed on springs, water, and dependent wildlife, this omission effectively overlooks a key facet and potential impact of the proposed Project.

e. Acreage, Footprint Inconsistencies Undermine Biological Surveys

Inconsistencies in the application's estimated acreages or footprint, such as transmission corridor acreages that may understate actual clearing width (as the 25–30-foot implied widths suggest), may cause incomplete or incorrect biological and other surveys. Acreage inconsistencies invite and compound errors in eventual impact analysis by predicating surveys on an informational foundation that doesn't reflect the actual physical project. Thus, the application's failure to provide accurate information with regard to the project footprint and the extent and type of its ancillary risks compounding errors in subsequent surveys and impact analysis.

f. The Application Should Be Denied Pending Compliance with Applicable Federal and Navajo Nation Code Relating to Biological Surveys and Surveys for Endangered Species

The application should be denied unless and until applicants provide evidence of compliance and permitting under all applicable federal and Navajo Nation law for biological, endangered species, and other field surveys or investigations that have the potential to impact federally threatened or endangered species or species on the Navajo Endangered Species List.

g. The Application and Proposed Project Would Conflict with Development

Restrictions in "Highly Sensitive Areas" Pursuant to Navajo Nation Code 17 NNC § 500 et. Seq. and Biological Resource Land Clearing Policies

The proposed Project is located within a "Highly Sensitive Area" where industrial energy development that involves "permanent structures, temporary, long term, or repetitive disturbance to wildlife or habitat" is generally restricted with a presumption of "no activity or development that is going to result in significant impact to wildlife resources" subject to Navajo Nation approval. Given the presumption against development, and because the basic nature and extent of proposed Project is knowable from the application, the Commission should deny the application until it provides evidence of compliance with applicable requirements of Navajo Nation Code 17 NNC § 500 et. Seq. and Biological Resource Land Clearing Policies that govern the protection of wildlife resources, including plants, from industrial development.

The Resources and Development Committee of the Navajo Nation Council ("RDC") provides the legislative oversight of the Division of Natural Resources that includes the Navajo Nation Department of Fish & Wildlife (NNDFW). It adopts policies, procedures and regulations that protect the biological resources of the Navajo Nation. The RDC, by Resolution No. RCMA-34-03, dated March 13, 2003, approved the Biological Resource Land Clearance Policies and Procedures formerly referred to as the BRLC. The NNDFW is established, "to conserve, protect, enhance and restore the Navajo Nation's fish, wildlife, plants and their habitat, through aggressive management programs for the spiritual, cultural and material benefit of present and future generations of the Navajo Nation". NNDFW has identified and mapped wildlife habitat and sensitive areas that cover the entire Navajo Nation. The RCP Policies and Procedures direct development to areas where impacts to wildlife and/or their habitat will be less significant. Development includes but is not limited to human activities that result in permanent

structures, temporary, long term, or repetitive disturbance to wildlife or habitat as defined by Navajo Nation Code 17 NNC § 500 et. Seq. The entire Navajo Nation has been divided into six types of wildlife areas, Areas 1 - 6. These areas provide the framework for planning specific development projects, but site-specific planning to address wildlife resources will still be necessary, in most cases. RCP Policies and Procedures explain what restrictions apply in each area and describes the process for the planning and approval of projects with respect to wildlife resources.

The proposed Project is located in Area 1, a "Highly Sensitive Area," which is the most protective among the six types of wildlife areas. According to NNDFW, this area:

> [C]ontains the best habitat for endangered and rare plant, animal and game species, and the highest concentration of these species on the Navajo Nation. The purpose of this area is to protect these valuable and sensitive biological resources to the maximum extent practical. The general rule for this area is no activity or development that is going to result in significant impact to wildlife resources. Restricted development is allowable only if the following criteria are met. All development requires the preparation of a BE. An acceptable BE must fully consider alternatives to the proposed development and provide a compelling reason to develop in this area.[29]

NNDFW criteria for allowable development in Highly Sensitive Areas are as follows:

A. Residential/business development is allowed within Area 1 if it is:

1. Not within or close enough to the habitat to cause significant impacts;

2. Located on the perimeter of the area; if not on the perimeter, there must be no reasonable alternatives;

3. Located within 1/8 mile of similar development.

B. Other types of development are allowed in Area 1 if:

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[29] *See:* https://www.nndfw.org/zones/area1.htm

1. It is not within or close enough to habitat to cause significant impacts;

2. There are no reasonable alternatives outside the area.

In this case, the applicants' proposed pumped storage business development within a Highly Sensitive Area would be inconsistent with the policy because it involves "permanent structures, temporary, long term, or repetitive disturbance to wildlife or habitat," it is within and close enough to cause significant impacts, and there are reasonable alternatives for applicants to pursue energy storage projects elsewhere in the United States and the world.

F. If the Commissions Inadvisably Accepts the Inadequate and Incomplete Permit application, the Commission Should Require PNFA To Conduct Additional Studies on the Proposed Projects and Allow Intervenors and Affected Communities to Participate in Study Development

The scope of studies proposed by the Applicant is inadequate to provide needed information for review under National Environmental Policy Act ("NEPA"), ESA, and other laws; for this, additional studies with additional detail are needed. If the preliminary permit is granted, the Intervenors request that they and all other parties and stakeholders be allowed to actively participate in the design and review of all such studies.

1. Scope of the Proposed Studies is Incomplete, Vague, and Inadequate

The scope of the proposed studies is incomplete, and descriptions of those studies in the application is incomplete, vague, and inadequate. The application often describes studies in sometimes duplicative word salads that the lack detail and substance necessary to adequately describe a forthcoming investigation. The application fails to connect studies to the specific requirements of Tribal, federal and state law and regulation required for project permitting. The application lists and describes

the following categories of study:

Engineering Feasibility
Engineering feasibility studies will be conducted to substantiate technical feasibility and consummate cost estimates for the Project. Preliminary evaluations of the demand and markets for peaking power, pumping energy, and on-peak generation have been conducted. This evaluation and involvement in relevant resource planning procedures will continue throughout the license application process and may result in adjustments to the Project configuration, including the total energy storage capacity, quantity and capacities of the pump turbine units, operating modes, or any other Project characteristics.

Geology
In order to inform feasibility-level designs of the major Project features, geologic mapping will be composed, and a subsurface investigation program will be created and implemented; the information garnered from these studies will be provided as part of the License application in the Supporting Design Report. Seismic analysis will include calculations of peak ground acceleration (PGA), and will be prepared with consideration of applicable attenuation relationships. During license application development, site seismicity will also be evaluated. Before conducting any ground disturbing activities, an erosion control plan will be prepared. The Applicant will participate in a cooperative effort with the appropriate resource Agencies, Tribal Historic Preservation Officers (THPOs), Arizona State Historic Preservation Office (SHPO), and Chapter and tribal members to assess any adverse effects on resources pertaining to geology or other effects on resources noted below and appropriate measures to minimize and/or mitigate for such effects. NPFA will also consult with the Navajo Nation Historic and Heritage Preservation Department which specializes archaeological and environmental field services.

Water Supply
The source of water supply for the project will be either remote river water resources, locally available groundwater resources, or a combination of the two, with rights of use to be owned or acquired by the applicant. Two potential water supply sources have been identified for the Project, including the San Juan River and the C Aquifer. Studies will be conducted to develop a thorough understanding of hydrogeology and important groundwater/surface water relationships, including recharge routes, discharge, groundwater mobility, variability San Juan River baseflows, and other criteria pertinent to groundwater/surface water interaction within the system, including evaluation of potential impacts to river flows. The Navajo Nation Water Resource Department has identified a need to specifically identify the potential impact of any proposed wells utilizing the C Aquifer on surrounding Navajo communities that are currently using the C Aquifer.

Water Quality
Impacts of the Project on water quality are not anticipated but will be assessed to confirm.

Wildlife and Botanical Resources
Work with the appropriate tribal representatives and resource Agencies during the

following surveys, to be conducted:

- *Identification of aquatic habitats that might be influenced by the Project, both natural and artificial, including wetlands, seeps and springs, and other water sources. For each aquatic habitat identified, the Applicant will assess the condition, size, existing use by vegetation and wildlife, potential effect of the Project, and options for reduction of potential effects.*
- *Habitat analysis for area within Project boundary.*
- *Identification of any issues with species of concern, indicator species, and threatened or endangered species within Project boundary.*
- *Identification of construction and operational particularities including, but not limited to permitting, scheduling, labor resources, construction duration, and other project details which may impact biological resources.*

<u>Rare, Threatened, and Endangered Species</u>
Work with the appropriate tribal representatives and resource Agencies during an examination of the area within the Project boundary and immediately surrounding areas will be conducted to ascertain the presence of special-status species and potential effects of the Project on individuals and populations of any special-status species determined to habituate these areas. The following steps will be taken during this process:

- *Reconnaissance surveys to understand the existence and extent of habitat for relevant species.*
- *Protocol-level surveys for species with existing survey protocols.*
- *Focused surveys for other special-status species with potential habitat within the Project boundary.*
- *Focused surveys for other special-status species with potential habitat in the area immediately surrounding the Project boundary that could be affected by Project related activities.*
- *Identification of existing and potential threats to special-status species.*
- *Identification of construction and operational particularities including, but not limited to, scheduling, labor resources, construction duration, and other project details which may impact biological resources.*
- *Investigation of relevant papers and reports and review of new information not currently available.*

<u>Recreation</u>
During the licensing process, the Applicant will consider potential impacts of Project development and operation on present recreation resources, facilities, and opportunities, and reduction of potential impacts will be developed where appropriate. Potential recreational resources at the Project will be considered, but will likely be limited due to the pumped storage functionality of the Project and resulting frequent and substantial reservoir elevation fluctuation.

<u>Aesthetic Resources</u>
During the licensing process, the Applicant will participate in a cooperative effort with the appropriate resource agencies, Chapter and tribal members to administer a visual

resource survey.

Cultural Resources
The Applicant will participate in a cooperative effort with the Arizona SHPO, and THPOs to conform with the requirements of Section 106 of the National Historic Preservation Act, and Chapter and tribal members to assess any potential traditional and cultural resources. In order to understand historic and pre-historic cultural resources within the Project area and transmission corridors, a cultural resource inventory will be conducted, especially within sections of the Project area and transmission corridors which are currently unsurveyed. In the un-surveyed sections, cultural resource inventories will be performed by a qualified cultural resource consultant. NPFA will also consult with the Navajo Nation Historic and Heritage Preservation Department which specializes archaeological and environmental field services.

Socio-economic Resources
During the licensing process, the economic advantages of the Project to local and regional economies, both due to temporary construction and long term operation, will be examined.

Tribal Resources
During the licensing process, the Applicant will work with the THPOs and Arizona SHPO and to conform with the requirements of Section 106 of the National Historic Preservation Act. The Applicant will define an Area of Potential Effects in coordination with local Chapter and tribal members, THPOs, and the SHPO as details of the Project, especially the final transmission plan and site design, become better defined. Areas requiring additional surveys will be identified by qualified cultural resource consultants, and the results of these surveys will be documented and provided for review to appropriate stakeholders. NPFA will also consult with the Navajo Nation Historic and Heritage Preservation Department which specializes archaeological and environmental field services.

Wetlands
The Applicant believes that there are no navigable waters or jurisdictional wetlands at the proposed reservoir locations, however a wetland survey will take place. In the case that wetlands are discovered at these locations during field explorations, the utmost care will be taken to mitigate impacts due to drilling, test pit excavations, and other activities. Any potential long-term wetland impacts will be addressed with procedures approved by resource agencies. The full scope of the field exploration activities has not yet been determined.

These general and vague categories are inadequate to show that the studies will address all relevant issues. For example, the application lacks entirely any discussion or proposed study of environmental justice impacts, yet the project us proposed in an area with a long history of environmental injustice from coal mining and combustion. That began with siting decisions and legal

agreements that excluded and undermined the interests of people who live on and near Black Mesa; the Applicant is now repeating that history by seeking federal approvals without first obtaining consent from those same impacted communities. Environmental justice studies must consider impacts of construction and operation of the proposed Project as additive to and cumulative with the past and ongoing impacts of coal mining operations on Black Mesa; this includes but is not limited to relocations, displacement, land conversion; pollution, aquifer, spring, and stream depletion; financial divestment and exploitation; and other harm to people and the environment that may be worsened by the construction and operation of the proposed Project. Environmental justice studies must also squarely evaluate non-tribal ownership structures that have begotten off-reservation profits; as seen in coal mining operations, similar ownership structures seem to attend of the extant project proposals too.

The "engineering feasibility" studies must include risk of failure for dams and other infrastructure across various time frames. They should specifically address cavitation and other risks to the power conduits associated with complete or near-complete drawdowns of the upper and lower reservoirs to support multi-hour pumping and generation. These studies must evaluate the many problems and infeasibilities relating to reservoir siting and construction that are described above, which we will not repeat here. The engineering feasibility studies must also consider how the water chemistry of proposed (and infeasible and unavailable) water sources would interact with and potentially damage dam facilities and shorten the useful life of any components that are in contact with that water. As discussed in comments above, "engineering feasibility" and "water availability" studies must address the rights of way, power, and infrastructure necessary to move water more than 45 miles from the San Juan River to Black Mesa on an ongoing basis, on which the applications is astonishingly silent.

The "water supply studies" need to do more than demonstrate that any water is "available" to fill the reservoirs and replenish water lost to evaporation on an ongoing basis: the studies must also consider

seepage losses from the upper and lower reservoirs. As discussed earlier in these comments, the water supply studies must explicitly address current and future unavailability of water. This includes but is not limited to overallocation of the San Juan and Colorado Rivers, past depletion of aquifers from coal mining operations on Black Mesa, and the impacts of regional warming and aridification on future water supply. The water supply studies must evaluate the impacts of further aquifer depletion on flows within regional seeps, springs, creeks, and water wells. The water supply studies must also consider all water rights holders interests (which are subject to ongoing adjudication) as well as instream beneficial uses for fish and other aquatic resources, recreation, and other uses. The studies must also evaluate the potential impacts of the projects' aquifer and river depletions on water availability for regional communities, agriculture, and homes. Water supply studies must additionally address all other relevant impacts and information otherwise discussed in the comments above.

The "wildlife and botanical resources" and "rare, threatened, and endangered species" studies need to address special status and rare, endemic, endangered, and threatened species. But the geographic scope of these studies must reach beyond the immediate project areas, as proposed in the applications, to include a geography encompassing of all listed species and critical habitats that may be directly, indirectly, or cumulatively impacted by project construction and operation. For example, pumping water from the San Juan River to Black Mesa necessitates evaluating the potential for these additional depletions to directly or indirectly harm endangered fish and their occupied and designated critical habitat. Similarly, the proposal to further deplete Black Mesa's aquifers requires analysis of resultant depletion to connected seeps, springs, and creeks (that may be located dozens of miles away from points of depletion) and associated impacts to special status species and wildlife, like federally threatened Mexican spotted owl, that is associated with those habitats. Prior to conducting these studies, applicants

must secure appropriate federal and tribal permits to ensure that field surveys themselves do not harm rare, threatened, and endangered species or their habitats.

The applications propose "socio-economic studies" that would only assess socio-economic benefits that would result from the proposed Projects. These studies must also evaluate harms, and, beyond enumerating benefits and harms, the studies must quantify the socio-economic impacts likely to result from the projects' construction and operation. The studies must specifically evaluate socio-economic impacts to people living on and near Black Mesa. How many people will the projects displace? How much grazing land will be destroyed? How will industrialization from building and operating the projects degrade the quality of life for nearby residents? Who will own the project, and will there be community benefits agreements allowing some of the profits from the proposed Project to remain on-reservation, or within communities? The studies must also evaluate the potential impacts of the proposed Project's aquifer and river depletions on water availability for regional communities, agriculture, and homes.

The "tribal resources" studies fall short of meaningfully addressing environmental justice context and consequences of the proposed Project that are discussed earlier in these comments.

Each of the studies must include direct, indirect, and growth inducing impacts from increased access roads and other infrastructure that will occur and impact each of the environmental resources in the area.

2. Additional studies are needed, as well as environmental review before studies begin:

a. Impacts to People

As discussed above, the Applicant should be required to provide an independent case study of the social, economic, and cultural impact of the proposed Project to people living on and near Black

Mesa. How many people will the projects displace? How much grazing land will be destroyed? How will industrialization from building and operating the projects degrade the quality of life for nearby residents? Who will own the project, and will there be community benefits agreements allowing some of the profits from the proposed Project to remain on-reservation, or within communities? The studies must also evaluate the potential impacts of the proposed Project's aquifer and river depletions on water availability for regional communities, agriculture, and homes.

b. Location Studies

The Applicant should be required to produce studies based on USGS topo maps showing realistic reservoir locations, maximum pools, actual volumes and surface areas, required pipeline lengths, and resultant powerplant capacities. If these studies are inconsistent with the preliminary permit applications, then the permits should be terminated at that point as having been based on false information. These location studies should include before-and-after topo maps showing the results of any cutting and filling that would be required to remove existing features that would otherwise be above the eventual maximum pools of each reservoir. They should also quantify the volume of land that would need to be moved by cutting and/or filling in order to create the proposed reservoirs.

c. Housing Impacts

Based on the actual location studies, the Applicant should identify all residences which would be impacted, either by immersion or by loss/curtailment of road access and/or grazing access, and identify the mitigation to be provided. Where mitigation consists of new access roads, the location and environmental impacts of such new roads need to be identified and studied.

d. Impacts Relating to Roads

The Applicant should identify all Tribal and county roads which would be impacted by the

proposed Project, and then study what new road construction would be needed to replace those inundated roads. That study should include the proposed locations for replacement roads, the cost of such roads, their impacts on current users in terms of increased mileage required to be driven on the new roads as compared to the existing roads, and the environmental impacts of both new road construction (in terms of disturbed environment, impacts on endangered species, impacts on viewsheds, etc.) and impacts of the use of new roads (e.g., increased emissions due to longer driving distances required by new roads routed around the proposed Project). The application as written involves reservoirs that would require impoundments spread across miles of land. Constructing such impoundments will require road access. The Applicant should be required to identify the locations of the new roads that would be required to construct and subsequently access the various project features, including reservoir impoundments, power conduits, transmission lines, and substations. Such studies should include analysis of the environmental impacts of both constructing and maintaining such roads.

e. Transmission Requirements

i. New 500 kV lines and routes

The Applicant should produce detailed studies based on (though not limited to) power flow modeling to identify what new 230 or (more likely) 500 kV transmission facilities would be required to deliver the proposed 1000 MW of peak project hydrogeneration, plus the 38 MW of additional proposed solar generation from the floating solar array described in the applications. Studies should identify not just the required outlet facilities from the proposed Project, but also the additional downstream facilities (transformers, substations, additional transmission lines) required at and beyond the first point of interconnection to existing transmission lines or substations.

The 500 kV transmission requirements studies should include interconnection studies done pursuant to Western Electric Coordinating Council ("WECC") rules and practices, in cooperation with

adjacent utilities (including Public Service of New Mexico ("PNM"), APS, the U.S. Bureau of Reclamation, Public Service Co. of Colorado/Xcel Energy, Tri-State Generation and Transmission, and others as needed), to ensure that downstream impacts on neighboring utilities' portions of the transmission grid are properly identified. They should also include the results of interconnection studies performed by others with regard to the proposed Project, such as APS queue interconnection studies.

In addition to the power flow and other studies required to identify new transmission line requirements, the studies should also identify the routes for such lines. At a minimum, routing studies should include all of the routes studied for the proposed eastern portion of the Navajo Transmission Project (NTP) in the NTP DEIS of 1996, and all of the routes studied for any subsequent proposals for 500 kV transmission across the Navajo Nation that passed within 25 miles of the proposed Black Mesa pumped storage sites.

ii. New sub-500 kV lines and routes

It is clear that delivering 1040 MW of new generation will require new transmission kV lines to interconnect with the Western U.S. grid. However, it is also likely that if there will be solar generation at either of the upper and/or lower reservoirs, then lower voltage transmission facilities will be needed to collect and deliver that generation to the grid. Thus the Applicants should be required to produce further studies identifying the locations and voltages of the required transmission lines and substations to collect generation from the proposed Project and deliver it to the grid. Such studies should specifically address where and how electricity generated from floating solar panels will be collected, aggregated, transformed to higher voltages, and ultimately interconnected to the grid. Routing studies for these lower-voltage facilities should include alternatives that avoid the visual and land-use impacts of transmission lines descending the steep eastern escarpment of Black Mesa.

e. Transmission impacts

For each of the new transmission facilities identified in the transmission requirements studies, the Applicant should study the environmental impacts to the level of detail required for a NEPA-compliant environmental impact statement ("EIS"). Although out of date in some ways, the existing EIS for the once-proposed Navajo Transmission Project provides an example of an already-done EIS with accompanying studies for transmission routed through the same area as the proposed Project. Note that the NTP FEIS specifically identified the Marsh Pass area (which transmission alternatives A, B, and C could pass through or near) as an area with "Navajo and Hopi traditional cultural places, Class A Scenery, residential views, archaeological resources, raptor habitat, and soil erosion" where "impacts on traditional cultural places would be high" and "visual impacts would remain high." (NTP FEIS, pdf p. 33 of 266).

f. Related project impacts and cumulative impacts

Four years ago the Applicant proposed three separate projects in Black Mesa, in a preliminary permit application that was denied. Now NPFA has come back with a proposed Project that would replicate a piece of that original application. However, Applicant is also pursuing a second project, at the northern tip if Black Mesa, which would produce another 1,000 MW of pumped storage capacity (see Applicant presentation in Kayenta, October 2025). If the current application is approved, the Kayenta project is likely to follow and make use of some of the same interconnection facilities. FERC should require studies of how the current application would relate to a pending Kayenta project, either by resulting in duplicative facilities (if the Kayenta project did not share interconnection facilities with the Chichinbeto Project) or by sharing facilities (if, e.g., the Chilchinbeto Project used a 500-kV intertie, which allowed the Kayenta project to interconnect to the larger grid using that same 500-kV line).

g. Additional Water Studies

i. Initial filling

The Applicant should be additionally required to quantify what the actual initial water requirements for the proposed Project would be, taking into account that it may not be possible to fully empty the upper reservoir even when the lower reservoir is full, or to fully empty the lower reservoir because of the solar cells floating on it.

ii. Annual replacement of losses due to seepage and evaporation

The Applicants should be required to study what the evaporative losses would be with or without the proposed solar cell coverage of portions of the reservoirs, as well as losses due to seepage into the underlying formations.

h. Water supply sources and impacts

The Applicant's studies should identify how the water requirements quantified in its water requirements studies will be met, both initially and on an ongoing basis. These water supply studies should include the water sources and the routes and mechanisms that will be used to deliver water from the sources to the multiple proposed reservoirs. They should identify not only the environmental impacts of the proposed water delivery mechanisms, but also the legal structures that will enable the proposed water deliveries. Legal analysis should specifically address permitting from the Navajo Nation, and how delivered water will fit into the Colorado River Upper and Lower Basin paradigm of current water law, given that the upper reservoir would be in the Lower Basin and the lower reservoir in the Upper Basin, creating a potentially convoluted dynamic.

i. Replacement energy source(s)

Pumped storage projects are net consumers of electricity, because the energy required to pump water uphill is greater than that generated when it is released downhill.[30] The proposed Projects as described in the Preliminary Permit applications (without the proposed solar panels) would have a net energy consumption of approximately800 gigawatt-hours ("GWh") per year.[31] The Applicant needs to provide studies showing the expected sources of this electricity, based on the expected hours during which pumping would occur and the marginal resources of the Western U.S. grid during those hours.

Alternatively, if the Applicant claims the proposed Project would self-supply part of the pumping energy from the floating solar cells that are referenced in the application, they will need to explain how they would supply pumping energy during nighttime hours when the solar cells would not be generating or provide studies showing how the marginal generation displaced by solar generation would compare to the marginal generation used during pumped storage pumping hours.

j. Dispatch Impacts Study

Relatedly, a dispatch impacts study should analyze the likely marginal sources of generation that would be used to provide pumping energy for the proposed Projects in the absence of some or all of the Projects' proposed solar generation, and the likely marginal sources of generation that would be displaced when the project was generating electricity.

The purpose of this study is to quantify the extent to which the proposed Projects would increase or decrease emissions of greenhouse gases and other pollutants. While a potential environmental benefit

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[30] If it were otherwise, pumped storage would constitute a perpetual motion machine and violate the laws of thermodynamics.

[31] Approximately 3200 gwh of generation, per the application, which at an efficiency of 80% would require 4000 gwh of pumping energy.

of the proposed Projects could be displacement of emissions from natural gas-fired generation that is the primary marginal source of generation for the Western U.S. grid during high-load hours, this potential benefit could be offset by the environmental cost of the projects including both construction impacts and emissions from the generation used to supply pumping energy. There would certainly be emissions increases in some locations, even if there are decreases in others. The net effect of these partially offsetting impacts is likely to be an increase in emissions, which needs to be studied and quantified for NEPA compliance.

Even if some of the marginal sources of pumping energy are similar in terms of emissions, the fact that more than one kilowatt-hour ("KWh") of pumping energy is required for each KWh of project generation means that the emissions associated with pumping energy would be greater than any saved emissions from project generation. If the marginal sources of pumping energy include off-peak coal generation but the marginal generation displaced by project generation is on-peak natural gas generation, then the net emissions could be strongly negative in quantity. In addition, it is likely that the sources of pumping energy and the generation displaced by project generation would be in geographically distinct locations, further increasing local project environmental impacts in the areas supplying the pumping energy.

The goal of the dispatch impacts study would be to quantify the amount and location of emissions changes due to operation of the proposed Project, so that the Commission's NEPA analysis can properly account for the emissions impacts of the project.

This study should use a WECC-wide hourly annual dispatch model, run with and without the proposed Project included (individually and together), to identify changes in the location and quantity of annual generation attributable to the proposed Project. The output of that model, showing generation changes in MWh terms, would then be coupled to known power plant-specific emissions factors (from

EPA data) to calculate the emissions changes for CO2, NOx, SO2, and particulates attributable to the proposed Project.

There is ample precedent for the kind of study proposed here. The Bonneville Power Authority ("BPA") modelled emission changes throughout the WECC as part of its NEPA analysis of changed electricity marketing as long ago as 1988.[32] NRDC modelled emission changes throughout the WECC as part of its analysis of potential closure of large hydroelectric generators on the BPA system.[33] More recently, Energy + Environmental Economics ("E3") analyzed CO2 emissions impacts of integrating the PacifiCorp and California Independent System Operator ("CAISO") systems, albeit without using dispatch modeling,[34] and the CAISO used dispatch modeling of the Western U.S. grid to analyze regional impacts, including emissions from grid regionalization.[35] More generally, dispatch modeling of the WECC to quantify the locations and amounts of generation changes due to changes in the grid has been done extensively by both electric utilities and developers, as well as their regulators.

Such a study would benefit the public by determining the location and magnitude of the emissions impacts of the proposed Project and documenting its net greenhouse gas and other emissions.

k. Study of Growth Induced by the Project

A study of the growth that could be induced by the new access resulting from construction and operation of the proposed Project must also be undertaken. It is likely that new and/or improved roads

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32 *See* BPA, 4/88, Intertie Development and Use FEIS, DOE/EIS-0125-F

33 NRDC, Going With the Flow: Replacing Energy from Four Snake River Dams, April 2000, by David Marcus and Karen Garrison. (Executive Summary available at http://www.bluefish.org/goingwth.htm)

34 E3, October 2015, Regional Coordination in the West: Benefits of PacifiCorp and California ISO Integration, Technical Appendix, pp. 39-42

35 *See* http://www.caiso.com/Documents/Presentation-SB350RatepayerImpactsAnalysis-BrattleGroup.pdf#search=SB350, pp. 9-10. Note particularly the last bullet item on p. 9: "Simulations will also yield emissions (GHG, NOx, SOx) for environmental analysis."

and parking areas would be required for the proposed Project. Will this beget additional recreational visitation and tourism? If so, the environmental impacts of that growth in tourism would need to be addressed in any NEPA review and must be studied; this would include a suite of impacts to aquatic and riparian resources, water and air quality, cultural resources, recreation, visual and other resources. Similarly, new roads and transmission could induce growth in a large area that would affect many environmental resources in the uplands as well as air and water quality. All of these impacts must be studied.

l. Economic Viability Study

An economic viability study is needed to address whether and why any additional pumped storage capacity would be prudent or needed when existing pumped storage projects are not currently fully utilized. For example, there are two pumped storage hydroelectric projects larger than 1,000 MW, each operating in California, that are in relatively close proximity to high-demand/load centers and renewable generation. These are PG&E's Helms Project in Fresno County in the Sierra Nevada and the Castaic Power Plant in northern Los Angeles County operated by the Los Angeles Department of Water and Power ("LADWP") in cooperation with the California Dept. of Water Resources.

The Helms Project was specifically built as a pumped storage project and includes the 123,000 acre-foot Courtright Reservoir and the 129,000 acre-foot Wishon Reservoir, with an installed capacity of 1,212 MW.[36] With a nominal installed capacity of more than 1,500 MW, the Castaic project uses the State Water Project's Pyramid Reservoir and Castaic Reservoir to generate hydroelectricity via pumped

[36] https://en.wikipedia.org/wiki/Helms_Pumped_Storage_Plant

storage, but the primary purpose of the reservoirs is to store water from the State Water Project for export to southern California cities.[37]

Both the Helms and Castaic projects were designed primarily to generate electricity during periods of high demand (summer afternoons in particular) and to pump water back into the upper reservoirs at night when electricity demand and costs were low. During California's energy crisis of 2000-2001, the Helms project was unable to operate because of the round-the-clock demand and high electricity costs caused by the crisis.[38]

The cost of construction of the Helms project ballooned from an initial estimate of $200 million to $600 million.[39] More recently, the increase in electricity demand in Central California has consumed transmission capacity prompting PG&E to plan to construct a new 150 mile-long 500 kV transmission line to restore the flexibility of Helms operations.[40]

The CAISO has repeatedly studied the economics of adding new pumped storage capacity to serve California loads, and has repeatedly found negative economic impacts. For example, a 2017 update to earlier studies found that a 1,400 MW pumped storage project would have revenue requirements well in excess of its benefits under numerous planning assumptions.[41]

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[37] https://en.wikipedia.org/wiki/Castaic_Power_Plant
[38] https://www.latimes.com/archives/la-xpm-2001-jan-24-mn-16302-story.html
[39] http://large.stanford.edu/courses/2014/ph240/galvan-lopez2/
[40] https://www.nwcouncil.org/sites/default/files/ManhoYeung_1.pdf
[41] CAISO, Economic Planning-Production cost model development, 2017-2018, pages 51-116 (available at http://www.caiso.com/Documents/Day2_ISO-Presentation_2017-2018TransmissionPlanningProcess_PreliminaryReliabilityResults.pdf#search=pumped%20storage, pdf) . Those pages consist of a 66 page presentation entitled: Bulk Energy Storage Resource Case Study-Update to the 2016-2017 Transmission Plan Studies, *Shucheng Liu, Principal, Market Development, 2017-2018 Transmission Planning Process Stakeholder Meeting, September 21, 2017* . The charts on pp. 23, 38, 47, 56, and 65 each show, for different planning assumptions, that the revenue requirements for a new pumped storage plant (in green) would exceed the revenues and values that such a plant could produce.

To avoid waste of economic resources, the applicants need to do an economic study analogous to that done for the CAISO, but with costs and benefits specific to the proposed Project.

m. Geotechnical Studies May Have Impacts that Adversely Affect the Environment

The application states: "The locations of major project features, including the upper and lower reservoir locations, powerhouse locations, and penstock routes will be investigated by borehole drilling, test pits, sampling, and field and laboratory testing. None of these investigations will take place in wetlands or navigable streams. The drilling will take place only within the identified Project boundary, utilizing permitting. The exact locations and timing of the investigations has yet to be determined." Application Exhibit 2 at 5 of 8. More information is needed regarding the size of the boreholes and test pits, the equipment needed to undertake these studies. The environmental impacts of the geotechnical studies themselves may be significant and require NEPA and ESA analysis and compliance before they are undertaken.

n. Biological Surveys May Adversely Affect Plants, Wildlife, and the Environment, and Must Comply with Navajo Nation Law Prior to Issuance of FERC's Notice

As discussed earlier in this intervention, compliance with federal and Navajo Nation law and policy must occur before, not after, FERC's acceptance of a preliminary permit application because plant and wildlife surveys and other study activities could themselves impact rare, endangered, threatened, or culturally important species protected under federal and Navajo Nation law and policy.

VI. MOTION TO INTERVENE

As detailed above, Tó Nizhóní Ání, Diné Citizens Against Ruining our Environment, Blac Mesa Trust, and the Center for Biological Diversity (the "Intervenors") have unique interests in the land, water, endangered and imperiled species, habitats, and other resources that may be impacted by the

proposed Project. The Intervenors have interests in supporting renewable energy production and storage projects that provide a net reduction in greenhouse gas emissions while avoiding and minimizing direct, indirect, and cumulative impacts to the environment and nearby communities. For these reasons, the intervenors' interests cannot be represented by any other party in these matters. The Intervenors' involvement in these proceedings would promote the public interest and would assure protection of the affected habitats, endangered and imperiled species, waters, and other resources. Accordingly, the Intervenors respectfully move to intervene in these proceedings in the public interest pursuant to 18 C.F.R. § 385.214(b)(2)(iii).

VI. CONCLUSION

WHEREFORE, Tó Nizhóní Ání, Diné Citizens Against Ruining our Environment, Black Mesa Trust, and the Center for Biological Diversity request that the Commission grant the Motions to Intervene in the proceedings for the proposed Chilchinbeto Pumped Storage Project.

Respectfully submitted,

Dated: July 27, 2026.

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing upon each person designated on the official service list in the proceedings as compiled by the Secretary of the Federal Energy Regulatory Commission.

Dated at Oakland, California this 27th day of July, 2026.

/s/ Lisa T. Belenky

Lisa T. Belenky