UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Southeast Oklahoma Power Corporation	P-14890-000, -001, -005
Pushmataha County Pumped Storage Hydroelectric Project	

CHOCTAW NATION OF OKLAHOMA AND CHICKASAW NATION'S JOINT REQUEST FOR EXPEDITED ACTION TO REJECT APPLICANT'S SECOND UPDATED PROPOSED STUDY PLAN AS DEFICIENT

On March 17, 2025, the Southeast Oklahoma Power Corporation (**SEOPC** or **Applicant**) filed its second updated proposed study plan (**PSP**) for the Pushmataha County Pumped Storage Project (**Project**), eLibrary no. 20250317-5029 (Mar. 17, 2025). This is SEOPC's third attempt to file an adequate proposed study plan, as the Federal Energy Regulatory Commission (**FERC** or **Commission**) already rejected its initial PSP, eLibrary no. 20241223-5060 (Dec. 23, 2024), and first updated PSP, eLibrary no. 20250206-5014 (Feb. 6, 2025), as deficient under the Commission's Integrated Licensing Process (**ILP**) regulations, *see* eLibrary nos. 20250108-3035 (**First Deficiency Notice**), and 20250220-3076 (**Second Deficiency Notice**). This third attempt shows little improvement in SEOPC's effort.

For the reasons set out in this Joint Request, the Choctaw Nation of Oklahoma and Chickasaw Nation (collectively, **Nations**) call on the Commission to also reject SEOPC's second updated PSP. First, the new attempt *still* does not meet the express requirements of the Commission's ILP regulations. Second, additional information that the Nations have developed in their review of the Project shows that SEOPC's proposal will not be economically feasible or beneficial to develop. Further, not only does SEOPC have no prior experience in constructing or operating a project of this nature, but the existing record provides no indication that SEOPC has

the financial wherewithal either to complete construction of the project or to operate it successfully, even before one considers the proposal's lack of economic feasibility. The Commission has a duty under the Federal Power Act Part I (**FPA**) to protect the public interest. Further, FERC's prior decisions show the merit of inquiring as to the general fitness of an applicant. The current record highlights grave concerns regarding both the public's interest relative to this project and SEOPC's fitness to operate its proposed project. Accordingly, the Nations assert that the Commission would violate its duty under the FPA, as well as its trust duty to the Nations, if it allowed this Project to continue to advance through the ILP. The Commission's doing so would impose on the Nations and the region the harm of this Project's construction, loss of natural and cultural resources to such construction, and risk of its ultimate economic or physical failure.

Accordingly, in light of SEOPC's repeated violations of the Commission's regulations and directives, including its most recent failure "to file an *adequate* Proposed Study Plan," the Nations call for FERC's rejection of this third attempt and, further, request that the Commission terminate the ILP without further proceedings. Finally, because of SEOPC's lack of due diligence to date, it cannot complete pre-filing requirements before its preliminary permit expires. This failure already renders SEOPC's permit largely meaningless, and for that reason we also request the Commission initiate cancellation of SEOPC's preliminary permit for the Project.

This filing is organized as follows: Section I provides an Executive Summary; Section II describes the pattern of deficiencies and delays that characterize SEOPC's performance as potential-applicant; Section III describes how the proposed Project is neither feasible nor economically viable; Section IV explains the unresolved, fundamental deficiencies in the second updated PSP; Section V describes why the Commission should terminate the ILP; Section VI

requests that the Commission initiate cancellation of the preliminary permit for good cause; and Section VII concludes the filing.

I. EXECUTIVE SUMMARY

The Commission is authorized to issue licenses for hydropower project works that it determines are "necessary or convenient" for the development of power. 16 U.S.C. § 797(e). But it must exercise this authority in furtherance of the public interest:

> The grant of authority to the Commission to alienate federal water resources does not, of course, turn simply on whether the project will be beneficial to the licensee. Nor is the test solely whether the region will be able to use the additional power. *The test is whether the project will be in the public interest*. And that determination can be made only after an exploration of all issues relevant to the 'public interest,' including future power demand and supply, alternate sources of power, the public interest in preserving reaches of wild rivers and wilderness areas, the preservation of anadromous fish for commercial and recreational purposes, and the protection of wildlife.

Udall v. Fed. Power Comm'n, 387 U.S. 428, 450 (1967) (emphasis added).

Under the ILP regulations, the applicant's study plan is foundational to ensuring an adequate evidentiary record for the Commission's consideration "of all issues relevant to the 'public interest,'" *id.*, prior to exercising its licensing authority. *Hydroelectric Licensing under the Federal Power Act*, 68 Fed. Reg. 51070, 51078 (Aug. 25, 2003). An applicant's failure to comply with those regulations cannot be ignored without eroding the integrity of the ILP and discrediting any license that may be issued.[1]

As described below, the Commission should terminate the ILP based on SEOPC's lack of good faith and due diligence in preparing a proposed study plan and its failure to comply with its

[1] *See* "The Chickasaw Nation and Choctaw Nation of Oklahoma's Comments on Pre-Application Document and Scoping Document 1 and Study Requests (P-14890-005)," eLibrary no. 20241105-5062 (Nov. 5, 2024) (**Nations' PAD Comments**), pp. 38-40.

other obligations as the applicant and preliminary permit holder. SEOPC has shifted the burden of developing the record here to the Nations and other stakeholders. The need to respond to SEOPC's Notice of Intent (**NOI**) and Pre-Application Document (**PAD**) and multiple deficient filings to protect our legally cognizable interests has imposed real and significant financial and other costs on the Nations. The Commission, as our trustee, should not force us to continue to incur these costs for the sole benefit of SEOPC, a private corporate entity that has shown no real regard for the Nations and local communities.

The injustice of continuing this ILP is highlighted and heightened by expert evidence that SEOPC is pursuing a Project that will *not* be economically beneficial. The Nations commissioned Energy + Environmental Economics (**E3**) to evaluate the economic viability and development risks associated with the Project.[2] E3's written evaluation of the Project is provided as Attachment 1. Relying on industry-standard data and methodologies, E3 found that the Project "faces economic challenges and development risks. Based on E3's cost-benefit analysis, **the forecasted costs outweigh benefits by about $1B, indicating this [pumped storage hydropower (PSH)] is not economically beneficial.**" Attachment 1, p. 19 (emphasis added).

The Tribes, agencies, and other stakeholders should not be forced to spend considerable resources to respond to a proposed Project that SEOPC has yet to show, even on a preliminary basis, is needed, can be feasibly constructed and operated, or will be economically beneficial. Accordingly, the Nations request that the Commission terminate the ILP for this Project and initiate cancellation of the related preliminary permit.

[2] E3 is an energy consulting firm that provides technical and strategic advising services to utilities, regulators, policy makers, developers and investors regarding energy markets and energy projects, *see* https://www.ethree.com/about/overview/ (last accessed Apr. 1, 2025).

II. SEOPC'S PURSUIT OF THE PROJECT HAS BEEN CHARACTERIZED BY DEFICIENCIES AND DELAYS.

SEOPC has engaged in non-compliance and misrepresentations throughout its pursuit of this Project before the Commission. The Commission has previously found that an applicant's repeated non-compliance and lack of progress are relevant to its decision whether to allow an applicant to rely on the Commission's processes to keep pursuing a project that it ostensively lacks the capacity to develop. *See Nevada Hydro Co., Inc.*, 183 FERC ¶ 61,111, 61,648 (2023) (***Nevada Hydro Co.)***. As discussed below, the Commission has given SEOPC additional time to make progress under its preliminary permit and multiple opportunities to come into compliance with the ILP. SEOPC has repeatedly demonstrated an inability or unwillingness to do so. The Commission should not continue to accommodate SEOPC's misuse of the Commission's processes and resources in this way.

A. SEOPC Has Not Demonstrated Due Diligence under its Preliminary Permit.

On August 27, 2018, SEOPC applied for a preliminary permit for the Project, eLibrary no. 20180827-5182 (**Preliminary Permit Application**), stating that it "intend[ed] to provide a reliable and affordable source of clean power storage" and was filing the application "to secure and maintain priority in the FERC licensing process, while undertaking activities and working with key stakeholders to determine the economic viability and feasibility of the" Project. SEOPC proposed preparing several "feasibility studies" to preliminarily evaluate the Project's viability and potential impacts, which were "anticipated to include":

- Topographical surveying and aerial mapping
- Geological investigations
- Ground water studies
- Water quality studies

- Hydrologic and hydraulic studies
- Water rights studies
- Land ownership confirmation, commercial discussions and negotiations
- Generation interconnection studies
- Power marketing, power sales, ancillary services and power supply forecasts
- Cost estimating and financial modeling and valuation studies to determine economic viability
- Stakeholder engagement, environmental, social, and cultural study scoping and consultation, surveys, impact identification and assessment, and formulation of mitigation measures
- Engineering studies to optimize the Project's physical configuration . . .
- Additional studies may be required as issues arise and applicant will develop appropriate modifications to the scope of the above-mentioned studies in response to consultation with utilities, resource agencies, Indian tribes, and other stakeholders and members of the public, *and as it studies the proposed Project in anticipation of filing a Notice of Intent and Pre-Application Document*, Draft and Final License Application.

Id. at 13 (emphasis added). SEOPC acknowledged that "[f]ield studies w[ould] be required for geological investigations, topographic surveying and mapping, environmental and cultural surveys." *Id.* at 14. SEOPC stated it would begin developing the studies in discussion with landowners, the Choctaw Nation, and government agencies within the first year of preliminary permit issuance, and then would begin conducting studies in consultation with stakeholders and negotiating with potential off-takers in the second and third years of the 36-month permit:

First twelve months:

- Discuss project plans and potential agreements with private landowners
- Discuss water rights and existing hydrologic data with the Choctaw Indian Nation
- Develop model-based studies examining the environmental benefits of the proposed Project

- Consult with and enter into agreements with appropriate governmental agencies
- Conduct cost estimating, financial modeling and valuation, and cost-benefit analysis to determine economic viability of the proposed Project
- Conduct engineering studies to optimize the proposed Project's physical configuration . . . .

Id.

By letter dated October 3, 2018, eLibrary no. 20181003-3017, the Commission rejected the application as deficient due to SEOPC's failure to provide adequate description of Project features or adequate Project maps. SEOPC responded by providing some additional information regarding proposed Project features and modified Project maps, *see* eLibrary no. 20181023-5267.

On April 10, 2019, the Commission issued the preliminary permit to SEOPC over a competing application from Tomlin Energy LLC based on order of filing. *Se. Okla. Power Corp. Tomlin Energy LLC*, 167 FERC ¶ 62,019, 64,038 (2019) (**First Preliminary Permit**). The preliminary permit included conditions set forth in standard form P-1, including Article 2, which states that, a permit "is not transferable and may, after notice and opportunity for hearing, be canceled by order of the Commission upon failure of the permittee to prosecute diligently the activities for which a permit is issued, or for any other good cause shown." *Id.* at Ordering ¶ (C).

On March 17, 2020, SEOPC filed its "One-Year Progress Report under Article 4" of the preliminary permit, eLibrary no. 20200317-5082. SEOPC reported that it had completed the following tasks during the first year:

1. Engaged consultants: to conduct environmental studies and other services in connection with the preparation of a license application;

2. Engaged a consultant (HDR) to conduct a preliminary hydrological study which was completed with positive results;[3]

3. Engaged a consultant (HDR) to perform a preliminary transmission interconnection analysis to identify the preferred point of interconnection for the primary transmission line. The study was completed, and SEO will discuss the results with the regional grid operator and relevant utility in order to finalize the point of interconnection;

4. Interviewed engineering firms with a goal of reviewing and modifying preliminary Project cost estimates …;

5. Interviewed consultants to update and confirm the Project's market studies;

6. Identified potential development sponsors …;

7. Engaged in discussions with Indian tribal leaders on potential collaboration areas in order to support the project's construction and implementation, as well as bringing employment and economic benefits to the local community; and

8. Engaged in discussions with land acquisition advisors to explore processes and steps for the acquisition of project site and right-of-way for the facility and transmission lines.

Id. at 1-2. SEOPC subsequently filed progress reports in years two and three, which summarized SEOPC's "discussions" with various entities regarding market dynamics, market needs, and potential Project funding, *see* eLibrary nos. 20210226-5448, 20220215-5103. *However, SEOPC did not provide any supporting documentation for these reports.*

On February 10, 2023, SEOPC applied for a four-year extension of its preliminary permit, *see* eLibrary no. 20230210-5231 (**Application for Extension**). The application included the same description of proposed studies as the original preliminary permit application. *See id.* at 15. It proposed a similar work plan for the first 12 months under the amended preliminary permit (Year

[3] On May 30, 2024, following an additional information request from Commission staff, SEOPC filed a report prepared by HDR entitled, "Determination of Water Source and Fill Rates – Preliminary Results," eLibrary no. 20240530-5020 (May 30, 2024). The report is dated December 19, 2018, and pre-dates issuance of SEOPC's preliminary permit by several months. Based on our review of the relevant dockets, SEOPC has not filed the additional preliminary hydrological study results that it reported as being conducted during the first year of the preliminary permit.

4 overall), including "[d]evelop model-based studies examining the environmental impacts of the proposed Project," and "[c]onducting geotechnical studies of the site to determine structural integrity and suitability for building the facility." *Id.* at 16. It proposed to "[c]onduct *further* environmental, cultural, visual, soil, and geotechnical studies," and "preparation and filing of the FERC Draft License Application," during the next 36 months of the extended permit. *Id.* (emphasis added). SEOPC estimated the costs for carrying out its proposed studies would range from $5 - $10 million, which it stated would be funded by investors. *Id.* at 17.

On April 7, 2023, the Commission granted SEOPC's application to extend the preliminary permit term until March 31, 2027. *Se. Okla. Power Corp.*, 183 FERC ¶ 62,012, 64,019 (2023) (**Permit Extension**). In granting the extension, the Commission relied on SEOPC's progress reports that "indicate[d] that [SEOPC] ha[d] engaged consultants to: (1) conduct environmental studies; (2) conduct a preliminary hydrologic study; (3) evaluate the site's geology; (4) perform a preliminary transmission interconnection analysis; and (5) equipment cost estimates." *Id.* The Commission also relied on SEOPC's report that it had "engaged in dialog with local tribal leaders." *Id.* The Commission stated the expectation "that during the remaining term of the permit, as extended, agency consultation will continue, studies will be completed, and a PAD and development application will be prepared." *Id.* The Permit Extension does not state that the Commission independently verified any of SEOPC's claims.

As described in more detail below, it has become clear that SEOPC's description of its workplans and progress in the preliminary permit docket are not based in reality. SEOPC did not engage in outreach or dialogue with the Nations. It has apparently undertaken little to no study of the feasibility or economic viability of any element of its Project since it obtained the permit. That has resulted in serially deficient filings in the ILP. Those deficiencies have delayed proceedings

so greatly that SEOPC cannot meet the Commission's stated expectations for completion of studies and preparation of the license application during the remaining term of the preliminary permit.

And most recently, on March 31, 2025, SEOPC missed the deadline to file its annual progress report, violating Article 4 of its preliminary permit, as amended. *See* Permit Extension at Ordering ¶ (B).

B. SEOPC Has Not Demonstrated Due Diligence in the ILP for the Project.

1. Notice of Intent and Pre-Application Document

SEOPC first filed its NOI/PAD on January 31, 2024, eLibrary no. 20240131-5410. The Commission rejected the initial NOI/PAD on March 21, 2024, eLibrary no. 20240321-3018. On April 1, 2024, SEOPC filed a revised NOI/PAD, eLibrary nos. 20240401-5670, -5676, -5678, which the Commission rejected on April 19, 2024, eLibrary no. 20240419-3004. SEOPC refiled its NOI/PAD *for a third time* on May 7, 2024, eLibrary no. 20240507-5119. After requiring SEOPC to provide additional information, eLibrary no. 20240529-3068, the Commission accepted and publicly noticed the as-supplemented third NOI/PAD on July 8, 2024, eLibrary no. 20240708-3054, albeit without finding that the deficiencies which resulted in prior rejections had been corrected.[4]

The Commission received over 300 oral comments and more than 1,000 written comments on the NOI/PAD, the vast majority of which opposed the Project. Scoping Document 2, eLibrary no. 20241220-3056 (Dec. 20, 2024) (**SD2**), p. 5. The Nations and several other commenters objected to the PAD based on numerous deficiencies, including SEOPC's failure to include

[4] *See, e.g.,* "Chickasaw Nation and Choctaw Nation of Oklahoma's Joint Request for Extension of Time to File Comments on Pre- Application Document and Scoping Document 1 and Study Requests," eLibrary no. 20240815-5171 (Aug. 15, 2024), pp. 4-8.

specific descriptions of proposed studies or show that it could obtain sufficient access from landowners to undertake field studies necessary to prepare an adequate license application.[5] The Nations noted that, despite SEOPC's reports that it had engaged with Tribal leaders, there had been a complete lack of outreach by SEOPC to the Nations prior to the Commission's publication of the NOI/PAD for public comment. Nations' Comments at 12-13; *see also* Nations' PAD Comments at 107.

2. Proposed Study Plan

On December 23, 2024, SEOPC filed the initial PSP, eLibrary no. 20241223-5060. The Nations, U.S. Fish and Wildlife Service (**FWS**), and Bureau of Indian Affairs (**BIA**), and other stakeholders objected, requesting that the Commission reject SEOPC's filing as deficient.[6] The Commission granted the requests, rejecting the initial PSP and directing SEOPC to re-file an adequate plan within 30 days or risk termination of the ILP for the Project. *See* First Deficiency Notice at 1-2 (discussing requirements of 18 C.F.R. § 5.11(b)(1)-(4), (d)(2)-(5)).

SEOPC filed the first updated PSP on February 6, 2025. *See* eLibrary no. 20250206-5014. The Commission again rejected the filing, citing obvious deficiencies based on preliminary review:

> the updated Proposed Study Plan [is] insufficient to proceed with the study planning process because it lacks information required by section 5.11(b)(4) of the Commission's regulations. More specifically, for those requested studies that were not adopted, the updated proposed Study Plan did not include an explanation of why the requested studies were not adopted, with reference to the criteria set forth in section 5.9(b).

[5] *See, e.g.,* "Choctaw Nation of Oklahoma and Chickasaw Nation's Joint Request for Expedited Action to Reject Applicant's Proposed Study Plan as Deficient," eLibrary no. 20241230-5389 (Dec. 30, 2024) (**Nations' Comments**), p. 11; "Kiamichi River Legacy Alliance and Center for Biological Diversity Joint Request for Expedited Action to Reject Applicant's Proposed Study Plan as Deficient for P-14890-005," eLibrary no. 20250107-5014 (Jan. 7, 2025), pp. 1, 4.

[6] Nations' Comments; FWS, "Objection to Southeast Oklahoma Power Corporation's Proposed Study Plan and Request to Strike Study Plan Meeting and Associated Deadlines," eLibrary no. 20250106-5143 (Jan. 6, 2025); BIA, "Objection to Southeast Oklahoma Power Corporation's Proposed Study Plan and Request to Strike Study Plan Meeting and Associated Deadlines," eLibrary no. 20250106-5138 (Jan. 6, 2025).

Second Deficiency Notice at 1.

SEOPC filed its second updated PSP on March 17, 2025. This latest version includes several new tables that list stakeholder study requests and SEOPC's summary, dichotomous responses: proposed for study or not proposed for study. It also extends the duration of the study plan meetings. Apart from those changes, the substance of the second updated PSP remains largely unchanged from the first updated PSP that the Commission rejected and, as described in Section IV, *infra*, still does not satisfy Section 5.11 of the ILP regulations.

III. SEOPC HAS NOT DEVELOPED A FEASIBLE OR ECONOMICALLY BENEFICIAL PROJECT PROPOSAL.

The purpose of a preliminary permit under the FPA is to give a project proponent the exclusive right to study the feasibility of developing a proposed hydropower project at a specific site before applying for a license to build and operate it. As described above, SEOPC has held a preliminary permit for six years, but it has not used this time to do the work necessary to develop a viable project proposal. Instead, it has proposed an uneconomical project for which the costs will likely exceed the benefits *by $1 billion*. And there are many remaining gaps in SEOPC's proposal, which increase the development, permitting, and contracting risks and worsen the economic outlook for the Project. In short, SEOPC has yet to make even a preliminary showing that the Project is needed and will be economically beneficial, two findings the Commission must make and support with substantial record evidence to grant a license under the FPA. *See In re Rocky Mountain Power Co.*, 37 F.P.C. 329, 334-35 (1967) (***Re Rocky Mountain***).

The Nations commissioned E3, an industry leader in energy economics, to evaluate the economic viability of the Project by "forecast[ing] the cost and revenue of the project based on

expectations of future market trends." Attachment 1 at 12. Unlike SEOPC's analysis, prepared by ZGlobal in 2023,[7] E3 disclosed the assumptions and methodologies for its analysis, which have been used by government agencies, developers, and non-governmental organizations, and accepted in multiple administrative, policy, and other proceedings.[8] And there are other reasons to credit E3's analysis over ZGlobal's. In particular, it appears ZGlobal is not an impartial analyst, but rather may have a direct, financial interest in the Project. In November 2023, SEOPC informed tribal stakeholders that "ZGlobal, doing business as Southeast Oklahoma Power Corporation," had obtained the preliminary permit for the Project in 2018,[9] and the NOI and PAD for the Project were subsequently sent to FERC under ZGlobal and SEOPC letterhead.[10] Notably, SEOPC did not present itself as an alter ego of ZGlobal when it filed the preliminary permit application,[11] and ZGlobal did not disclose any relationship with SEOPC in its 2023 analysis.

According to E3's analysis, the "total project cost under different inflation assumptions ranges from **$6.31 billion to $6.64 billion** . . . ."[12] Attachment 1 at 13 (emphasis added).

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[7] Attachment 1 at 14 (*e.g.*, ZGlobal's "analysis lacks sufficient references to the sources of the cost and detailed calculations."). ZGlobal's analysis is *available at* https://s44740.pcdn.co/wp-content/uploads/Oklahoma_Storage-final-version-8.23.2023-003_NR-FINAL.docx.pdf (last accessed Apr. 1, 2025).

[8] Attachment 1 at 3, 12, Appendix: Author Resumes.

[9] *See, e.g.*, Letter from Johann Tse, President, SEOPC, to Bill Anoatubby, Governor, Chicasaw [sic] Nation (Nov. 29, 2023) (attachment to PAD); Letter from Johann Tse, President, SEOPC, to Gary Batton, Chief, Choctaw Nation of Okla. (Nov. 29, 2023) (attachment to PAD).

[10] *See* Letter from Johann Tse, President, SEOPC, to Kimberly D. Bose, Sec'y, FERC (May 1, 2024), eLibrary no. eLibrary no. 20240507-5119 (enclosing PAD); Letter from Johann Tse, President, SEOPC, to Kimberly D. Bose, Sec'y, FERC (May 1, 2024), eLibrary no. 20240501-5252 (enclosing NOI). *See also* Seth Willyard, "Request for Expedited Review and Enforcement Action — Apparent Unauthorized Transfer of Preliminary Permit in Project No. P-14890, Pushmataha County Pumped Storage Project," eLibrary no. 20250401-5083 (Mar. 31, 2025), Att. A (email correspondence describing an individual with a ZGlobal email address as "the *developer/investor*/engineer" for the Project (emphasis added)).

[11] *See* Preliminary Permit Application (Aug. 27, 2018).

[12] In Attachment 1, E3 describes upfront capital expenditures (**Capex**) as "the primary cost component, accounting for nearly 90% of the total cost." This is typical of pumped storage hydropower projects, "which require substantial investment in infrastructure, including reservoirs, dams, and powerhouses." *Id.* at 13-14. In other words, SEOPC and its investors would have to spend upwards of $6 billion before the Project would generate any revenue.

ZGlobal's report, by contrast, assumes "lifetime costs of $3.1 billion." However, E3 was unable to verify this number and found that it was inconsistent with the National Renewable Energy Laboratory's (**NREL**) Annual Technology Baseline (**ATB**), which provides a consistent set of technology cost and performance data for energy analysis and served as the basis for E3's calculations:

> The report does not provide details on the source of ZGlobal's assumed cost estimate or the methodology used to arrive at this figure. The $3.1 billion estimate is 48% lower than the cost estimate calculated by E3 based on the cost assumptions published in the NREL Annual Technology Baseline. ZGlobal's underestimated cost has significant implications for the project's financial planning and investment decisions.

Id. at 14.

According to E3's analysis, the total, estimated cost of >$6 billion would likely result in Project power being significantly more expensive than the most likely alternative sources: Long Duration Battery Storage and natural gas, "which is a far cheaper source of electricity."[13] *Id.* at 15.

In addition to underestimating costs, ZGlobal's analysis overstates potential Project benefits, which depend on several variables, including, but not limited to, SEOPC's ability to take advantage of the diminishing opportunity to participate in the Investment Tax Credit (**ITC**) to offset Capex costs, its ability to overcome regulatory and market barriers to flexibly and profitably export energy to the Electric Reliability Council of Texas (**ERCOT**) and/or Southwest Power Pool (**SPP**) markets, its ability to overcome market trends and monetize the Project's ancillary services

[13] The Commission's economic analysis typically looks for project power to be *less* expensive than alternative sources. *See Mead Corp., Publ'g Paper Div.*, 72 FERC ¶ 61,027, 61,068 (1995) ("The basic purpose of the Commission's economic analysis is to provide a general estimate of the potential power benefits and the costs of a project, and reasonable alternatives to project power. The analysis helps to support an informed decision concerning what is in the public interest with respect to a proposed license.").

(**AS**), and its ability to effectively manage inflationary pressure. E3 finds that SEOPC's assumptions for all these variables are unsupported and overly optimistic:

> Due to undisclosed assumptions leading to higher revenue projections and a lower cost estimate, SEOPC's net benefit analysis concludes a significant net benefit in all cases, which contrasts with E3's forecast. *Based on the inputs and assumptions applied in the calculation, it is evident that SEOPC's analysis is overly optimistic regarding the potential benefits the [Project] could generate compared to the highly optimistic cost assumption*.

Id. at 18 (emphasis added).

E3's analysis also describes lingering uncertainties related to the Project's design, grid interconnection, permitting, and contracting that could result in costs greater than E3's conservative estimates based on available information. These key uncertainties are summarized below.

> + **Undetermined Construction Plans and Site Locations:** The specific details of the reservoirs, powerhouse and transmission line construction plans, including their site locations, are yet to be finalized. This ambiguity poses significant risks related to land acquisition, permitting timelines, and construction schedules, potentially leading to higher costs and delays.[14]
>
> + **Incomplete Powerhouse Design Specifications and Site Selection:** While the PAD includes partial design specifications, SEOPC has indicated that it is still considering critical details such as the switchyard, cable tunnel, and exact powerhouse site location. This lack of finalized plans adds to the uncertainty surrounding the project's feasibility and execution.
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> + **Transmission Development:** SEOPC has not yet determined the proposed transmission line route, circuit count, voltage, and configuration for interconnection with the ERCOT grid in Paris, Texas. According to the S&P Market Intelligence database, there are currently no operating or planned transmission lines that can transport energy from Pushmataha County, OK to Paris[, Lamar] County, TX. As a result, there are no alternative solutions available to transport energy to [Lamar] County if the proposed transmission line addition cannot be completed due to land acquisition challenges or ERCOT interconnection

[14] Despite multiple requests, SEOPC has refused to describe or show the Project location in any greater detail than the description included in the PAD. *See* Second Updated PSP at 4-6 ("The proposed project would be located along the Kiamichi River in Pushmataha County, Oklahoma, approximately 5 miles south of Talihina, Oklahoma").

> constraints. The uncertainty regarding transmission infrastructure to deliver project power to potential offtakers on the ERCOT grid presents a significant risk to the project's feasibility and timeline.
>
> Additionally, SEOPC's third-party analysis of the scenario for transporting energy to SPP will likely need to utilize the 70-year old Pittsburg-Valliant 345 kV transmission line . . . . However, according the Frequently Constrained Areas 2021 Study by SPP, the Pittsburgh-Valiant 345 kV transmission line is frequently constrained. . . . These studies suggest that transporting large amounts of energy to SPP through the existing nearby transmission infrastructure would present significant challenges and may not be feasible using existing transmission infrastructure. . . .
>
> + **ERCOT Interconnection:** Transmission line development decisions depend on consultations with ERCOT, and there is no evidence of formal commitment or notification from ERCOT regarding these plans.
>
> + **Financing Risks:** It is reasonable that the project has not yet established or publicized a clear financing plan at this state of project development. However, due to the large-scale size and high forecasted cost of the project . . . challenges in securing financing could lead to project delays, increased costs, or potentially a significant reduction in the project scope. Although FERC licensing process does not require secured financing, obtaining financing is necessary for interconnection request approval and project construction. According to the National Hydropower Association, financing [pumped storage hydropower] in today's deregulated power market is particularly challenging due to the difficulty in predicting energy price volatility in regional wholesale markets. . . . Additionally, the ancillary services (AS) and capacity markets are saturating rapidly . . . These uncertainties make it harder for the project to demonstrate a reliable future revenue stream, a key factor in securing financing in the capital markets.

Id. at 8-9 (internal citations excluded).

According to E3, the Project also faces permitting timeline risks, including, but not limited to the Commission's licensing proceeding. As E3 notes, SEOPC's proposal to dam Long Creek to create the Upper Reservoir disqualifies the Project from being eligible for expedited permitting for closed-loop pumped storage projects. *Id.* at 10; *see also* Nations' PAD Comments at 41. Under the latest Revised Process Plan and Schedule, the earliest SEOPC could file a license application is April 2028, which would likely place the licensing "decision after 2032 or even later." *Id.* at 10.

The Project risks identified by E3 are likely to mount during this extended timeframe, while any returns on investment will continue to be delayed. *Id.* E3 also highlights the particular challenges of securing interconnection agreements with both SPP and ERCOT, which may be contingent on the outcome of the FERC proceeding. *Id.*

E3 describes a vicious cycle in which the Project's development and permitting timeline risks are likely to contribute to increased difficulty in securing offtakers willing to contract for Project power:

> Financing a project of this scale will require contracted offtakers. Due to the large project size of 1,200 MW, the project will likely require multiple offtakers with large energy appetites which could pose a significant contracting challenge. In addition, the project will face competition from smaller projects and alternative technologies, which may be more appealing to offtakers due to their lower costs and fewer complexities in contracting with multiple parties.

Id. at 11.

In sum, E3's analysis shows that this Project will likely *not* be economically beneficial or commercially viable, given that "the forecasted costs outweigh benefits by about $1B," and the Project still "faces many development, permitting, contracting, and interconnection risks that could increase the project's estimated cost." *Id.* at 20.

This stark analysis of the negative economics of SEOPC's proposal could have real consequences now by making it more difficult for SEOPC to secure the additional investment needed to prepare and carry out the study plan and undertake other tasks necessary for Project development and licensing. That would further hobble SEOPC's seemingly limited capacity to fulfill its responsibilities as the applicant here. Moreover, as described in more detail in Section VI, *infra,* it would be contrary to the public interest to allow SEOPC to continue to bank this site for a proposed Project that, after six years, SEOPC cannot show is economically viable, while also

wasting the time and resources of the Nations and other stakeholders who must continue to participate to defend their interests. *See Nevada Hydro Co.*, 183 FERC ¶ 61,111, 61,648.

IV. SEOPC HAS NOT CORRECTED THE DEFICIENCIES IN ITS PROPOSED STUDY PLAN DESPITE MULTIPLE ATTEMPTS.

In their December 30, 2024 objection to the initial PSP, the Nations explained in detail what SEOPC must include in its proposed study plan under the ILP regulations, showed that SEOPC had failed to provide that necessary information, and explained that although SEOPC has had years to collect information and develop plans, it has repeatedly failed to do so, while continually shifting the burden onto others to collect information for it. The Nations requested the Commission to reject the filing as insufficient under 18 C.F.R. § 385.2001(b). Nations' Comments at 4-5.

The Commission granted the request, rejecting SEOPC's initial PSP because it failed to provide information required by the ILP regulations, 18 C.F.R. § 5.11(b)(1)-(4), (d)(2)-(5). First Deficiency Notice at 1-2. The Commission gave SEOPC an opportunity to submit another. SEOPC's second swing missed again. The Commission let SEOPC try again, but the result is the same, and SEOPC has struck out.

SEOPC's second updated PSP fails to meet the requirements of the ILP regulations, because it does not include information required by the regulations, *see id.* at § 5.11(b)(1)-(3), (d)(2)-(5), or explain SEOPC's decision not to include study plans proposed by the Nations, federal agencies, and other commenters on the PAD and scoping document, *see id.* at § 5.11(b)(4). In short, SEOPC has repeated *precisely the same failures* that caused FERC to reject the initial and first updated PSPs. In so doing, SEOPC continues its troubling pattern of non-compliance and

impermissible efforts to shift the burden of developing the administrative record onto the Nations and others. The Commission cannot tolerate this subversion of the ILP and the FPA.

The continuing deficiencies in the second updated PSP demonstrate that SEOPC is incapable of timely developing and undertaking the studies necessary to support its preparation of an adequate license application before its preliminary permit expires, or even by the April 12, 2028, deadline set by the Commission's Revised Process Plan and Schedule. As stated above, SEOPC has already tied up this site for six years; it is not in the public interest to allow it to continue to bank the site while the Commission, Tribes, landowners, and other stakeholders are forced to invest significant time and resources engaging with SEOPC's pursuit of a Project that it has not shown is feasible or will serve the public interest. *See Idaho Power Co. v. FERC*, 767 F.2d 1359, 1363 (9th Cir. 1985) (***Idaho Power***) (upholding FERC's finding that site-banking "is contrary to the public interest and to the purposes of the Federal Power Act."). SEOPC's second updated PSP should therefore be rejected, and the ILP for the Project terminated.

A. SEOPC has not shown it can meet its responsibilities for conducting studies and other information gathering to meet its burden in the licensing process.

Under the FPA, 16 U.S.C. § 797(e), the Commission is authorized to issue licenses for the construction, operation, and maintenance of hydroelectric projects for which there is a demonstrated, timely need. *See Idaho Power*, 767 F.2d at 1362. In considering whether to issue a license, the Commission "assesses the public interest, broadly defined, keeping in mind that the license will allow the holder 'to appropriate water resources from the public domain.'" *Energie Grp., LLC v. FERC*, 511 F.3d 161, 163-64 (D.C. Cir. 2007) (quoting *Udall v. FPC*, 387 428, 450 (1967)); *see also Green Island Power Auth. v. FERC*, 577 F.3d 148, 166 (2d Cir. 2009). The "public interest" standard under Section 10(a)(1) includes considerations of economic feasibility,

environmental impact, and the need for power. *La Flamme v. FERC*, 852 F.2d 389, 402 (9th Cir. 1988). Additionally, in that analysis, "'[t]he general fitness of the licensee-applicant' is a valid consideration . . . ." *Energie Grp.*, 511 F.3d at 164 (quoting *Cooley v. FERC*, 843 F.2d 1464, 1471 (D.C. Cir. 1988); *Turbine Indus., Inc.*, 68 FERC ¶ 61,127 (1994)); *Hitchcock*, 69 FERC ¶ 61,382, 62,447 (1994) ("a relevant consideration is the fitness of the applicant, including the likelihood, based on past performance, that the applicant will be a responsible and reliable licensee").

Pursuant to the FPA, 16 U.S.C. § 825g, and the Administrative Procedures Act (**APA**), 5 U.S.C. § 554, a licensing proceeding is an "adjudication required by statute to be determined on the record after opportunity for an agency hearing." *Sierra Ass'n for Env't v. FERC*, 744 F.2d 661, 662–63 (9th Cir. 1984) (internal citations omitted). "[T]he proponent of a rule or order has the burden of proof" in such an adjudication. 5 U.S.C. § 556(d); *see also Re Rocky Mountain*, 37 F.P.C. at 334-35 (internal citations omitted). Therefore, the applicant must provide evidence to support a Commission decision that a proposed project would be "best adapted to a comprehensive plan for improving or developing a waterway," as required by Section 10(a)(1) of the FPA, 16 U.S.C. § 803(a)(1). That includes showing that the Project will be economically feasible and have acceptable environmental impacts, that there is a need for power, and that the applicant will be a "responsible and reliable licensee." *See Energie Grp.*, 511 F.3d at 164; *Hitchcock*, 69 FERC at 62,447; *Re Rocky Mountain*, 37 F.P.C. at 334-35.

Consistent with this statutory burden, an applicant must include comprehensive data and analyses as part of its license application to ensure that a licensed project will comply with environmental, safety, and public interest standards. *See* 18 C.F.R. § 4.41. That information is developed through the ILP. The Commission's ILP regulations emphasize the need for robust and scientifically sound studies to support this process. *See* 18 C.F.R. §§ 4.38, 5.9, 5.11. The project

proponent is therefore responsible for proposing and conducting studies that will meet these requirements and ensure compliance with the FPA.

Furthermore, the Commission's regulations for implementing the National Environmental Policy Act (**NEPA**) require the applicant to: (1) Provide all necessary or relevant information to the Commission for NEPA environmental review; and (2) Conduct any studies that the Commission staff considers necessary or relevant to determine the impact of the proposal on the human environment and natural resources. 18 C.F.R. § 380.3(b)(1)-(2). The applicant must also "[s]ubmit applications for all Federal and State approvals as early as possible in the planning process." *Id.* at § 380.3(b)(4). The ILP is the principal process for determining how this "necessary or relevant" information is collected and verifying that the applicant is actually collecting it using sound methodology.

SEOPC's responses to comments in the second updated PSP indicate that SEOPC is not able or willing to develop and conduct studies that will comply with these requirements. SEOPC's responses are copied almost verbatim from the Commission's SD2. As a result, SEOPC's responses repeat the Commission's responsibilities for *preparing* the NEPA document without addressing SEOPC's obligation to develop and provide sufficient information for the Commission to fulfill its responsibilities under NEPA. For only one example, the second updated proposed study plan copies the following comment and response from SD2:

> Comment: There was one comment on the impacts on property and timber due to an inability to do any long-term planning to plant for timber harvests until a decision is made on the project.
>
> Response: The NEPA document will describe the existing environment of potentially affected resources in the project area and where appropriate include supporting information, and an analysis of the effects of the proposed project and alternatives, including reasonably foreseeable effects, on potentially affected environmental resources.

Second Updated PSP, p. 11 (directly quoting SD2 at 9). Of course, Commission staff's response presupposes that SEOPC will gather and provide the information that the Commission will then use in the NEPA document to describe and analyze impacts on property and timber. SEOPC's restatement of Commission staff's response is therefore meaningless without a description of a study plan that will meet the requirements of 18 C.F.R. §§ 5.11(b) and (d), and that will establish the existing conditions for timber and other existing land uses and industries in the Project area and show how those conditions will be affected by Project construction and operations.

The rest of SEOPC's responses are equally specious. Rather than provide useful responses to comments identifying specific resource issues for analysis, SEOPC simply copies and pastes what the Commission has said or reflexively responds that it has added that issue to the study plan. However, a review of the specific study proposals reveals that SEOPC has listed issues to be studied rather than describing specific, systematic plans for studying. Unfortunately, this latest display is consistent with the pattern of poor conduct described in Section II, *supra.*

B. The Second Updated Proposed Study Plan does not comply with the Commission's ILP regulations.

In rejecting SEOPC's initial PSP, Commission staff cited SEOPC's failure to comply with specific requirements under Rule 5.11 of the Commission's ILP regulations. Staff then rejected SEOPC's first updated PSP after "preliminary review," based on SEOPC's obvious failure to explain why it did not include certain study requests, as required by Section 5.11(b)(4). Second Deficiency Notice at 1. The second updated PSP does not correct the deficiencies identified in the First or Second Deficiency Notices. Because SEOPC has again failed to satisfy the ILP regulations, its second updated PSP should be rejected.

1. *Failure to include detailed description of each proposed study and the methodology to be used (§ 5.11(b)(1))*

Under 18 C.F.R. § 5.11(b)(1), a potential applicant's proposed study plan "*must* include, with respect to *each* proposed study: . . . A detailed description of the study and the methodology to be used" (emphasis added).[15] SEOPC's second updated PSP fails to meet this requirement.

Look to SEOPC's proposed "Water Resources" study, which is really a package of at least fourteen studies into the Project's impacts on water—some with apparently overlapping components and analyses—each summarized in one short and uninformative paragraph.[16] Indeed, SEOPC's "Deliverables and Schedule" for this study (p. 12) accidentally gives up the game by admitting that SEOPC does not intend to meet the requirements of Section 5.11(b)(1) until 90 days *after* it initiates the study:

90 calendar days after initiation of study	Determination of existing information and additional data gaps (beyond PAD and as noted in the proposed Study Methodology above) and development of plans to fill required data gaps; determination of specific models/methods to be used.

In lieu of the necessary detailed methodology for any of these studies, SEOPC provides a flurry of undefined and vague promises. SEOPC says it "will study potential effects on water quality" from the Project but provides no details about how it will do so, except that it will "review" them based on "governing authorities, state/local policy, industry experience, and professional judgment developed by the SEOPC's qualified personnel." *Id.* at 9. That provides no information, much less a "detailed description;" it is just a general statement that SEOPC intends to use methods

[15] The Commission has further explained, "[a] good study defines the 'what, when, where, and how,' so that, ideally, anyone should be able to pick up the approved study plan and implement it." FERC, "Ideas for Implementing and Participating in the Integrated Licensing Process (ILP) (Mar. 2011) (**ILP Guidance**), p. 25.

[16] The Nations have not undertaken to explain all deficiencies with all proposed studies in this filing and reject SEOPC's effort to impose that intolerable burden onto them and their staffs. However, the Nations reserve the right to address additional failings in future filings, as necessary.

and personnel to study the issue. The same is true of SEOPC's proposals to study the effect of potential contaminants, and effects on water turbidity, temperature and algae. *Id.* at 9-10.

SEOPC also says it will study water withdrawal and hydrology use, relying on undescribed "hydrology and hydraulic modeling" to model impacts to flows from withdrawals from the Kiamichi River and Long Creek. *Id.* at 8-9. Such undefined "modeling" will also be used to determine surface water drainage and sub-basin transfers and anticipate erosion below the emergency spillway and sediment deposition in the Kiamichi River and Upper Little Creek. *Id.* at 9. This general description is meaningless and unreviewable.

SEOPC then promises, for all these studies, that its personnel will: identify anticipated "negative impacts," without describing how they will be evaluated as negative; determine whether those negative impacts will be "deemed significant," without describing how that determination will be made; and then develop a "mitigation measure" or a "mitigation plan" to address impacts, without describing how these measures or plans would be developed. Especially troubling is SEOPC's assertion that, as part of its study of water withdrawal from the Kiamichi, its "qualified personnel"—whoever that may be—will investigate "[p]ossible negative impacts to the Kiamichi River itself, downstream interests, aquatic and riparian habitants within and near the Kiamichi River, groundwater impacts, and other impacts *as deemed relevant*," *id.* at 8 (emphasis added), and if "negative impacts are found, the SEOPC will produce a plan to address those impacts," *id.* Similarly, SEOPC asserts that it will study effects of water seepage from reservoir fills and refills by identifying "negative impacts to water quality that may occur," using investigations "determined by SEOPC's qualified personnel" and then "produce a mitigation plan" including

elements "determined by SEOPC's qualified personnel."[17] *Id.* But it never answers the critical question under § 5.11(b): ***How***? SEOPC's proposal therefore gives it complete discretion to determine study methodologies. That defies the ILP regulations, which require an applicant to disclose its study methodologies *for evaluation by the Commission and other stakeholders* to ensure consistency with methods accepted by the scientific community.

Other studies also lack necessary descriptions of proposed methodology. SEOPC proposes a "Soil Erosion and Sedimentation" study but that plan simply restates that SEOPC "will study the effects of construction, operation, and maintenance of project structures, access roads, and transmission facilities on soil erosion and sedimentation." Geologic and Soil Resources Study at 9. SEOPC proposes to "study the effects of excavated soil chemistry and spoil disposal on erosion and sedimentation" by "collect[ing] soil samples in order to "identif[y], "describe[]," and "characterize[]" so-called "sensitive soils." *Id.* No methodologies or standards are described. SEOPC says it will "study" the effects of Project construction, operation and runoff events on riverbank and sediment conditions, that it will "study" the effects of water withdrawals on erosion and sedimentation in the Kiamichi River, and that "[m]odels will be run to predict" effects of water intakes on the Kiamichi River – again, with no explanation of methodologies. *Id.* SEOPC says it will "study the effects of seismic events on the proposed project and characterize the geoseismic settings for the different components of the proposed Project" but again provides no discussion of methodologies at all. *Id.* Similarly, the so-called "Development Resources" study is devoid of any discussion of methodology. *See* Development Resources Study Plan at 4. And the list goes on and on.

[17] SEOPC's second updated PSP does not include any resumes for these "qualified personnel," and, as stated below, the record indicates that SEOPC has only one employee: Johann Tse.

It is essential for all these areas to be thoroughly studied so that the Project's potential impacts can be fully understood and disclosed *before any license is issued*, and to determine whether there are any alternatives or mitigation measures that would protect the unique and irreplaceable environmental characteristics of this area of the Choctaw Reservation. As the Commission has made clear, "[p]roperly conducted environmental studies are those that provide the applicant, the Commission, and reviewing resource agencies *and tribes clear and substantial information* in three primary areas:

- description of the environment affected by the proposed project and its reasonable alternatives;
- project effects, both beneficial and adverse; and
- protection, mitigation, and enhancement measures."

FERC, *Handbook for Hydroelectric Project Licensing and 5 MW Exemptions from Licensing* (April 2004), p. 2-10 (emphasis added).[18] However, the adequacy of SEOPC's proposed studies simply cannot be verified until the methodology is described – which is why § 5.11(b)(1) requires that methodology be described *in detail*. SEOPC has provided no such detail.

2. <u>*Failure to include a schedule for conducting each proposed study (§ 5.11(b)(2))*</u>

Each proposed study in a proposed study plan must also describe "[a] schedule for conducting the study." 18 C.F.R. § 5.11(b)(2). SEOPC's second updated PSP does not provide a schedule, and the information it does provide is contrary to the ILP regulations and cannot be relied

[18] Further, the applicant is responsible to provide "any environmental information that the Commission may determine is necessary," 18 C.F.R. § 380.3(a)(2), including information the Commission deems necessary to comply, "with its trust responsibility, [to] assure that tribal concerns and interests are considered whenever the Commission's actions or decisions have the potential to adversely affect Indian tribes, Indian trust resources, or treaty rights." 18 C.F.R. § 2.1c(e).

on to comply with § 5.11(b)(2).[19] Once more, SEOPC's Water Resources study is an illustrative example.

Right from the starting gate, SEOPC's timeline is fantastical because it conflicts with the ILP regulations. Under "Deliverables and Schedule," SEOPC proposes to initiate study in May 2025, before FERC can even approve the study plan under the ILP regulations. Then, SEOPC simply says that within 90 days of initiating studies it will determine "existing information and data gaps," "develop[]" plans to fill those gaps, and "determin[e]" specific models/methods" to be used. Water Resources Study at 12. But it is contrary to 18 C.F.R. § 5.11(b)(1) for an applicant to determine study methodology *after* studies begin – again, those methodologies must be determined and described in advance.

SEOPC's schedule then simply states that it will conduct a "first study season" in "Summer/Fall/Winter 2025" and after filing the ISR and study stakeholder meeting, conduct a second study season in "Spring/Summer 2026." That is too general to be called a schedule. Many of these proposed studies involve multiple steps of modeling and analysis. Simply saying that the studies will be done in a nine-month period is not informative, and such blanket assertions do not comply with § 5.11(b)(2).

3. *Failure to provide sufficient time in the study schedule for technical review of the analysis and results provided in periodic progress reports (§ 5.11(b)(3))*

A proposed study plan *must* include "sufficient time for technical review of the analysis and results" of periodic progress reports. 18 C.F.R. § 5.11(b)(3). But SEOPC tightly limits its progress reports and does not provide sufficient time for review. For instance, SEOPC's Water

[19] *Cf.* ILP Guidance at 26 ("Applicants should provide a proposed study plan that is as detailed as possible in terms of methodology, timing, and scope.").

Resources Study proposes that SEOPC provide only *one* progress report, in an "interim update" provided 90 days after the study is initiated. The only information SEOPC proposes to share in that "interim update" is information that is arguably required to be included in the proposed study plan and *available now*: "data gaps, plans to fill these data gaps, and any additional methodologies that may be required for the Water Resources Study."[20] *Id.* at 12. SEOPC says it *may* share other information but does not anticipate doing so. *Id.* Apart from this one limited "update," SEOPC would not provide any information to anyone until it files its ISR on August 19, 2026, which under the applicable ILP regulations, 18 C.F.R. § 5.15(c)(2), would give the Nations, jurisdictional agencies, and stakeholders only fifteen days to review the Water Resources Study – which as noted above, contains at least a dozen subsidiary studies – before the ISR Meeting on September 3, 2026.[21]

4. Failure to provide an explanation for why certain requested studies were not adopted (§ 5.11(b)(4))

As Commission staff determined, SEOPC's initial and first updated PSPs failed to comply with § 5.11(b)(4) because SEOPC did not explain why it did not adopt certain studies requested by the Nations[22] or adopted substantially modified versions of the requested studies.

The second updated PSP includes several new tables that SEOPC presumably added in response to the Second Deficiency Notice. The tables are set-up to indicate SEOPC's response by a checkmark in one of two columns: "Proposed for Study or Proposed for Study with

[20] This is also contrary to the Commission's guidance, which advises applicants to "[c]onsider providing study results as they are completed to allow more time for review. Instead of providing them all at once in conjunction with the initial and updated study reports." ILP Guidance at 30.

[21] SEOPC's consultant erroneously reports that the ISR will be filed in May 2026 and that a stakeholder meeting will be held in June 2026, *see, e.g.*, Water Resources Study at 12. These dates ignore the latest Revised Process Plan and Schedule the Commission issued in the Second Deficiency Notice.

[22] Others, including BIA and FWS, also requested studies that SEOPC does not propose to undertake. Here, we discuss only the Nations' study requests that SEOPC failed to undertake, but reserve the right to raise others in future filings.

Modifications" or "Not Proposed for Study." There is a third column labeled, "Correlation to SEOPC Study Plan." However, this column only indicates where certain study requests have been included in the second updated PSP, or blankly states that a rejected study is *not* included in the PSP. In almost every case where SEOPC decided not to undertake a proposed study, it provides *no* explanation other than to state simply that SEOPC is "not proposing to do" the study "at this time," or even more summarily that a study plan will not be developed. *See, e.g.*, Second Updated PSP at Table of SEOPC's Responses to Nations, Lines 2(e), 4(c), 4(k), 4(l), 5(c), 5(d), 6(f), 6(g), 7(3)(f), 7(8), 8. Thus, the tables do not satisfy the requirement under § 5.11(b)(4) that SEOPC provide "an explanation of why the request was not adopted, with reference to the criteria set forth in § 5.9(b)." SEOPC has therefore repeated the very deficiency that the Commission staff specifically cited in rejecting SEOPC's last filing.

In addition to omitting the required explanation for rejected or modified studies, the tables do not accurately characterize SEOPC's treatment of the Nations' study requests. SEOPC indicates that several requests have been included in the second updated PSP. But closer review shows that SEOPC omitted or substantially truncated the following studies requested or expressly supported by the Nations. As a result, SEOPC has effectively rejected these study requests, without explaining why with reference to the Section 5.9(b) criteria. SEOPC's rejections include:

- A hydrologic and hydraulic (H&H) study, requested by the Bureau of Indian Affairs (**BIA**) and supported by the Nations, that will "obtain information related to the effects the Project would have on the surface water elevations, flow, quantity, quality, and uses," and "accurately represent the effects of Project operations by establishing a baseline . . . . BIA, "Comments on the Pre-Application Document and Scoping Document 1 and Study Requests," eLibrary no. 20241104-5183 (Nov. 4, 2024), p. 5; Nations' PAD Comments at

123 (supporting H&H study request), *see also id.* at 117-18. As described in the ILP regulations, existing and proposed uses of project waters and existing water rights are material to the Commission's evaluation of a Project's impacts on water resources. 18 C.F.R. §§ 5.6(d)(3)(iii)(D)–(E). As stated above, SEOPC committed to gather information regarding the Choctaw Nation's water rights within the first 12 months of its preliminary permit. Preliminary Permit Application at 14. However, SEOPC has yet to meet with the Choctaw Nation, nor has it addressed water rights within the context of the Nations' Water Settlement Agreement and the Water Settlement Act (**WSA**), which establish the specific, controlling, and exclusive legal and hydrologic framework for determining water availability and allowable impacts from new water uses in the Kiamichi and Upper Little River basins. *See, e.g.,* Nations' PAD Comments at 26-27, 36-38. Rather than acknowledge the significance of these issues, SEOPC doubles down by refusing, without explanation, to consider any water rights in its Water Resources Study, *see* Second Updated PSP at Table of SEOPC's Responses to Department of Interior, Line 1. Its position may be a tacit acknowledgement that it does not understand the WSA, that it believes it will not be able to obtain water from the Kiamichi River or justify its significant alteration of the Upper Little River under the WSA, or that it intends to attempt to evade compliance with the WSA, which would in itself be an actionable violation of federal law. Regardless, SEOPC has failed to meet its obligations under Sections 5.11(b)(4) and 5.9(b).

- A slope stability study of *all* existing and proposed slopes with the potential to be affected by Project facilities, including *inter alia* all reservoirs, the powerhouse, access road, and transmission structures. Nations' PAD Comments at 127. SEOPC proposes only to study the stability of the "proposed embankment location for the upper reservoir." Geologic and

Soil Resources Study at 8. SEOPC provides no explanation for how limiting study to a single feature of a massive construction project is consistent with Section 5.9(b) or accepted practice, or how doing so is consistent with protecting public safety and the environment against the threats posed by the Project as a whole, which are among the Nations' highest interests. *See* Nations' PAD Comments at 54-64, 76-80, 128.

- A Phase I Cultural Resources and Tribal Resources Survey, consistent with the requirements of Section 106 of the National Historic Preservation Act (**NHPA**) and the Native American Graves Protection and Repatriation (**NAGPRA**), both of which require the Commission to consult with the Nations. Under the Nations' proposal, this study would be used to develop a NHPA Programmatic Agreement, NAGPRA Plan of Action, and a FPA Historic Preservation and Management Plan. Nations' PAD Comments at 139-46. SEOPC instead proposes a vastly different and unrealistic "Cultural and Tribal Resources" Study. For example, SEOPC's study broadly proposes to "shovel test" the entire area of potential effects (**APE**), but the study budget is woefully inadequate to cover the level of effort that would require. Cultural and Tribal Resources Study at 7-8. This strongly suggests that SEOPC fundamentally does not understand the objectives of a Phase I Cultural Resources and Tribal Resources Survey nor how to properly achieve them.

  Even if SEOPC had a realistic plan for implementation, its study would still violate NHPA and NAGPRA. For instance, SEOPC's plan describes the NHPA as applicable but does not describe how anyone will comply with NHPA's consultation requirements. It instead redirects those obligations to the Commission, along with responsibility for developing the APE for the Project. *Id.* at 11. However, although under Section 106 regulations the Commission, not SEOPC, must consult with the Nations, FERC has

asserted to the Oklahoma State Historic Preservation Officer (**SHPO**) that SEOPC will initiate consultation with the State and Tribes under Section 106 (*see* FERC, Letter to Lynda Ozan, Deputy SHPO, re: Communication with Oklahoma State Preservation Officer, eLibrary no. 20240821-3060 (Aug. 21, 2024), p. 1).[23] SEOPC then uses the passive voice to refer to obligations to identify NRHP-eligible properties in the APE and says nothing about who will assess potential effects on those properties or determine how to avoid, minimize, or mitigate them. It appears that both SEOPC and FERC are abdicating responsibility for compliance with Section 106—leaving unanswered who will actually undertake to comply with Section 106.[24] This has forced the Choctaw Nation Historic Preservation Department (**CNHPD**) to spend significant time and resources documenting cultural sites within the APE on its own initiative and at its own expense. *See* Letter from CNHPD to FERC Docket, eLibrary no. 20240906-5006 (Sept. 5, 2024) (**CNHPD Letter**), pp. 1-2; *see also* Nations' PAD Comments at 101-104.

SEOPC also totally ignores NAGPRA, which applies here as the Choctaw Reservation are "tribal lands" as that term is used in NAGPRA. *See* 25 U.S.C. § 3002(d); 43 C.F.R. § 10.2. Instead of proceeding under a NAGPRA plan of action developed through consultation between the Choctaw Nation, the Commission, and other potentially culturally-affiliated Tribes, *see* 43 C.F.R. § 10.4(b), SEOPC proposes only to proceed

[23] *See also* 18 C.F.R. § 380.14(a)(3) (describing the SHPO or Tribal Historic Preservation Officer's (**THPO**) right to decline to consult with the project sponsor, rather than FERC); 18 C.F.R. § 2.1c(a) (acknowledging "consultation should involve direct contact between agencies and tribes").

[24] While the Nations have sought to actively participate in accordance with the ILP regulations, those procedures cannot satisfy the requirement for Section 106 consultation on a government-to-government basis: "While public informational meetings, consultations with individual tribal members, meetings with government staff or contracted investigators, and written updates are obviously a helpful and necessary part of the process, they don't amount to the type of 'government-to-government' consultation contemplated by the regulations." *Quechan Tribe of Fort Yuma Indian Rsrv. v. U.S. Dep't of Interior*, 755 F. Supp. 2d 1104, 1119 (S.D. Cal. 2010).

under a "unanticipated discoveries plan" to comply with "applicable state laws and SHPO requirements." Cultural and Tribal Resources Study at 13-14; *see also id.* at 11. That Native American burials subject to NAGPRA have already been documented in the APE by the CNHPD at its own expense,[25] highlights the potential consequences of proceeding according to SEOPC's proposal and the urgent need for consultation in accordance with the law.

Aside from the failure to comply with Sections 5.11(b)(4) and 5.9(b), SEOPC's ignorance and avoidance of the requirements of NHPA and NAGPRA strongly indicates that it is not a fit applicant and is unlikely to be a "responsible and reliable licensee," particularly for a Project to be located on the Choctaw Reservation. *Hitchcock*, 69 FERC at 62,447. And approving this plan would violate the Commission's non-delegable obligations under NHPA and NAGPRA. That provides yet another reason to reject the second updated PSP and discontinue this ILP.

- A Trail and Road Access Study, to inventory and assess the conditions of roads and trails that SEOPC will need to use to operate or maintain the facility, characterize SEOPC's proposed use of Project access road and trails, SEOPC's current maintenance practices and responsibilities, and SEOPC's existing agreements related to Project access roads and trails. Nations' PAD Comments at 146-47. Such a study would involve collecting significant amounts of information about the current conditions of roads and trails, evaluating the impacts to natural resources adjacent to roads and trails, and determining existing access agreements for roads and trails. *Id.* at 148-49. Instead, SEOPC proposes a

[25] CNHPD Letter at 2-3.

Traffic Study, which would only study Project effects on road traffic, with limited consideration of the existing condition of a few roads and bridges. Noise, Air Quality, and Traffic Resources Study at 6-7.[26] SEOPC provides no explanation for proceeding with a Traffic Resources Study instead of the Trail and Road Access Study requested by the Nations.

- An economic feasibility study for the Project, which the Nations noted is important because of SEOPC's apparent lack of experience in power generation and transmission. Nations' PAD Comments at 159. SEOPC instead proposes a Socioeconomics Resources Study, to study some of the economic effects of the Project on the surrounding area during construction and operation, *see* Socioeconomics Resources Study at 3. But SEOPC does not propose to study whether the Project is economically feasible and beneficial such that it *can* be constructed and operated as proposed for at least the duration of any license term, which is what the Nations requested. SEOPC provides no explanation for not undertaking the Nations' proposed study.

5. Failure to address known resource management goals of agencies and Tribes with jurisdiction over certain resources (§ 5.11(d)(3))

A potential applicant's proposed study plan must "[a]ddress any known resource management goals of the agencies or Indian tribes with jurisdiction over the resource to be studied." 18 C.F.R. § 5.11(d)(2). Although the Project would be located on the Choctaw Reservation and require the use of water resources subject to the WSA, the second updated PSP says *nothing* substantive about agency or tribal resource management goals. SEOPC merely states

[26] SEOPC also proposes to evaluate impact to historic trails and the trails of removal of Chickasaw and Choctaw people, as part of its "Cultural and Tribal Resources" study, *id.* at 3-4, 15, but that does not concern the use of trails as transportation routes in the Project area.

that, "Study results can inform separate analyses to assess Project effects on resource such as Soil, Water, Terrestrial, Endangered Species, Recreation, Cultural, Environmental Justice, Socioeconomics, and power generation. Such analyses, in turn, can inform agency decision-making pursuant to their statutory obligations." *See, e.g.*, Water Resources Study at 4. SEOPC cannot "address" resources management goals simply by saying that others may use SEOPC's studies to do their own analyses to inform some future, unspecified decisionmaking.

SEOPC's statements are facially insufficient to meet its mandatory obligation to address agency or Tribal resource management goals in the proposed study plan. Once again, SEOPC has tried to shift onto others the burden of doing the work that it is legally required to do. And SEOPC's failure even to identify, much less to address, the Nations' resource management goals only emphasizes its total failure to meaningfully engage with the Nations about this Project. SEOPC's ongoing failure to engage the Nations and other Tribes coupled with its false representations to the Commission that it had engaged with Tribal leaders during the first three-year-term of its preliminary permit show a lack of good faith by SEOPC.[27]

6. Failure to include complete and/or accurate descriptions of existing information concerning the subjects of certain studies and need for additional information (§ 5.11(d)(3))

A potential applicant must also "[d]escribe existing information concerning the subject of the study proposal, and the need for additional information." 18 C.F.R. § 5.11(d)(3). SEOPC fails this basic but critical task of summarizing existing information, even where that information has been handed to them in comments on the PAD. SEOPC's failure to adequately evaluate and

[27] SEOPC's claim that "inviting all Tribes to participate in voluntary engagement *listening* sessions . . . conducted on 11 and 12 December 2023," Cultural and Tribal Resources Study at 13 (emphasis added), constitutes adequate, early engagement of Tribes, is insulting.

describe existing information prevents it from providing a coherent description of what additional information is needed and how its proposed study has been designed to gather that information.[28]

These failures are illustrated by the following examples.[29] SEOPC's Geologic and Soil Resources Study (p. 6) includes almost verbatim excerpts from Sections 4.2.1 – 4.2.3 of the PAD. Most of this information generally applies to the state and region, rather than the Project site. Some of the information is entirely irrelevant, as in the description of land ownership under "Project Geology." *Id.* It does not include any of the additional background information regarding specific geological resources in the Project area filed in response to the PAD. For example, it omits information regarding the specific geotechnical and hydrologic conditions at the proposed location of the pumped storage facilities provided and rigorously cited by Dr. Arden Davis, Ph.D., and Mr. Ethan Schuth, P.G. *See* Nations' PAD Comments, Attachments 2 and 6. SEOPC's Terrestrial Resources Study's description of existing information that will be used to inform the study is similarly incomplete. It begins with a description of the information to be provided: "This section provides an overview of the background and existing information on terrestrial resources in the Kiamichi River, the Little River, and Long Creek basins." Terrestrial Resources Study at 4. However, the very next sentence states that information is *not* provided but can be found in the PAD.[30] It then purports to describe only resources "associated with the transmission line . . . ." *Id.* SEOPC's misdirection results in a proposed study plan that says nothing substantive about the

[28] Notably, SEOPC's discussion of existing information does not cite to any results from the feasibility studies that it reported preparing during the first three-year term of its preliminary permit.

[29] The Nations do not intend this filing to comprehensively describe all of SEOPC's failures to describe existing information or describe the need for further information and reserve the right to address other failings in future filings should the ILP continue.

[30] The PAD does not provide complete or accurate description of existing information on terrestrial resources. *See, e.g.,* PAD at 4-67 (misstating there are no special status plan species in the Project area). And in making this facile reference, SEOPC ignores the additional information regarding terrestrial resources in the project area provided by the Nations and other commenters. *See, e.g.,* Nations' PAD Comments at 90-94, 118-119.

terrestrial resources associated with the area where the intake structure, reservoirs, and powerhouse will be located.

7. *Failure to fully explain the nexus between the direct, indirect, or cumulative effects on certain resources to be studied (§ 5.11(d)(4))*

SEOPC must "*explain* the nexus" between Project construction and operations and the resource(s) to be studied, 18 C.F.R. § 5.11(d)(4) (emphasis added). Although SEOPC lists a "Nexus between Project Operations and Effects on Resources" subsection in each study proposal, this subsection simply repeats the gambit from SEOPC's failed initial PSP by making the conclusory observation that "Project construction, operation, and maintenance activities have the potential to directly or indirectly affect" resources near the Project site. *See, e.g.*, Land Use and Aesthetic Resources Study at 4. Typographical errors suggest that portions of this subsection were repeatedly copy-and-pasted without significant consideration. *See* Threatened and Endangered Species Study at 5; Terrestrial Resources Study at 5. If this were all that an applicant needed to say to meet 18 C.F.R. § 5.11(d)(4), then that provision would be utterly meaningless.

8. *Failure to explain how proposed study methodology is consistent with generally accepted practice in the scientific community or considers known Tribal interests (§ 5.11(d)(5))*

In all cases, SEOPC's second updated PSP fails to explain how its proposed study methodologies are consistent with generally accepted practice in the scientific community, *cf.* 18 C.F.R. § 5.11(d)(5) – perhaps because in many instances, no detailed methodologies have been developed. Instead, SEOPC repeatedly asserts, without any support, that "[a]ll scientific methods employed to gather, generate, and analyze information and draw conclusions from that information with regard to impacts caused by the proposed construction and operations and maintenance of the Project will be consistent with accepted scientific practice as well as currently accepted industry

standards." *See, e.g.*, Water Resources Study at 11. *That is assertion, not explanation*. As with its rote attempts to satisfy Section 5.11(d)(4), SEOPC's responses on Section 5.11(d)(5) are void of any substance and cannot meet the regulatory requirements.

Furthermore, SEOPC's proposals fail to consider known Tribal interests, as required by 18 C.F.R. § 5.11(d)(5). At this point, notwithstanding SEOPC's failures to engage with the Nations, there can be no doubt that the Nations have interests in the Project. The Nations have described their interests, and their study requests explained methodologies that are necessary to protect their interests. By ignoring study methods that the Nations explained in their requests, SEOPC fails to consider the known tribal interests in how the effects of the Project will be studied. Again, SEOPC's persistent failures are preventing the Commission from fulfilling its trust responsibility to the Nations, "[to] ensure that tribal concerns and interests are considered whenever the Commission's actions or decisions have the potential to adversely affect Indian tribes Indian trust resources, or treaty rights." 18 C.F.R. § 2.1c(e).

For example, the Nations made specific study requests related to Geologic and Soil and Water Resources which they described as among the priority studies necessary to protect their interests. However, the individual proposals included in the second updated PSP do not address the Nations' interests in either specific methodologies or protection of the resources, as described below:

- SEOPC's Geologic and Soil Resources Study is a mixed bag of restated study objectives (*id.* at 9 ("SEOPC will study the effects of Project construction, operation, and runoff events on riverbank and sediment conditions . . ."), entire, additional studies (*id.* at 8 ("Slope Stability Study")), and descriptions of specific equipment to be used for certain, discrete activities like drilling (*id.* at 7-8). These errata do not add up to a coherent

methodology, like those the Nations described in their Geological and Soil Resources Study Request (Nations' PAD Comments at 123-27), Slope Stability Study Request (*id.* at 127-31), or Site-Specific Seismic Hazard Study Request (*id.* at 132-35), and do not provide a description that can be used to evaluate whether the proposed studies are consistent with generally accepted scientific practice. For example, SEOPC's Geologic and Soil Resources Study mentions a Slope Stability Study that would rely on a "numerical computer-based limit-equilibrium stability model/software," but does not describe a specific model or software, or any of the potential inputs that would inform the model, aside from a vague and confusing reference at "[m]aterial properties" will "be assumed" based on "drilling investigation." Geologic and Soil Resources Study at 8. SEOPC's repeated refusals to describe the methodologies for its proposed Geologic and Soil Resources Study create an unacceptable and mounting risk for the Nations, particularly the Choctaw Nation, which would be most vulnerable to loss of property and/or life and environmental damage due to geohazards caused or exacerbated by Project construction.

- SEOPC's proposed methodology for the aesthetics component of its Land Use and Aesthetic Resources Study has some overlap with the methodology described in the Nations' Visual and Aesthetic Resources Study Request (Nations' PAD Comments at 138-39). However, SEOPC notably excludes consultation from its list (Land Use and Aesthetic Resources Study at 5), which had been the Nations' first proposed step (Nations' PAD Comments at 138):

> a) Consult with the USFS, BLM, Nations, and other Native American Tribes to identify viewsheds and representative views ("KOPs") and the characteristic and natural features on which they rely, for assessment of the influence of future Project operations, maintenance, or construction activities on those viewsheds and representative views and their use by the Nations and others.

By excluding consultation with the Nations and other critical stakeholders, SEOPC reduces the scope and depth of the Nations' requested study (and does so without explanation, *see* 18 C.F.R. § 5.11(b)(4)). SEOPC states that "KOPs may include locations whose vistas are likely to be considered iconic or unique within the community" without providing an explanation for the process to make such determinations (Land Use and Aesthetic Resources Study at 5). While SEOPC includes "Conduct ISR stakeholder meeting" for June 2026 in its proposed schedule, that is not a methodology for evaluating KOPs nor will it incorporate Tribal interests in that process, since this meeting would occur after the first (and potentially only) round of viewshed analysis and KOP photographs are completed (*id*. at 7).

Furthermore, SEOPC generally omits effects of the "generation tie/transmission lines." As a result, the scope of SEOPC's analysis will inaccurately reflect the aesthetic impacts of the Project on the cultural and aesthetic qualities of the landscape, in which the Nations are interested (*id*. at 5). SEOPC also fails to include "c) Document existing Protection, Mitigation, and Enhancement measures" (Nations' PAD Comments at 138), in which the Nations are also interested.

- SEOPC's Noise, Air Quality, and Traffic Resources Study (p. 4) proposes a geographic scope restricted to the Project boundary, the transmission line right-of-way, a 0.5-mile extended area beyond the Project boundary, and along major roads providing access to the Project. SEOPC describes its Ambient Noise Measurement Program as expected to include Type 1 sound level meters "at least three locations" that would be "programmed to measure noise levels on a continuous and simultaneous basis for a minimum 24-hour period." *Id*. at

4. As the Nations previously explained, project-related noise can disrupt wildlife and degrade cultural experiences and practices far beyond the Project boundary (Nations' PAD Comments at 152). SEOPC's proposal to restrict consultation to a single meeting after the completion of field work (Noise, Air Quality, and Traffic Resources Study at 8) does not meet the Nations' interests in being consulted in the "[i]dentif[ication of] sensitive noise receptor areas (i.e., wildlife habitat, recreation and cultural areas) where sound data needs to be collected" (Nations' PAD Comments at 152) given the Nations' deep knowledge of the Project area, or in ensuring the study area is large enough to encompass the full range of noise-related impacts. The sensitive areas that are identified will be grossly under-studied with the mere *24 hours* of proposed monitoring.

Furthermore, the noise study does not address the Nations' requested methodology for SEOPC to fully "[i]dentify the type and expected frequency of maintenance activities that would generate noise in the project vicinity (e.g., helicopter or airplane use)" (Nations' PAD Comments at 152) – SEOPC instead states that "[o]perational noise sources associated with the Project are anticipated to be limited to the powerhouse and the pumping station" (Noise, Air Quality, and Traffic Resources Study at 5). Again, Tribal interests are ignored.

- As described above, SEOPC's Cultural and Tribal Resources Study would ignore NHPA and NAGPRA requirements, violating federal law and ignoring the Nations' interests that are protected under those statutes. SEOPC's proposed methodologies also ignore Tribal interests that the Nations explained in their comments. SEOPC proposes to augment background research to "determine if there are any updates since the previous review" (Cultural and Tribal Resources Study at 6). But as the Nations explained, a full desktop

review is needed due to significant data gaps: "It is highly probable that most of the project area has not received a cultural resources survey up to modern standards" (Nations' PAD Comments at 142-43). The Nations' interest in the historical and cultural resources on the Choctaw Reservation is obvious, and they are in the best position to explain how those interests can be protected by proper information gathering. Yet SEOPC ignores the Nations' recommendations for what SEOPC must do to identify and protect these resources.

The Nations are also concerned that SEOPC's currently proposed Unanticipated Discoveries Plan (**UDP**) "will [only] be submitted to the FERC, [Texas Historical Commission], and [Oklahoma Historical Society] for review and approval" (Cultural and Tribal Resources Study at 13). The Nations previously requested:

> Incorporating the results of the phase I and II cultural resources work, the applicant, OK SHPO, THPOs, and Commission will draft a Programmatic Agreement for complying with the NHPA during Project implementation. This would specify site avoidance measures (e.g., work exclusion areas and construction buffers), treatment measures (e.g., construction mats), and lay out a legally binding plan for inadvertent discovery.

Nations' PAD Comments at 144. SEOPC's methodology omits the Nations from SEOPC's list of UDP parties, which again ignores tribal interests that they have clearly articulated in the ILP. That compounds the failure to engage in NHPA section 106 consultation with the Nations or to plan on complying with a plan of action under NAGPRA.

9. *Inadequate opportunity for local participation in the study plan meeting.*

SEOPC's second updated PSP (pp. 7-8) increases the number of study plan meeting days from one to two-and-a-half days. This is an improvement over its initial PSP. However, additional meeting days cannot overcome a patently deficiently proposed study plan. Also, SEOPC's ability

to host a successful study plan meeting is uncertain given its repeated errors in complying with the ILP. And its efforts now give little comfort, as they suggest a rushed and slapdash effort to check regulatory boxes rather than develop a real plan. In particular, it appears SEOPC copied almost verbatim Grand River Dam Authority's (**GRDA**) study plan meeting proposal, including reference to the meeting being held for "relicensing," which suggests SEOPC did not give much independent thought to how to convene an inclusive and productive meeting. Second Updated PSP at 6-7; *compare* GRDA, Pensacola Hydroelectric Project (P-1494), eLibrary no. 20180427-5045 (Apr. 27, 2018), p. 46.

Furthermore, SEOPC's plan for an exclusively virtual meeting will deny landowners, including many members of the Nations, and other local stakeholders the opportunity to meaningfully participate. These local stakeholders will be directly impacted by the Project, but many in this area do not have reliable access to the internet. Denying the local community meaningful opportunities to participate in the ILP is contrary to FERC policy, which, according to FERC's Office of Public Participation, prioritizes "Bringing People to FERC," https://www.ferc.gov/what-opp-does.[31]

[31] The opaque RSVP system also raises questions. SEOPC has conditioned participation on RSVPs via email to an address associated with Johann Tse, the President of SEOPC. And SEOPC has reported Mr. Tse as its only employee. *See* Comments of the Oklahoma House of Representatives in opposition of the Pushmataha County Pumped Storage Hydroelectric Project, eLibrary no. 20250122-4001 (Jan. 22, 2025), p. 16. Apparently, then, Mr. Tse will be receiving and processing RSVPs, himself. Given Mr. Tse's reaction to public questions during the scoping meeting in Paris, Texas last year, the Nations have serious concerns about whether he can be relied on to manage the RSVP process and ensure that all stakeholders are allowed to participate. Moreover, SEOPC gives no information about how RSVPs will be confirmed or how access to the virtual meeting will be managed. At least one local stakeholder has reported SEOPC's RSVP system to be unreliable. *See* Comment from Oliver Skimbo, eLibrary no. 20250303-5059 (Mar. 3, 2025) ("This email does not work. Where can I get access to this meeting?").

V. SEOPC'S FAILURE TO FILE AN ADEQUATE PROPOSED STUDY PLAN WARRANTS TERMINATION OF THE ILP FOR THIS PROJECT.

Under 18 C.F.R. § 385.2001(b), if a filing does not comply with any applicable statute or rule, it may be rejected as if it were never filed. As the Nations have shown, SEOPC's second updated PSP does not comply with ILP regulations, *id.* § 5.11, and therefore it must be rejected. Despite being granted multiple chances and roughly three additional months to comply, SEOPC has failed to comply with the ILP requirements that a potential applicant must file a proposed study plan within 45 days after the deadline for filings of comments on a PAD, including a proposal to conduct a study plan meeting during the 90-day period provided in 18 C.F.R. § 5.12. *See id.* §§ 5.11(a), (e). As Commission staff warned, a potential applicant's failure to exercise due diligence may result in termination of a licensing proceeding. First Deficiency Notice at 2 ("If you are unable to file an adequate Proposed Study Plan, the ILP for your project may be terminated."); *see also City of Augusta, Georgia,* 74 FERC ¶ 61,261, 61,868 (1996) (citing applicant's "failure to timely submit the information, or demonstrate good faith efforts to initiate the necessary studies" as basis for terminating proceeding); *Willard C. Oppy*, 6 F.P.C. 502, 502 (1947) (terminating proceeding because "Applicant has failed to complete his application for license for the proposed project and has given no assurance of his ability to do so"). As described above, SEOPC's failure to prepare an adequate proposed study plan is entirely in keeping with its seemingly deliberate ineptitude to date, which is almost certain to continue unless the Commission acts to terminate the ILP.

VI. THE COMMISSION SHOULD CANCEL THE PRELIMINARY PERMIT FOR NON-COMPLIANCE AND GOOD CAUSE.

A preliminary permit serves an important purpose in a licensing proceeding under the FPA, and so the Commission demands diligence of all permit holders:

> The purpose of a preliminary permit is to enable an applicant to make his investigations, examinations and surveys, prepare his maps, plans and specifications, and estimates, make his financial arrangements, and gather whatever other data is required in order to obtain a license. *The intent of the Federal Power Act is to have applicants act diligently and complete all the necessary investigations during the period of the preliminary permit*.

Nat'l Wildlife Fed'n v. FERC, 801 F.2d 1505, 1508 (9th Cir. 1986) (emphasis added); *see also* 18 C.F.R. § 4.81.

The Commission has authority to "cancel a preliminary permit after notice and opportunity for hearing if the permittee fails to comply with the specific terms and conditions of the permit," or "for other good cause shown after notice and opportunity for hearing." 18 C.F.R. § 4.83(a); *Green Wave Energy Sols., LLC*, 132 FERC ¶ 61,254, 62,442 (2010); *Ne. Hydrodevelopment, LLC*, 131 FERC ¶ 61,151, 61,667 (2010) (upholding cancellation based on permittee's failure "to meet the requirements clearly set forth in its permits" without explanation). SEOPC's preliminary permit specifically provides that it "may, after notice and opportunity for hearing, be canceled by order of the Commission upon failure of the permittee to prosecute diligently the activities for which a permit is issued, or for any other good cause shown." First Preliminary Permit, Form P-1, art. 2. The Commission should exercise its authority to cancel SEOPC's preliminary permit.

In the first place, SEOPC has failed to comply with the terms of its preliminary permit. Most recently, it failed, without explanation, to meet the March 31, 2025, deadline to file its annual progress report. This missed deadline follows SEOPC's failure to "prosecute diligently the activities for which [the] permit is issued" during the past six years, which include, "maintain priority of application for a license during the term of the permit while the permittee *conducts investigations and secures data necessary to determine the feasibility of the proposed project*." First Preliminary Permit, Form P-1, art. 1 (emphasis added).

The methods by which SEOPC should undertake such investigations and gather such data are to be determined in significant part by the Commission's regulations, specifically the study plan process described in the ILP. *Valley Affordable Hous. Corp.*, 141 FERC ¶ 61,038, 61,119 (2012); *see also Nat'l Wildlife Fed'n v. FERC*, 801 F.2d at 1508 ("The Commission licensing decision is to be based on 'the detailed studies and agency consultation to be conducted under the permit.'"). But SEOPC has repeatedly failed to comply with the ILP by submitting deficient study plan proposals.

Even if the preliminary permit itself did not require compliance with the ILP study plan process, the Commission should still cancel the preliminary permit for "good cause." That is because failure to comply with the schedule for the ILP is itself a basis for FERC to cancel a preliminary permit. *See Green Wave Energy Solutions, LLC*, 132 FERC 61,254, ¶ 6 (2010). And apart from the ILP deadlines *per se*, SEOPC's lack of diligence and apparent lack of good faith are cause for cancellation.

Further, based on the information SEOPC has provided, SEOPC does not appear to have a reliable source of funding to undertake the studies that will be needed to prepare an adequate license application by April 2028 and otherwise comply with its obligations under the ILP. In its Application for Extension of the preliminary permit (eLibrary no. 20230210-5231, p. 17), SEOPC stated the expectation that investors would fund necessary studies:

> Statement of costs and financing
>
> (i) The estimated costs of carrying out or preparing studies, investigations, tests, surveys, map plans, or specifications identified in this Exhibit 2:
>
> $5,000,000 to $10,000,000
>
> (ii) The expected sources and extent of financing available to the applicant:

The Applicant expects investors to fund the costs to conduct studies.

As described above, there appears to be no reasonable basis for SEOPC's expectations for additional investor funding under the current circumstances. SEOPC cannot defend its priority against competitors now that its preliminary permit will expire before it can prepare and file a final license application. Also, there is now expert evidence that the Project's costs will likely exceed its benefits by $1 billion. This evidence severely undermines SEOPC's business case for the Project, which will likely make it even more difficult to attract additional investment for studies that could very well cost more than SEOPC's high-end estimate of $10 million.

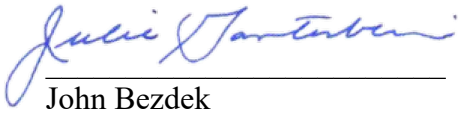
In sum, SEOPC has not exercised diligence under the preliminary permit. As described by E3, SEOPC has yet to address significant uncertainties that must be resolved to demonstrate the feasibility of its proposed Project. Attachment 1 at 8-12. SEOPC has yet to produce a minimally sufficient plan to even *study* the impacts of its proposed Project, much less show its readiness to comply with legal requirements for securing necessary authorizations for the Project. SEOPC has yet to demonstrate the means to construct and operate the Project. SEOPC itself appears to be a shell corporation, with no office, no income, no staff, no industry experience, and no purpose except periodically filing papers in the preliminary permit and ILP dockets for this Project, which have been routinely rejected for being facially insufficient. In short, every indication suggests that SEOPC is using the preliminary permit to tie up the site against potential competitors while it seeks investors to fund its castle in the air. This misuse of the preliminary permit cries out for cancelation. *Cf. Eagle Mtn. Energy Co.*, 62 FERC 61,163, 62,125 (1993) ("The purpose of permit conditions, then, is primarily to ensure that the permittee take certain minimal steps and not tie up a site for up to three years without pursuing in good faith a study of the project's feasibility."). For these reasons, the Commission should immediately initiate cancellation of the preliminary permit.

VII. CONCLUSION.

The Nations request the Commission reject the second updated PSP, terminate the ILP for the Project, and initiate cancellation of the preliminary permit based on SEOPC's non-compliance with the permit terms and for additional good cause, including the impossibility of SEOPC filing an adequate license application prior to permit expiration and the negative economics of the Project as proposed by SEOPC.

Dated: April 2, 2025

Respectfully submitted,



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DECLARATION OF SERVICE

Southeast Oklahoma Power Corporation's Pushmataha County Pumped Storage Hydroelectric Project (P-14890-000, -001, -005)

I, Emma Roos-Collins, declare that I today served the attached "Choctaw Nation of Oklahoma and Chickasaw Nation's Joint Request for Expedited Action to Reject Applicant's Second Updated Study Plan as Deficient," by electronic mail, or by first-class mail if no e-mail address is provided, to each person on the official service list compiled by the Secretary in this proceeding.

Dated: April 2, 2025

By:

Emma Roos-Collins
Paralegal/Firm Administrator
WATER AND POWER LAW GROUP, PC
2140 Shattuck Ave., Suite 801
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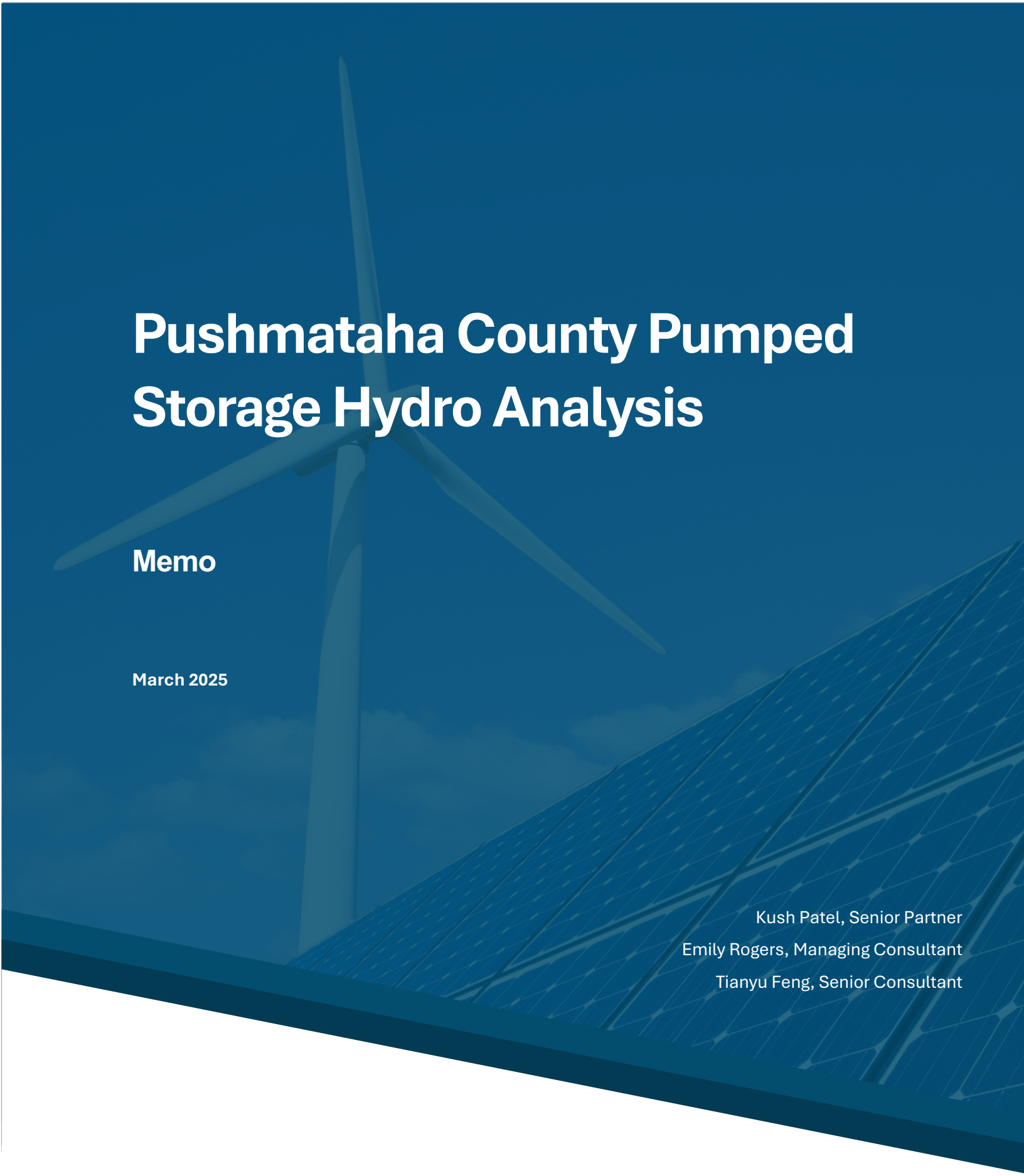
Attachment 1



Pushmataha County Pumped Storage Hydro Analysis

Memo

March 2025

Kush Patel, Senior Partner
Emily Rogers, Managing Consultant
Tianyu Feng, Senior Consultant

Energy+Environmental Economics

Table of Contents

Executive Summary

The Southeast Oklahoma Power Corporation (SEOPC) proposed a 1,200 MW hydropower project (the "Project" or "Asset") on the Kiamichi River, located entirely within the Choctaw Nation Reservation, in a pre-application document to FERC in May 2024. The proposed project includes a pumped storage hydro (PSH) facility and 100-mile transmission line extending from the PSH location in Pushmataha County, Oklahoma to Paris County, Texas.

On behalf of the Choctaw Nation of Oklahoma and Chickasaw Nation, E3 evaluated the economic viability and development risks associated with the proposed project. E3 forecasted the net cost of the project to be about $1B due to high upfront capital costs for PSH and relatively limited revenue opportunities for a project of that size. Revenues from the ancillary services market are forecasted to be low due to increased lithium-ion battery energy storage builds. The Asset will compete for capacity revenues in the SPP market with existing and new natural gas power plants. E3 forecasted the total cost of the project to be $6.3B including capital expenditures and maintenance for the PSH and transmission line. E3 forecasted the benefits of the project to be $3-$7B depending on sensitivities related to the investment tax credit, inflation, and interconnection to ERCOT, SPP, or both markets.

Compared to SEOPC third party analysis, E3 forecasts significantly higher costs to build the project and lower ancillary services revenues based on markets saturating due to lower cost lithium ion deployment and observed historical price trends. E3's costs analysis is based on the NREL ATB 2024 projections, a highly credible source, backed by rigorous methodologies, transparent assumptions, and extensive peer-reviewed research from NREL. It is widely used by industry experts, policymakers, and researchers for reliable, up-to-date cost and performance projections of energy technologies. SEOPC has provided limited information on the justification behind their cost estimates, which are far lower than NREL cost estimates.

In addition to the cost effectiveness challenges, the proposed project includes significant development, permitting, offtake and interconnection risk. The existing transmission network in the project region is constrained and will require new transmission buildout to be interconnected which comes with associated transmission development risk related to land acquisition, permitting, and rights of way. In order to secure financing, the project will require offtaker contracts. Due to the large scale of the project, multiple offtakers with significant energy demands will be required to secure financing, which poses a major contracting challenge.

Based on the following analysis and development risks, the proposed project does not present a compelling case to be economically beneficial.

About E3

Energy and Environmental Economics, Inc. (E3) is a 125+ person energy consulting firm with offices in San Francisco, Boston, New York, Denver, and Calgary. Founded in 1989, E3 helps utilities, regulators, policy makers, developers, and investors make the best strategic decisions possible in this period of transition in the electric and gas sectors. Many of E3's projects center around rigorous and transparent modeling analyses that provide a foundation for our strategic advising. Because E3 works with clients from all sectors of the electricity industry across the U.S., we provide a 360-degree understanding of markets, planning, policy, regulation, and environmental factors. Just as important, we are committed to delivering clear, unbiased analyses that help clients make informed decisions often in complex and multi-stakeholder contexts. This is particularly relevant with how we develop our forward price forecasts.

E3 has deep expertise in pumped storage hydro and evaluating long duration energy storage projects across the country. E3 qualifications and author resumes are provided in the Appendix. Examples of past pumped storage hydro engagements include:

Confidential Client, Diligence of Pumped Storage Hydro in the Pacific Northwest (2022 - 2023). E3 supported an international investor in its diligence of a pumped storage hydro asset in development in the Pacific Northwest. E3's support included market strategy recommendations and a review of utility Integrated Resource Plans in the region to assess regional reliability trends and potential offtaker appetite for new, clean, firm, dispatchable capacity. E3 conducted system-level cost analysis using our RESOLVE model, to estimate the potential impact on the region's electricity system of incremental pumped storage hydropower capacity. E3 used RESOLVE model to forecast market revenues for an energy storage asset in the CAISO market. E3's final recommendations and analysis were critical to the client's strategy formation and discussions with potential offtakers.

National Grid Ventures, Pumped Storage Analysis. E3 provided technical analysis and regulatory support for the 1,200 MW Goldendale pumped storage project proposed in Washington as well as the 400 MW Swan Lake pumped hydro project in Oregon both being developed by National Grid Ventures. E3 performed production simulation to quantify the benefits of pumped storage for integrating higher penetrations of renewable energy in the Western U.S. E3 also quantified the significant value of long duration storage in preventing curtailment of excess solar generation and evaluated the benefits of pumped storage for the operation of the bulk transmission system in Washington, Oregon, and California.

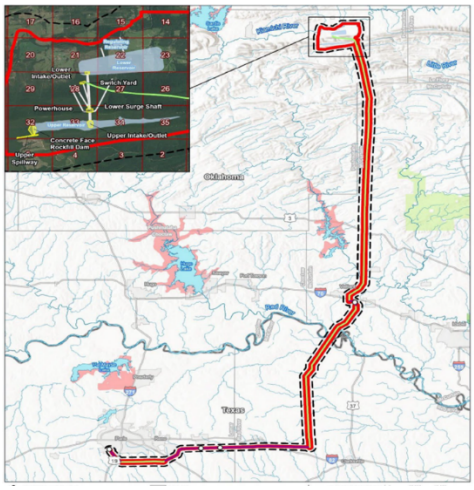
Los Angeles Department of Water (LADWP) and Power Boulder Canyon Pumped Storage (BCPS) Economic Analysis (2019 – 2020). E3 assisted LADWP to analyze the potential conversion of Boulder Canyon (Hoover) Dam into a pumped hydro facility. By partnering with the engineering firm HDR, E3 led the economic analysis to assess the energy arbitrage and resource adequacy benefits of the potential pumped storage project. E3 relied on in-house loss-of-load-probability modeling to determine resource adequacy value and hourly PLEXOS modeling to assess the long-term energy arbitrage value of BCPS under a high-renewable electricity system. E3 modeled RESOLVE scenarios including different pump sizes, different load forecasts, and different renewable penetration levels.

Project Overview

In May 2024, the Southeast Oklahoma Power Corporation (SEOPC) proposed a 1,200 megawatt (MW) hydropower project on the Kiamichi River, located entirely within the Choctaw Nation Reservation, in a pre-application document (PAD) filed with the Federal Energy Regulatory Commission (FERC). The proposed project includes a pumped hydro facility and 99.95-mile, 345-kilovolt transmission line extending from Pushmataha County, Oklahoma, to Paris County, Texas.

The proposed construction includes an 886-foot-long upper dam with a 600-acre upper reservoir, a 13,615-foot-long lower dam with an 887-acre lower reservoir, a 40-acre re-regulating reservoir, and a concrete pump station/powerhouse. The project boundary encompasses 35,235 acres of private land spanning Pushmataha and McCurtain Counties in Oklahoma and Red River and Lamar Counties in Texas. The proposed project site and transmission path are shown in Figure 1 below.

Figure 1: Planned Project Site and Transmission Line Location[1]



SEOPC's third party consultant proposed scenarios that allow the project to participate in both the Southwest Power Pool (SPP) and Electric Reliability Council of Texas (ERCOT) markets based on its interconnection in both Oklahoma and Texas. However, the ability of the project to interconnect and participate in both markets is highly uncertain.

FERC granted SEOPC a 4-year preliminary permit to study the project's feasibility in 2018. SEOPC applied for and received a permit extension until April 1, 2027. However, there is no evidence that SEOPC has submitted additional permit applications for the pumped storage hydropower (PSH) system or associated transmission line during the 2 years it has held the preliminary permit extension.

SEOPC proposes to begin pre-construction activities after the issuance of the FERC license and other necessary authorizations. Such activities are expected to last three years. During this phase,

[1] Pushmataha County Pumped Storage Project, PAD

SEOPC also plans to conduct geotechnical investigations, perform transmission interconnection studies, finalize design and engineering, and develop off-taker agreements. Based on the PAD, SEOPC anticipates it will take three to four years to complete project construction, and an additional two to three years to fill the Project's lower and regulating reservoirs. Thus, under SEOPC's proposal, the project is not expected to come online until after 2037, including the time needed for licensing, construction and filling the reservoirs.

Pumped storage hydropower (PSH) is a type of hydroelectric energy storage technology that utilizes upper and lower water reservoirs at different elevations to generate power during water discharge.[2] The system also requires a powerhouse to pump water back into the upper reservoir during the charging process. As a result, PSH is a net energy consumer, as it consumes more power during charging than it generates during discharge. The typical round-trip efficiency of PSH is about 75%, which is lower than the 85-90% efficiency observed in lithium-ion batteries.

In the United States, there are currently 43 PSH plants with a combined generation capacity of 22 GW, which accounted for 70% of the nation's utility-scale power storage capacity in 2022. The primary benefit of PSH, similar to other energy storage technologies, is its ability to shift energy discharge to periods of high demand and charge during periods of low energy demand, which usually corresponds to charging at lower prices and discharging at high prices to realize energy arbitrage value or revenues. The development of PSH is largely influenced by site-specific factors such as geological conditions, water availability, climate, and grid interconnection. However, over the past few decades, the growth of PSH capacity has slowed due to the rapid expansion of lithium-ion battery storage systems. Based on a study by Washington State University,[9] the typical FERC licensing timeline for a similar PSH project is 5-7 years from the filing of Notice of Intent (NOI).

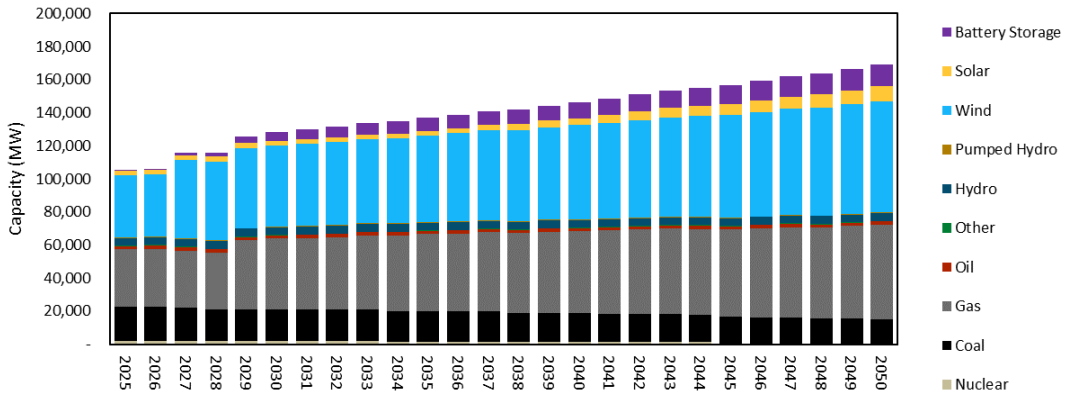
About Southwest Power Pool (SPP)

SPP is a wholesale electricity market that spans 14 states in the Southwestern U.S. and serves a population of more than 18 million people. SPP includes energy, ancillary services (AS), and capacity markets. According to E3's SPP market outlook[3], non-thermal resources are projected to account for over 55% of total capacity by 2050, with wind continuing to hold the largest share. Coal capacity is expected to decline, although at a slower rate compared to other U.S. regions, while natural gas capacity is anticipated to increase, primarily for reliability purposes and as a replacement for retired coal capacity. Projected capacity build by year is forecasted in the figure below.

[2] Depart of Energy, What is Pumped Storage Hydropower? https://www.energy.gov/eere/water/pumped-storage-hydropower.

[3] E3 produces highly rigorous and bankable market price forecasts for all major U.S. markets, including SPP and ERCOT. E3 price forecasts are built around E3's expectation for how policies, regulations, technologies, economics, and customer demand will evolve to drive new resource additions, retirements, and market prices from today through 2050 and beyond. E3 price forecasts and market outlooks have been used by many investors, developers, and regulators and are widely recognized within the industry.

Figure 2: SPP Total Nameplate Capacity Forecast (E3)



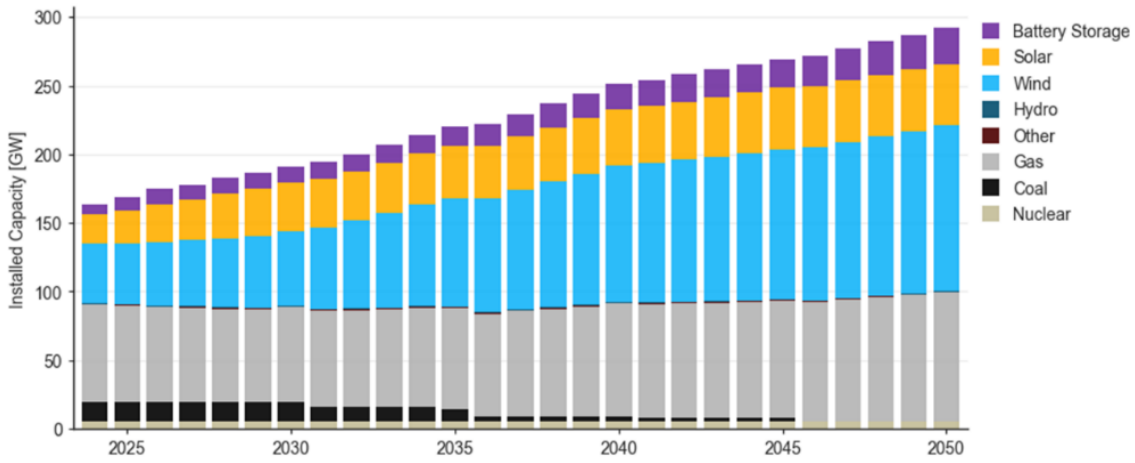
SPP does not present high economic value for PSH because the region does not have any strict barriers for preventing the new build of natural gas power plants, which are generally cheaper than PSH. SPP energy prices are not highly volatile compared to other wholesale markets. It minimizes the value of storage energy revenues through daily or seasonal price arbitrage, which would reduce the energy revenue potential over time.

About Electric Reliability Council of Texas (ERCOT)

ERCOT is the wholesale electricity market in Texas and serves about 26 million customers. ERCOT is a summer-peaking system, with an all-time summer peak demand of 85.4 GW recorded in 2023.[3] The three largest generating sources in the region are natural gas, wind, and solar. Additionally, ERCOT currently has 5.6 GW of battery storage capacity.

By 2030, ERCOT is expected to have over 50 GW of wind, 35 GW of solar, and 11 GW of storage capacity, driven by economic trends. By 2050, wind and solar resources are projected to comprise nearly 60% of the region's generating capacity, while the entire coal fleet (approximately 14 GW) is assumed to retire by the end of 2045.

Figure 3: ERCOT Nameplate Capacity Forecast (E3)



Unlike other wholesale markets, ERCOT offers only energy and ancillary services (AS) markets. ERCOT typically exhibits greater variability in energy prices compared to other regions, reflecting the dynamics of its resource mix and market structure.

SEOPC's proposed PSH project plans to export energy to Paris County in the ERCOT North region due to higher and more volatile energy discharge prices. However, there is significant uncertainty regarding the project's ability to develop the 100-mile transmission line to ERCOT and interconnect with the ERCOT system, as detailed in the Section Interconnection Uncertainties and Challenges. Historically, ERCOT has limited interconnection to other U.S. electricity systems and operated as an Independent System Operator (ISO) region to limit federal regulatory oversight by staying within the state of Texas[4].

[4] FERC, An Introductory Guide to Electricity Markets Regulated by the Federal Energy Regulatory Commission, https://www.ferc.gov/introductory-guide-electricity-markets-regulated-federal-energy-regulatory-commission?utm_source=chatgpt.com

Development, Permitting, and Interconnection Risks

Based on the current status of project planning and design, as well as the inherent complexities of energy market dynamics, the project faces significant uncertainties, along with various potential challenges. These uncertainties stem from the nature of the project type, the intricacies of project development, the complexities of interconnection with the SPP and ERCOT markets, and the regulatory and permitting processes. Collectively, these factors present substantial risks to the project's overall feasibility and success.

Development Risks

The PAD submitted by SEOPC provided information about the project's development plans and design details. However, given the early stage and the complexity of the project, many risks related to the details and action plans of project development remain undefined. It is crucial to note that the preliminary permit granted by FERC only authorizes feasibility studies and maintains priority for a license application. It does not authorize construction of the PSH or transmission line or other ground-disturbing activities. Key uncertainties include:

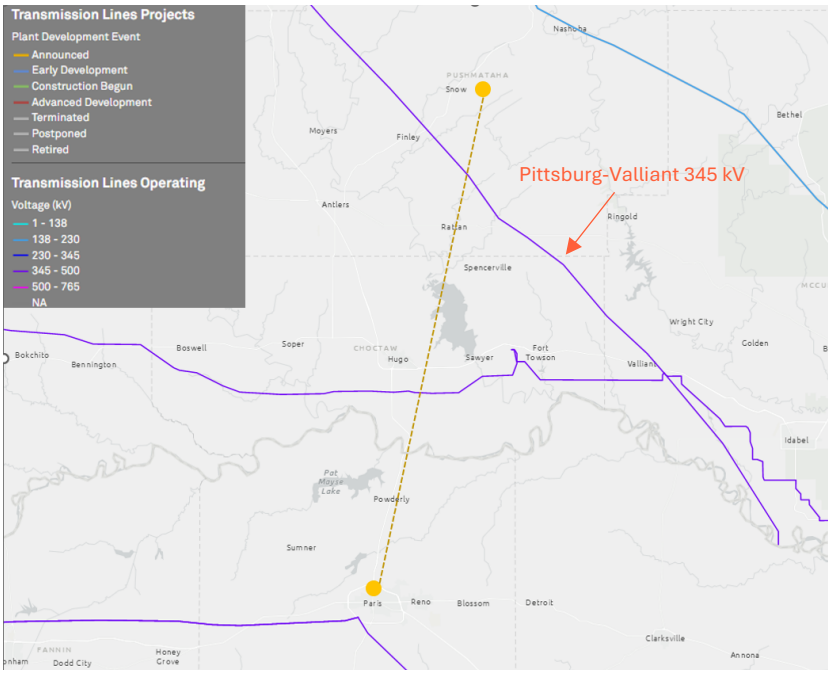
- **Undetermined Construction Plans and Site Locations**: The specific details of the reservoirs, powerhouse and transmission line construction plans, including their site locations, are yet to be finalized. This ambiguity poses significant risks related to land acquisition, permitting timelines, and construction schedules, potentially leading to higher costs and delays.
- **Incomplete Powerhouse Design Specifications and Site Selection**: While the PAD includes partial design specifications, SEOPC has indicated that it is still considering critical details such as the switchyard, cable tunnel, and exact powerhouse site location. This lack of finalized plans adds to the uncertainty surrounding the project's feasibility and execution.
- **Transmission Development:** SEOPC has not yet determined the proposed transmission line route, circuit count, voltage, and configuration for interconnection with the ERCOT grid in Paris, Texas. According to the S&P Market Intelligence database[5], there are currently no operating or planned transmission lines that can transport energy from Pushmataha County, OK, to Paris County, TX. As a result, there are no alternative solutions available to transport energy to Paris County if the proposed transmission line addition cannot be completed due to land acquisition challenges or ERCOT interconnection constraints. The uncertainty regarding transmission infrastructure to deliver project power to potential offtakers on the ERCOT grid presents a significant risk to the project's feasibility and timeline.

  Additionally, SEOPC's third-party analysis of the scenario for transporting energy to SPP will likely need to utilize the 70-year old Pittsburg–Valliant 345 kV transmission line, as shown in

[5] S&P Market Intelligence, Transmission Line Map, https://www.capitaliq.spglobal.com/web/client?auth=inherit#mapping/map

Figure 4. However, according to the *Frequently Constrained Areas 2021 Study* by SPP,[6] the Pittsburg–Valliant 345 kV transmission line is frequently constrained. Furthermore, a report by the American Council on Renewable Energy [7] indicates that while recently proposed upgrades to this line may alleviate some congestion, they have inadvertently caused new congestion downstream on the same line. These studies suggest that transporting large amounts of energy to SPP through the existing nearby transmission infrastructure would present significant challenges and may not be feasible using existing transmission infrastructure.

Figure 4: Active and Planned Transmission Lines in the Region



- **ERCOT Interconnection**: Transmission line development decisions depend on consultations with ERCOT, and there is no evidence of formal commitment or notification from ERCOT regarding these plans.
- **Financing Risks**: It is reasonable that the project has not yet established or publicized a clear financing plan at this stage of project development. However, due to the large-scale size and high forecasted cost of the project (SEOPC third party report estimates up to $4.6B), challenges in securing financing could lead to project delays, increased costs, or potentially a significant reduction in the project scope. Although the FERC licensing process does not require secured financing, obtaining financing is necessary for interconnection request approval and project construction. According to the National Hydropower Association,

[6] SPP, Frequently Constrained Areas 2021 Study, https://www.spp.org/documents/66176/fca%202021%20report%20-%20final.pdf?utm_source=chatgpt.com

[7] American Council of Renewable Energy, Just & Reasonable? Transmission Upgrades Charged to Interconnecting Generators Are Delivering System-Wide Benefits, https://acore.org/wp-content/uploads/2021/10/Just_and_Reasonable.pdf?utm_source=chatgpt.com.

financing PSH projects in today's deregulated power market is particularly challenging due to the difficulty in predicting energy price volatility in regional wholesale markets.[8] Being able to predict energy prices enables PSH to optimize charge and discharge cycles, maximize arbitrage opportunities (i.e., charge when prices are low and discharge when prices are high) based on the prices signals of the energy markets. Additionally,, the ancillary services (AS) and capacity markets are saturating rapidly, as detailed in the Section Alternative Technologies. These uncertainties make it harder for the project to demonstrate a reliable future revenue stream, a key factor in securing financing in the capital markets.

Permitting Timeline Risks

The project's initial preliminary permit application was filed with FERC on August 27, 2018. Due to the complexities associated with the project and its permitting process, SEOPC applied for and received a permit extension to April 1, 2027. According to the current FERC schedule, SEOPC is expected to file the Final License Application on February 18, 2028. According to PAD, the upper reservoir would be created by damming Long Creek, which would disqualify the project from being considered as closed-loop systems. Therefore, FERC's final decision could multiple years, placing the decision after 2032 or even later.[9]

In addition to FERC approval, the project will require various construction, environmental, and location-related permits for the PSH facility and transmission lines, as well as interconnection agreements with both SPP and ERCOT. Securing these agreements and permits is expected to be time-intensive due to the project's size and complexity, as described in detail in the Section Development Risks. Furthermore, many of these agreements and permits are contingent upon FERC's project approval, potentially causing additional delays. As the PSH project requires FERC licensing, it is likely that SPP interconnection approval is contingent on FERC licensing.[11] ERCOT interconnection request is not subject to FERC licensing, as it is not under FERC's jurisdiction.

Given the estimated 3 to 4 years needed for construction, it is highly likely that the project will not be operational until 2036 or later, even under optimal circumstances without unforeseen challenges or barriers. This extended timeline underscores the substantial risks related to permitting, interconnection, and construction in large-scale infrastructure projects of this nature.

Interconnection Uncertainties and Challenges

As described above, the PAD includes a proposal to interconnect the project to both ERCOT and SPP. This interconnection strategy would allow the project to charge from the SPP market and discharge to the ERCOT market. While this strategy could optimize energy revenue, it significantly increases

[8] National Hydropower Association, Challenges and Opportunities For New Pumped Storage Development, https://www.hydro.org/wp-content/uploads/2017/08/NHA_PumpedStorage_071212b1.pdf
[9] Washington State University, Pumped Storage Hydropower Siting Information Study, https://www.energy.wsu.edu/documents/24-09-11%20PSH%20meeting%20slides.pdf?utm_source=chatgpt.com
[11] SPP, Generator Interconnection, https://www.spp.org/engineering/generator-interconnection/

the complexity and uncertainty of successfully establishing interconnections in both regions, jeopardizing the ability of the project to operate as planned.

According to the December 2024 ERCOT GIS Report[12], the project has filed an interconnection request and is in the process of preparing the proof of site control. However, the project is currently the largest in ERCOT's interconnection request queue, which has over 1,000 projects ahead of it. A project generally cannot jump the ERCOT interconnection queue. The ERCOT interconnection process is based on a first-come, first-served system.[13] Additionally, there is no evidence that the project has submitted any application for constructing the transmission infrastructure necessary to interconnect to ERCOT, which would be a separate license issued apart from the interconnection request. It is also unclear whether ERCOT would support the development of a new transmission line specifically for this project, especially considering ERCOT's historical preference for operational independence and limited interconnection with other regions. As proposed in the PAD, the project interconnection to SPP (under FERC's jurisdiction) and ERCOT could potentially invite oversight from federal authorities, such as FERC, due to the involvement of multiple regional grids and cross-jurisdictional considerations.

On the SPP side, while the PAD mentions an email indicating that the developer has made an interconnection request to SPP, this project does not appear in SPP's generation interconnection database.[14] This raises questions about whether SEOPC has formally submitted an interconnection request or if there are undisclosed issues complicating the process.

These uncertainties in the interconnection process for both ERCOT and SPP present substantial risks to the project's interconnection strategy feasibility, as successful interconnection is critical to the project's ability to generate and deliver energy revenue as planned.

Offtake Risk

Financing a project of this scale will require contracted offtakers. Due to the large project size of 1,200 MW, the project will likely require multiple offtakers with large energy appetites which could pose a significant contracting challenge. In addition, the project will face competition from smaller projects and alternative technologies, which may be more appealing to offtakers due to their lower costs and fewer complexities in contracting with multiple parties.

Alternative Technologies

Although PSH is a well-recognized utility-scale storage technology, Lithium-ion battery energy storage systems (BESS) have emerged as a competitive alternative and other long duration storage technologies are rapidly emerging at larger scale. BESS are advancing in technological maturity and

[12] ERCOT, GIS_Report. https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER.
[13] ERCOT, ERCOT Planning Guide, https://www.ercot.com/files/docs/2021/02/24/March_1_2021_Planning_Guide.pdf?utm_source=chatgpt.com
[14] SPP, Generation Interconnection Requests, Generator Interconnection Request Summary - OpsPortal.

being adopted swiftly by utilities, making them one of the fastest-growing energy resources across multiple U.S. regions.

The widespread adoption also benefits the BESS cost decline, significantly bolstering their appeal. A recent report by the California Public Utilities Commission (CPUC) [15] forecasts that the total installation cost for a utility-scale, 10-hour battery system will decrease to approximately $1,800/kW by 2032, about half of today's cost.

One of the primary advantages of long-duration BESS is its flexibility. Unlike PSH, which depends on specific natural resources such as water, batteries can be deployed at diverse locations. BESS can also be installed in smaller increments, allowing for faster deployment and reduced permitting and interconnection hurdles. Additionally, these smaller, modular installations are easier to finance, and they also qualify for Investment Tax Credits (ITC). With greater round-trip efficiency than PSH, BESS are more efficient for energy storage and discharge. ERCOT exemplifies this trend, with its existing 5.6 GW of storage capacity expected to grow to 11 GW by 2050.

Cost and Benefits Analysis

In order to evaluate the economic viability of the proposed project, E3 forecasted the cost and revenue of the project based on expectations of future market trends. E3 compared the resulting cost and benefit forecasts to SEOPC third party analysis, which presented a significantly lower view of costs and higher view of benefits.

Costs

E3 estimated project costs including the capital expenditure (CapEx) for the PSH system, the transmission line, interconnection costs, fixed operations and maintenance (O&M), and variable O&M costs using the E3 RECOST[16] tool. RECOST is an E3 in-house discounted cash flow model used to calculate levelized resource costs of different technologies. Since 2010, E3 has regularly created and released formal public databases and calculations of levelized costs for its clients. E3 RECOST analysis of resource costs has supported multiple utility public planning processes and regulatory proceedings including for the California Public Utilities Commission (CPUC) and the WECC Transmission Expansion Planning and Policy Committee. Public RECOST publications include the CPUC 2022-2023 Integrated Resource Plan (IRP)[17], Eugene Water & Electric Board 2023 IRP, Omaha Public Power District 2021 IRP, and Capital Cost Review of Power Generation Technologies:

[15] California Public Utilities Commission, Energy Storage Procurement Study, May 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energydivision/documents/energy-storage/2023-05-31_lumen_energy-storage-procurement-study-report.pdf.

[16] E3 RECOST Tool with publications links: https://www.ethree.com/tools/recost-model/

[17] CPUC, 2022-2023 Integrated Resource Planning, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/inputs-assumptions-2022-2023_final_document_10052023.pdf

Recommendations for WECC's 10- and 20-Year Studies[18]. Additional documentation on the RECOST model is available on the E3 website[19].

For this analysis, E3 estimated costs assuming a 50-year project lifetime starting in 2030, aligning with the estimations provided in the PAD. E3 calculated project costs using E3 RECOST, which incorporates cost assumptions for a 10-hour pumped hydro new addition technology as outlined in the NREL ATB 2024 database[21], a widely recognized and applied cost data source in the utility and power industry. The PSH Capex also includes the financing and debt service costs.

The financial assumptions underlying E3's cost estimation are detailed in the table below. Additionally, E3 evaluated the project's lifetime costs under both 2% and 4% inflation scenarios, which are common assumptions in similar analysis.

Table 1 Costs Summary under 2% Inflation

Cost Component	2% Inflation - 2025 $	Total – 2025 $ Billion
PSH Capex	$4,668 / kW	$5.60
Tx Line Capex	$2 M / Mile Tx Line	$0.20
Interconnection Cost	$94/ kW	$0.11
Fixed O&M	$294 / kW	$0.35
Variable O&M	$0.6/ kWh	$ 0.04
Total Costs		**$ 6.31** [24]

Table 2 Costs Summary under 4% Inflation

Cost Component	4% Inflation - 2025 $	Total – 2025 $ Billion
PSH Capex	$4,853/ kW	$5.82
Tx Line Capex	$2.1 / Mile Tx Line	$0.21
Interconnection Cost	$118 / kW	$0.14
Fixed O&M	$342/ kW	$0.41
Variable O&M	$0.6 / kWh	$ 0.05
Total Costs		**$ 6.63**[24]

Table 3 Financial Inputs Assumptions

Characteristics	Values
After-Tax WACC (Nominal)	9.29%
Equity Share	49.25%
Cost of Debt (Nominal)	5.7%
Cost of Equity (Levered)	14.41%

The total project cost under different inflation assumptions ranges from $6.31 billion to $6.64 billion, as detailed inTable 1 Table 1and Table 2Table 2. The PSH CapEx is the primary cost component, accounting for nearly 90% of the total cost. This significant share underscores the capital-intensive

[18] E3 - prepared for Prepared for the Western Electric Coordinating Council, Cost and Performance Review of Generation Technologies, https://www.nwcouncil.org/sites/default/files/E3_GenCapCostReport_finaldraft.pdf
[19] E3 RECOST Tool with publications links: https://www.ethree.com/tools/recost-model/
[21] National Renewable Energy Lab, Annual Technology Baseline, https://atb.nrel.gov/.
[24] The total values may not sum exactly to the detailed cost categories due to rounding.

nature of PSH projects, which require substantial investment in infrastructure, including reservoirs, dams, and powerhouses.

The remaining costs, including transmission line construction, interconnection, and O&M (both fixed and variable), make up a smaller portion of the overall budget. While these components contribute less to the total, they are essential for ensuring the operational functionality and long-term reliability of the project.

Benchmark to SEOPC's Analysis

SEOPC hired a third-party consultant, ZGlobal, to conduct a cost-benefit analysis for the proposed project; however, the analysis lacks sufficient references to the sources of the cost and detailed calculations. In the report, six different scenarios were evaluated, with three core scenarios focusing on interconnection to ERCOT, SPP, and a combination of both SPP and ERCOT. Each of these core scenarios assumes lifetime costs of $3.1 billion.

The report does not provide details on the source of ZGlobal's assumed cost estimate or the methodology used to arrive at this figure. The $3.1 billion estimate is 48% lower than the cost estimate calculated by E3 based on the cost assumptions published in the NREL Annual Technology Baseline. ZGlobal's underestimated cost has significant implications for the project's financial planning and investment decisions.

Table 4 E3 and SEOPC Results – Total Costs Comparison

Cost Component	E3 - 2% Inflation -2025 $ Billion	SEOPC – 2025 $ Billion
PSH Capex	$5.60	$2.3-4.6
Interconnection Cost	$0.11	
Tx Line Capex	$0.20	
Fixed O&M	$0.35	$0.09
Variable O&M	$ 0.04	
Total Costs	**$ 6.31**[24]	**$2.4 - $4.7B**

Further, in ZGlobal's sensitivity scenario analysis, costs deviate from the core estimate by a simple 25% to 50% range. However, the rationale behind this increase is not disclosed in the report, leaving uncertainties about the factors contributing to the higher cost projections and the base cost forecast itself. Without clear explanations or justifications, the validity of these cost forecasts cannot be independently verified.

Benchmark to other data sources and comparable technologies

Due to the limited number of PSH projects in the U.S., historical cost data for this technology remains relatively scarce. A report released by Pacific Northwest National Lab (PNNL)[25] indicates that the total costs for PSH projects could reach as high as $5,200/kW in 2025 dollars. This reflects the

[25] https://www.pnnl.gov/sites/default/files/media/file/PSH_Methodology_0.pdf.

significant capital required for infrastructure, including the construction of reservoirs, dams, and powerhouses, which makes PSH a capital-intensive energy storage solution.

In contrast, the cost of Long Duration Battery Storage (LDBS) has experienced a rapid decline, largely driven by continuous advancements in technology and the growing adoption of battery storage systems. According to the Energy Storage Procurement Study released by the California Public Utilities Commission (CPUC)[26], the total installation cost for a utility-scale 10-hour battery system is expected to decrease to around $1,800/kW by 2032, down from approximately $3,300/kW in 2021. This dramatic reduction in costs highlights the ongoing improvements in battery technologies, which have made them increasingly competitive compared to traditional energy storage solutions like PSH.

The NREL ATB database provides a similar forecast, reporting the 10-hour Long Duration Storage overnight cost at approximately $3,400/kW, which is in line with the CPUC study. This would result in a 25% reduction in cost for LDS systems when compared to PSH. The substantial cost difference underscores the rapidly evolving landscape of energy storage technologies, where battery systems are becoming more cost-effective, challenging the traditional dominance of PSH in the market.

In addition to competition from LDBS, PSH will face competition for providing capacity from natural gas, which is a far cheaper source of electricity.

Benefits

E3 forecasted the potential revenue from energy, ancillary services (AS), and capacity over the project's 50-year lifetime. In addition to the costs associated with building and maintaining the facilities, E3's analysis incorporates the benefits of the Investment Tax Credit (ITC) from the Inflation Reduction Act (IRA) and the tax benefits derived from asset depreciation. The ITC covers 30% of the capital cost, with assumption that partial equipment qualifying for an additional 10% domestic content adder, resulting in a total credit of 36% of the capital cost. Due to the new federal administration's potential rollback of IRA tax credits, there is uncertainty regarding the availability of the ITC or whether the credits will be reduced. It is also unclear whether the ITC will have expired by the time the project is operational.

The revenue forecasts vary depending on whether the energy is exported to ERCOT, SPP, or both. In the case of both ERCOT and SPP participation, E3 assumes the project can maximize energy revenue by responding to favorable price signals from either market. All scenarios used E3's in-house market price forecasts, which includes projections for energy, AS, and capacity prices. These scenarios assume the facility operates with full 1,200 MW capacity and an annual discharge energy output of 4,368,000 MWh.

One of the greatest uncertainties in this analysis is the availability of the ITC when the project is constructed, as it will be several years before the project is operational. By that time, there is a

[26] California Public Utilities Commission, Energy Storage Procurement Study, May 2023, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energydivision/documents/energy-storage/2023-05-31_lumen_energy-storage-procurement-study-report.pdf.

possibility that the ITC could be fully claimed or eliminated. Additionally, the new federal administration may present risks regarding the availability of the ITC, which could impact the financial viability of the project.

To account for different market participation scenarios and the uncertainty surrounding the ITC availability, E3 created a series of benefit and revenue scenarios under both 2% and 4% inflation assumptions, as outlined below.

Table 5 Total Benefits and Revenue under 2% Inflation in 2025 $ Billion

Benefit and Revenue	100% ITC + ERCOT Interconnection	No ITC + ERCOT Interconnection	50% ITC + ERCOT Interconnection	100% ITC + SPP Interconnection	100% ITC + Max Energy
ITC	$2.19	$ -	$1.10	$2.19	$2.19
Energy	$3.01	$3.01	$3.01	$2.12	$3.46
AS	$0.14	$0.14	$0.14	$0.17	$ -
Capacity	$ -	$ -	$ -	$1.14	$ -
Total Benefit	**$5.34**	**$3.15**	**$4.24** [24]	**$5.62**	**$5.65**

Table 6 Total Benefits and Revenue under 4% Inflation in 2025 $ Billion

Benefit and Revenue	100% ITC + ERCOT Interconnection	No ITC + ERCOT Interconnection	50% ITC + ERCOT Interconnection	100% ITC + SPP Interconnection	100% ITC + Max Energy
ITC	$2.28	$ -	$1.14	$2.28	$2.28
Energy	$4.07	$4.07	$4.07	$2.80	$4.68
AS	$0.18	$0.18	$0.18	$0.22	$ -
Capacity	$ -	$ -	$ -	$1.32	$ -
Total Benefit	**$6.53**	**$4.25**	**$5.39**	**$6.62**	**$6.95** [24]

The availability of the ITC would have a significant impact on the overall benefits, potentially reducing the total benefit by approximately 30%. There is significant uncertainty regarding ITC availability due to potential rollbacks by the new federal administration. As mentioned in the previous section, energy prices in SPP are relatively less volatile, leading to lower energy revenue compared to ERCOT. The capacity market in the SPP offer significant benefits, resulting in a total benefit slightly higher than the ERCOT case with the ITC credits. E3's analysis factors in a relatively conservative ELCC for the project when forecasting SPP capacity revenues.

It is important to note that if the project is able to export energy flexibly to both ERCOT and SPP, it could maximize its energy revenue by responding to favorable price signals from both markets. However, even in this scenario, the project is unlikely to participate in the AS or capacity markets, as it would not be able to commit to either market while maintaining the flexibility to charge or discharge in response to favorable market conditions for maximizing energy arbitrage. Participation in the capacity or AS markets would require the project to commit firm capacity to the respective market. The opportunity cost of missing out on AS and capacity revenue is still outweighed by the additional energy revenue generated through flexible market participation.

Furthermore, the higher inflation scenario results in higher revenue over time, leading to a higher total benefit. In the maximized energy revenue scenario, the lifetime revenue is approximately 20% higher compared to the 2% inflation case.

Benchmark to SEOPC's Analysis

SEOPC's analysis employed both back-casting and forecasting approaches to estimate the energy and AS revenue for all three core scenarios. For each scenario, SEOPC developed three cases based on varying assumptions about natural gas prices, electricity demand growth, renewable and conventional generation additions, and coal retirements. Additionally, SEOPC calculated the ITC in a manner similar to E3's approach. However, due to the lower project cost, the ITC benefit was also reduced accordingly.

The SEOPC analysis assumed a roundtrip efficiency of 80%, indicated in the PAD, which is higher than the 70-75% efficiency typically seen for PSH facilities.

Table 7 E3 and SEOPC Results – Total Benefit Comparison

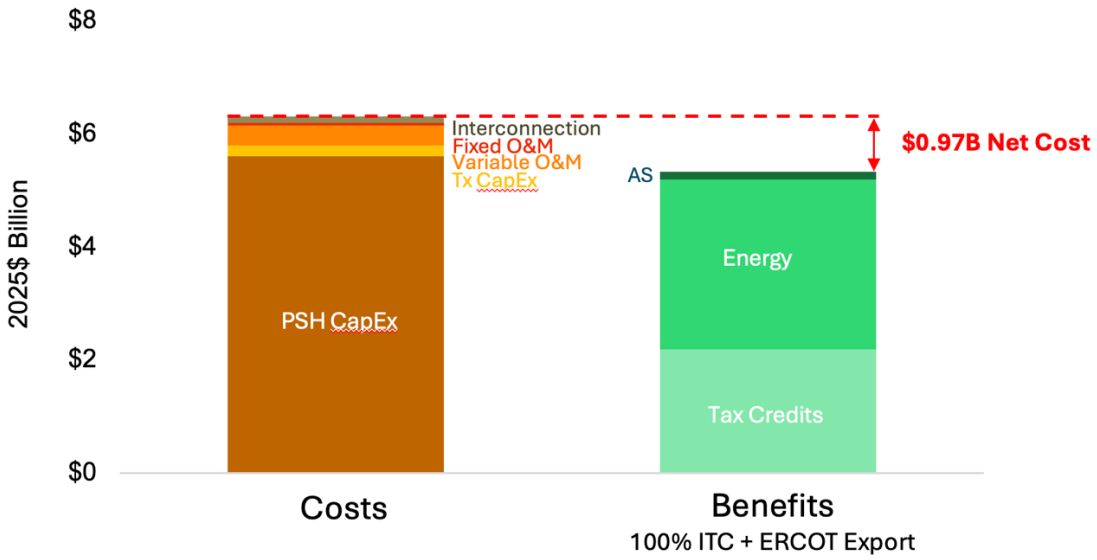
Revenue	E3 Forecast – 2025 $ Billion	SEOPC's Core Case Forecast – 2025 $ Billion
ERCOT	$3.15-$6.53	$8.5-$13.0
SPP	$4.24-$6.62	$6.7-$10.5
ERCOT + SPP	$5.65-$6.95	$10.0 – $16.2

E3's total benefits, including favorable assumption of 100% of the ITC credits, are about 30% lower than SEOPC's conservative forecast, which assumes low natural gas prices and load growth. The difference stems from two main factors: SEOPC used a 6% discount rate, while E3 used a higher 9.25% rate, calculated based on a series credible financial input assumption rooted from the NREL ATB database, resulting in a larger discount on future benefits. Additionally, E3's market price forecast predicts a sharp decline in AS revenue by 2030, whereas SEOPC assumed higher AS revenue, which would contribute around 50% of energy revenue, leading to higher overall revenue in their back cast analysis approach. The SEOPC's forecast for AS revenue appears overly optimistic based on historical trends and future market developments, particularly given the saturation of AS markets due to battery storage. Furthermore, SEOPC's analysis lacks a detailed breakdown of energy, AS, and capacity revenue forecasts, making it opaque and difficult to identify potential mistakes or unjustifiable assumptions.

Net Costs

Figure 5 displays the cost and benefit of the core ERCOT scenario with 2% inflation, 100% ITC, and interconnection with ERCOT only, resulting in a lifetime net cost of approximately $1 billion.

Figure 5: Cost and Benefits Analysis of the Core Scenario



Across all scenarios except for one highly optimistic case, the project has net costs. Net costs by scenario are summarized in the table below and range depending on availability of the ITC, interconnection, and inflation. The highly optimistic case assumes 100% ITC, 4% inflation, and maximizing revenues in both ERCOT and SPP resulting in $0.32B net benefit. This case is unrealistic given the potential rollback of the ITC in the 2030s or sooner and does not address the major separate development and environmental challenges.

Table 8 Net Benefit (Cost) Across all Scenarios in 2025 $ Billion

Net Cost (Benefit)	100% ITC + ERCOT Interconnection	No ITC + ERCOT Interconnection	50% ITC + ERCOT Interconnection	100% ITC + SPP Interconnection	100% ITC + Max Energy
2% Inflation	$(0.97)	$(3.16)	$(2.07)	$(0.69)	$(0.66)
4% Inflation	$(0.11)	$(2.39)	$(1.25)	$(0.01)	$0.32

Benchmark to SEOPC's Analysis

Due to undisclosed assumptions leading to higher revenue projections and a lower cost estimate, SEOPC's net benefit analysis concludes a significant net benefit in all cases, which contrasts with E3's forecast. Based on the inputs and assumption applied in the calculation, it is evident that SEOPC's analysis is overly optimistic regarding the potential benefits the PSH project could generate compared to the highly optimistic cost assumption.

Table 9 E3 and SEOPC Results – Net Benefit (Cost) Comparison in 2025 $ Billion

Net Benefit (Cost) 2025$ Billion	E3 Forecast	SEOPC's Core Case Forecast
ERCOT	$(0.11)-$(3.16)	$5.1-$9.7
SPP	$(0.01)-$(0.69)	$3.2-$7.1
ERCOT + SPP	$(0.66)-$0.32	$6.6 – $12.7

Conclusion

The proposed Pushmataha County PSH project faces economic challenges and development risks. Based on E3's cost-benefit analysis, the forecasted costs outweigh benefits by about $1B, indicating this PSH project is not economically beneficial.

Under different scenarios modeled by E3, the project consistently had a net cost or very small net benefit, driven by the ITC availability and high capital expenditures required for PSH construction, indicating that the project is likely not cost-effective. Additionally, the calculation did not account for preparation costs, such as permitting fees and the destruction of non-power uses. If these were included, they would further increase the net cost of the project, making it less economically beneficial. The root causes of the net cost results are high PSH costs and comparatively low potential revenues in SPP and ERCOT, due to the prevalence of relatively cheap natural gas and lack of significant barriers preventing new natural gas additions. The high net cost could further trickle down, limiting the attractiveness to potential offtakers.

The PAD and technical analysis of the Pushmataha Pumped Storage Hydro project prepared by SEOPC provide a broad overview of preliminary project information, design, and planning. However, as the project remains in its early study phases, several critical considerations are absent in the proposal, which could pose significant risks to the project's design, construction, and operation. These include:

- **Development Risks**: SEOPC has not yet determined key construction plans, transmission line and powerhouse site locations. Additionally, the project's financing plans are unclear, which could be a critical challenge due to the difficulty in demonstrating a reliable future revenue stream and large Capex needs of the project.
- **Extended Permitting Timeline:** Obtaining FERC license, construction and environmental permits, and interconnection agreements with SPP and ERCOT may take several years. Any delays in the permitting processes could push the project's operational timeline beyond planned dates, potentially risking ITC qualification and increasing overall financing costs.
- **Interconnection Uncertainties:** The project is in the preliminary stages of securing interconnection with both SPP and ERCOT. Given the project's size and the long active interconnection request queue, delays or capacity curtailment for market interconnection are significant risks.

E3's analysis concludes that these uncertainties and high project costs highlight the importance of thorough due diligence, robust risk mitigation strategies, particularly in terms of development and

permitting, to address uncertainties and high project costs and adaptability to evolving conditions. Based on E3's analysis, the proposed project is likely not economically beneficial especially if the ITC is unavailable to the project in the 2030s and faces many development, permitting, contracting and interconnection risks that could increase the project's estimated cost.

Appendix: Relevant E3 Qualifications

Confidential Client, Diligence of Pumped Storage Hydro in the Pacific Northwest (2022 - 2023). E3 supported an international investor in its diligence of a pumped storage hydro asset in development in the Pacific Northwest. E3's support included market strategy recommendations and a review of utility Integrated Resource Plans in the region to assess regional reliability trends and potential offtaker appetite for new, clean, firm, dispatchable capacity. Building on this market overview, E3 conducted system-level cost analysis using our RESOLVE model, to estimate the potential impact on the region's electricity system of incremental pumped storage hydropower capacity. In addition, E3 used its RESOLVE model to simulate the potential market revenues for a pseudo-tie energy storage asset in the CAISO market. E3's final recommendations and analysis were critical to the client's discussions with potential offtakers and the formation of the strategy for the asset.

Confidential Client, Hydro Sell-Side Process Support (2022 - 2023). For over more than one year, E3 supported a generation company during the sale process of a hydroelectric generation facility. E3's main role was to create a sell-side market report for the facility, which included an overview of the asset, an overview of the offtaker opportunities, and a forecast of revenues across the main for potential offtaker scenarios.

To develop the revenue forecast E3 had to determine both the potential contracting and merchant value. Merchant value was determined by calculating the asset's future energy, REC, and capacity revenues, using E3's "Core" case regional market price forecasts. In addition, E3 evaluated the transmission wheeling and power loss costs associated with each of the offtaker transmission paths.

Los Angeles Department of Water (LADWP) and Power Boulder Canyon Pumped Storage (BCPS) Economic Analysis (2019 – 2020). E3 assisted LADWP to analyze the potential conversion of Boulder Canyon (Hoover) Dam into a pumped hydro facility. By partnering with the engineering firm HDR, E3 led the economic analysis to assess the energy arbitrage and resource adequacy benefits of the potential pumped storage project. E3 relied on in-house loss-of-load-probability modeling to determine resource adequacy value and hourly PLEXOS modeling to assess the long-term energy arbitrage value of BCPS under a high-renewable electricity system. E3 used its RESOLVE capacity expansion model to evaluate BCPS under a range of scenarios including different pump sizes, different load forecasts, and different renewable penetration levels.

National Grid Ventures, Pumped Storage Analysis. E3 provided technical analysis and regulatory support for the 1,200 MW Goldendale pumped storage project proposed in Washington as well as the 400 MW Swan Lake pumped hydro project in Oregon both being developed by National Grid Ventures. E3 performed production simulation to quantify the benefits of pumped storage for integrating higher penetrations of renewable energy in the Western U.S. E3 also quantified the significant value of long duration storage in preventing curtailment of excess solar generation and evaluated the benefits of pumped storage for the operation of the bulk transmission system in Washington, Oregon, and California.

Eagle Crest Pumped Storage Project (2013-2016). E3 provided technical analysis and regulatory support for the 1,300 MW proposed pumped storage project in Southern California. E3 performed stochastic production simulation to quantify the benefits of pumped storage for integrating higher penetrations of renewable energy in California. E3 quantified the significant value of long duration storage in preventing curtailment of excess solar generation. E3 also evaluated the benefits of pumped storage for the operation of the bulk transmission system in Southern California.

PG&E Gates-Gregg Project (2010-2015). E3 evaluated the reliability implications for California of implementing the Gates-Gregg 230 KV upgrades or alternative transmission options in California's Central Valley area, including assessing transmission limitations under various contingencies conditions and various renewable penetrations. This project used these limitations and required transmission operator responses to create constraints on use of PG&E's Helms pumped storage unit while maintaining reliability within California's central valley area. Because the Central Valley is a location constrained area (LCR zone) in California, separate evaluation of the transmission line's contribution to LCR was also required as part of the analysis.

Project Development Support (2010-Present). E3 has supported hundreds of developers in evaluating project development opportunities across North America focused primarily on renewables, energy storage, and DERs. Our project development support spans a diverse range of topics such as siting, valuation and financing, interconnection queue analysis/management, transmission access, market entry, and offtake strategy. Through these engagements, E3 has developed deep expertise on the issues that are most salient to project developers such as being able to site, secure off-take and ultimately bring projects to COD. We have supported both small and large developers looking to deploy a single asset in a single jurisdiction to developers looking for a large national strategy and ambitious development goals. E3 currently supports over half the top 10 project developers in the U.S. both for utility scale projects and DG projects including community solar across the full project development lifecycle and beyond.

Confidential Battery Developer, Energy Storage Contracting Analysis (2024). Over a month period, E3 worked for a confidential battery developer on a project explaining the dynamics of the storage across the United States. For this scope, E3 leveraged more than thirty public Requests for Proposals (RFPs) and Term Sheets and analyzed their structure. Particularly, E3 extracted insights about trends in the contract and price structure, products offered, liquidated damages, operational control among other attributes.

The results of the project were that in battery procurement, the seller is mainly the owner and is responsible for the operation of the battery technology. The price structure of batteries mainly takes the shape of a tolling agreement where the buyer pays the seller a certain $/kW-month and demands all access to discharging energy, capacity, and ancillary services that come with the battery. In addition, E3 guided the client to the expected conditions regarding round-trip efficiencies, credit support and expected battery duration.

Within the scope of work, the client also requested learning about the largest players in the battery offtaker market. With expert consultation and public data analysis, E3 presented a summary of the largest PPA buyers by volume. Additionally, E3 also gave insights on the competitive landscape of storage development in the United States. E3 named the most prominent developers, utilities and

private equity-backed developers. Emphasis was also placed on the ERCOT market, where E3 presented on the battery competitive landscape with established and emerging players.

Finally, E3 presented the developer with information on the battery landscape in the country. These included incentives from the Inflation Reduction Act, the storage deployment and contract structuring by region.

Maine Governor's Energy Office, Maine Energy Storage Market Assessment (2021-2022). The Maine Governor's Energy Office commissioned E3 to study the storage landscape in Maine, including technologies and use cases, markets, policies, and potential barriers to storage deployment, and finally a cost-benefit analysis on storage deployment scenarios. E3's study found that not only were there several promising energy storage technologies that may help Maine reach its targets, including lithium-ion batteries in the near term, but also that achieving them could provide many distinct benefits to Mainers including lowering wholesale electricity generation costs, utility infrastructure costs, and electricity bills, as well as improving resiliency.

E3's analysis began with the policy and market context surrounding storage development in Maine. Then E3 reviewed and compared six potentially deployable storage technologies, looking at their costs, commercial readiness, siting flexibility, scalability, duration, and other key characteristics. The study also looked at potential value streams and uses cases for these different technologies. The core of the study, the cost-benefit analysis, focused on six scenarios, including:

- Wholesale standalone storage
- Wholesale storage + solar
- Customer-sited standalone storage for C&I customers
- Customer-sited storage + solar for C&I customers
- Customer-sited standalone storage for residential customers
- Customer-sited storage + solar for residential customers

E3 built a detailed and transparent model to estimate the costs and benefits of storage deployment across these scenarios. Ultimately, E3's cost-benefit analysis showed cost-effectiveness for wholesale ("grid-connected") storage by the mid-2020s, but continued cost declines and the ability to monetize multiple value streams will be important for Maine to achieve its 2025 and 2030 energy storage targets. Further, customer-sited storage could reduce customer bills and showed cost-effectiveness when also including resiliency benefits achieved with a reduction in outages (loss-of-load).

Oklahoma Municipal Power Authority, Distributed Generation Engineering Study (2000). E3, in collaboration with Gridwise Engineering and Endecon Engineering, recently completed a distributed generation engineering study for the OMPA on behalf of its over 30 member municipal utilities. The technology assessment portion of the study addressed (1) conventional DG technologies (diesel and spark ignition engines, mini and micro turbines), (2) renewable and advanced generation (photovoltaics, solar thermal electric, wind, battery energy storage and fuel cells), and (3) implementation issues. DG results included generator efficiency and performance characteristics

(heat rates, unforced outage rates, size ranges, start-up time, reject heat temperatures, fuel requirements, maintenance and overhaul schedules, emissions characteristics, and interconnection requirements), and costs (capital, installation, operation, and permitting). Renewable energy generation performance and costs were modeled for several sites within the OMPA service area. Several key pragmatic distributed generation implementation issues were reviewed, including evaluation of OMPA's current capacity purchase contract for use with DG, related rate and tariff issues, interconnection requirements and issues, along with methods for selecting sites for DG.

Appendix: Author Resumes

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ENERGY AND ENVIRONMENTAL ECONOMICS, INC. San Francisco, CA
Senior Partner

Mr. Patel has worked in the energy industry for over 20 years, spanning from the deregulation and restructuring of the electric and gas sectors in the 1990s to today. He currently helps lead E3's Asset Valuation and Strategy practice, working with infrastructure funds, large institutional investors (like pensions), technology companies, and project developers on valuing and assessing assets, projects, and technologies critical to the future of energy. His work has involved supporting clients making multibillion-dollar investments – into utilities, technology companies, and development platforms – and decisions around individual assets and portfolios, consisting of renewables, energy storage, and/or distributed energy resources, as well as newer technologies needed in the energy transition, such as low carbon fuels, long duration energy storage, enhanced geothermal, and advanced nuclear. He also helps lead E3's strategy practice, working with clients on market, technology, and off-take strategy as well as general corporate strategy leveraging the best-in-class insights. Mr. Patel supports utility clients and public sector clients on a variety of additional topics, especially around emerging and low- to zero-carbon technologies.

Before joining E3, Mr. Patel was the Director of Corporate Development and Project Finance at a rapidly growing solar and energy efficiency engineering, procurement, and construction company in Washington, DC. Mr. Patel has direct project financing experience for residential to utility scale solar PV projects along with other finance activities such as debt/equity structuring and revolving lines of credit. Prior to that position, Mr. Patel worked in the Energy Practice at NERA Economic Consulting as part of the Oliver Wyman Group in New York City and Washington, DC.

General Topic Areas

- Developing and expanding upon E3's expertise on data centers, including incorporating data center impacts into E3's custom modeling and supporting a variety of clients with related issues, including utilities on load forecasting, strategy support, and interconnection process improvement, technology companies on procurement and clean energy accounting frameworks, and data center companies and investors on site assessment and power supply options
- Developing and supporting E3's best-in-class markets analytical toolkit that relies on a combination of in-house models as well as Energy Exemplar's PLEXOS production cost and capacity expansion modeling platform, with a focus on price and asset revenue forecasting along with benefit-cost analysis that supports a wide number of clients across all markets in North America, leveraging all the insights being generated at E3 across our practice areas with a focus on transparency and intellectual honesty regarding potential techno-economic pathways around the Energy Transition
- Supporting venture capital investors and later stage investors looking to deploy capital in new technologies to combat climate change, ranging from distributed energy resources, energy

storage technologies, and advanced generation technologies, like enhanced geothermal and small modular nuclear reactors, along with green hydrogen projects
- Supporting project developers, utilities, and investors on developing strategies to execute on ambitious goals such as capital deployment, go-to-market strategies, and ESG mandates
- Supporting clients on investments into energy transition assets, ranging from existing renewables and energy storage assets to assets needed for long-term decarbonization

Sample Engagements

- Supported Virginia's Joint Legislative Audit and Review Commission (JLARC) in analyzing the ratepayer impacts of data center load growth in the state, which contains half of all primary market data center capacity
- Advised a number of state agencies, such as NYSERDA and DPS in New York on a host of topics including energy storage, distributed energy resource, hydrogen, carbon emission standards, and technology strategy needed to achieve ambition climate targets
- Supported a developer of a large multi-state green/blue hydrogen pipeline looking at potential future need and demand across multiple economic sectors
- Supported Global Infrastructure Partners on providing market advisory services for the Northeastern U.S. to support their recent acquisition of Eversource's stake into several offshore wind projects
- Supported Blackstone Infrastructure Partners as their market advisor in their multibillion-dollar investment in the Northern Indiana Public Service Company
- Supported a Macquarie Asset Management and Ontario Teachers' Pension Plan as their market advisor on their successful multibillion-dollar investment into Puget Sound Energy
- Currently supporting a number of investors looking to invest in various U.S., Canadian, and Caribbean utilities by providing market advisory and local regulatory/policy analysis
- Recently supported a large gas and electric utility in developing a Strategic Planning Toolkit that was a bottoms-up modeling and scenario planning exercise to create a new modeling framework and a number of new modeling tools to examine, in a rigorous quantitative manner, future states of the world to guide strategic planning that included robust capabilities on modeling capital expenditures and resource needs
- Supported numerous transaction diligences ranging from portfolios of distributed energy resources to large multibillion-dollar investments into utilities along with a number of energy storage and renewable platforms
- Recently led market analysis and revenue forecasting to support several first-of-its kind tax equity financings into stand alone energy storage assets across the U.S. after the passing of the Inflation Reduction Act
- Supporting several large corporates on developing renewable procurement strategy as well as supporting on cutting-edge decarbonization analysis such as hourly matched clean energy procurement
- Testified in front of the U.S. House of Representatives Subcommittee on Energy, discussing the growth of energy storage in the context of its costs and benefits to the U.S. grid and its role in wholesale markets

STANDARD SOLAR, INC. Rockville, MD
Director, Corporate Development and Project Finance March 2012 - July 2013

- Head of corporate development and project finance, investor/Board relations, financial reporting, and budget development/forecasting.
- Collaborated across departments and worked directly with lenders/underwriters and equity and JV partners to identify new sources of corporate/project finance and led financing due diligence, negotiations, and closings.
- Assisted with the launch of an expanded energy efficiency product line along with new smart home, LED, and backup battery/generator product lines by developing finance and sales tools to create a successful launch.

OLIVER WYMAN GROUP – NERA ECONOMIC CONSULTING New York City/Washington D.C.
Senior Consultant, Energy Practice June 2002 – June 2011

- Managed energy procurements valued at over $40 billion for renewable energy certificates/projects (e.g. solar, wind, biomass, hydro), block power, and full-requirements electric supply in Pennsylvania, New Jersey, Ohio, Illinois, Spain, and Portugal on behalf of utilities which included: extensive financial, and risk analysis of potential bidders and project developers; power purchase agreement design and pricing; project and bid valuation; extensive analysis of the wholesale and retail energy and fuel markets; creation of portfolio cost and bid benchmarks; procurement and bid evaluation design and analysis; software and website development; internal team management, extensive bidder, client, and regulatory interaction; procurement rules creation; and retail tariff design.
- Modeled, valued, and analyzed generation assets on an extensive project finance, economic, and dispatch level such as determining financing and hedging options and valuing solar, wind, nuclear, and fossil-fuel generation assets.
- Performed several audits of a major electric retailer's operations in PJM, MISO, and ERCOT and authored reports with findings, conclusions, and recommendations on business and strategy to senior management.
- Composed and edited a 15-year Integrated Resource Plan for the Baltimore Gas & Electric and Allegheny utilities in Maryland and performed extensive modeling, forecasting, and analysis of the underlying energy efficiency and demand response initiatives (EmPOWER) as well as the renewables, emission, electric, capacity, and fuel markets.
- Created testimony for various deferred energy cost proceedings, which included extensive review, analysis, and evaluation of several western U.S. utilities resource planning, hedging, and energy purchasing/selling strategies.
- Performed an extensive analysis and review of a major paper and pulping company's renewable and conventional energy strategy for its mills in 10 states and co-authored a report recommending actions to the Board of Directors.

Education

Dartmouth College Hanover, NH
Bachelor of Arts (A.B.) Engineering Sciences, Economics June 2001
Concentrations in Corporate Finance and International Trade

Dartmouth College, Thayer School of Engineering — Hanover, NH
Bachelor of Engineering (B.E.) Materials Science — June 2002

Dartmouth College, Thayer School of Engineering — Hanover, NH
Master of Engineering Management (M.E.M.) — June 2002
Operations Management and Optimization Methods
Winner of Henderson Prize for Outstanding Thesis

George Washington University, School of Business — Washington, DC
Master of Accountancy (M.A.) — June 2011

Emily Rogers

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Managing Consultant

Ms. Rogers is a member of E3's Asset Valuation team where she focuses on transportation electrification and the integration and valuation of renewables, storage, and distributed energy resources. Since joining E3 in January 2021, Emily has gained extensive experience supporting revenue forecasting and financial transactions of storage and renewables portfolios. Emily leads the use of RESTORE, E3's inhouse optimization model for storage and DER dispatch, for Asset Valuation projects. She has managed many projects for developers and investors, especially those interested in utility-scale storage economics in the CAISO and ERCOT wholesale markets. Emily has demonstrated expertise in transportation electrification through working with utilities and automakers to evaluate the grid impacts of electric vehicles and analyze the value of vehicle to grid integration.

Prior to joining E3, Ms. Rogers held research positions at the UC Berkeley Transportation Sustainability Research Center (TSRC) and Energy, Controls, and Applications Laboratory (eCAL). Ms. Rogers holds an M.S. in Civil and Environmental Engineering from UC Berkeley and B.S. in Mechanical Engineering from University of Southern California.

Select E3 projects include:

- **Confidential Automaker, Multiple VGI Projects (2022 – 2024).** Supported confidential automotive OEM on both Vehicle-Grid-Integration (VGI) Market Assessment and an evaluation of the value of electric vehicles to microgrids. For the first project, she presented potential value streams for EV batteries enabled with V2G. In the second engagement, E3 offered more technical analysis to evaluate the value of EVs to microgrids using RESTORE. Emily was technical lead for RESTORE for the work in which E3 synthesized its highly technical inhouse optimization model results to wider audience. Emily was the project manager for subsequent engagements focused on comparing storage vs. VGI and the value of V2H when paired with solar or storage.
- **Multiple Confidential Developers and Investors, Storage Revenue Forecasting (2021 – 2024).** Project Manager for multiple E3 projects focused on storage revenue forecasting in wholesale markets using RESTORE optimization model.
- **Confidential Developer, Valuation of Offshore Wind in Hawaii (2023).** Project Manager for engagement focused on the potential capacity need for renewables in Hawaii and cost competitiveness of offshore wind.
- **Confidential Renewable Investor/Developer, Long Duration Energy Storage (LDES) Valuation (2022 – 2023).** Project Manager for an E3 project forecasting revenues for a client considering investing in specific LDES company. Led a competitive assessment against other LDES technologies, presented to client, and handled day-to-day client communication.

- **New York Power Authority, Small Clean Power Plant Adaptation Study (2021 – 2022).** Conducted technical modeling to evaluate the ability of battery storage to replace fossil fuel peaker plants located in environmental justice communities across New York City. Contributed to report published publicly in April 2022.
- **New York Power Authority Transit Bus Electrification Master Plan (2021).** Evaluated the cost implications of electrifying New York state's five largest transit agencies outside of New York City by 2035. Findings were used to inform electrification roadmaps for each transit agency.
- **Sacramento Municipal Utility District, Net Energy Metering Successor Rate Modeling (2021).** Performed detailed economic analysis assessing the cost shifts under each successor rate compared to NEM 1.0 compensation. Used E3's RESTORE model to estimate investment payback and value of solar and solar plus storage for SMUD customers.
- **GridLab, Distribution Cost Impacts of High Electrification Analysis (2021).** Developed model to estimate the distribution connected and coincident peak load, investment, and rate impacts of a high transportation electrification adoption scenario. Contributed to a report published publicly as an appendix to GridLab and UC Berkeley's 2035 Report.

TRANSPORTATION SUSTAINABILITY RESEARCH CENTER, UC BERKELEY Berkeley, CA
Research Associate September 2020 – December 2020

- Developed a zero-emission bus (ZEB) implementation guidebook to assist California transit fleets in their transition to 100% ZEB fleets by 2040
- Compiled data on available bus, infrastructure, and fleet management technologies

PRE-ENGINEERING PROGRAM, UC BERKELEY Berkeley, CA
Design Assistant July 2020 – August 2020

- Provided project guidance for teams of underrepresented and first-generation incoming UC Berkeley College of Engineering students
- Taught electronics and CAD basics

ENERGY, CONTROLS, & APPLICATIONS LAB, UC BERKELEY Berkeley, CA
Graduate Researcher May 2020 – August 2020

- Developed and deployed a department-wide survey to Civil and Environmental Engineering undergraduate students to quantify the value of in-person courses during the COVID-19 pandemic
- Presented COVID-19 survey results to department chair for decision making and CITRIS
- Designed stated preference survey to determine price elasticity of electric vehicle charging options to make workplace charging economically sustainable

SUSTAINABILITY SYSTEMS GROUP, UNIVERSITY OF SOUTHERN CALIFORNIA Los Angeles, CA
Undergraduate Researcher May 2018 – May 2019

- Analyzed data integrity within the energy-water nexus body of literature, presented results in a peer-reviewed publication

- Identified water infrastructure locations and aggregated data to quantify the electricity required for water services in LADWP territory with high spatio-temporal resolution
- Actively participated and presented findings in weekly group meetings

CLARK PACIFIC CONSTRUCTION, IT DEPARTMENT Los Angeles, CA
Independent Contractor May 2016 – December 2016

- Rewrote VBA programs in VB.NET to update and build custom AutoCAD Macros
- Hired as an independent contractor after completing summer internship

Education

University of California, Berkeley Berkeley, CA
M.S., Civil and Environmental Engineering - Energy, Civil Infrastructure, and Climate Program 2020

University of Southern California Los Angeles, CA
B.S., Mechanical Engineering 2019

Publications

Grubert, E., **Rogers, E.**, & Sanders, K. T. (2020). Consistent Terminology and Reporting Are Needed to Describe Water Quantity Use. Journal of Water Resources Planning and Management, 146(8). doi:10.1061/(asce)wr.1943-5452.0001241

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Senior Consultant

Mr. Feng supports E3's Climate Pathways and Electrification with an emphasis on projects analyzing the implementation of energy efficiency strategies towards building electrification and evaluating the utility costs, utility allowances, and cost-shifting resulting from electrification. Mr. Feng brought to E3 over four years of experience in building energy efficiency, previously working on multiple major utility demand-side management programs. Additionally, he actively supports the large-scale battery storage modeling and analysis, transportation electrification, and rate analysis projects at E3.

Selected E3 projects include:

- **NYSERDA BEEM (Building Efficiency and Electrification Model) Roadmap (2021-present)**
  - Building Electrification Roadmap (BER) **–** Analyzed the implementation of a list of energy efficiency strategies towards building electrification by evaluating their economic performance and market penetration in residential and commercial sectors. Helped create an output viewer for the clients to assess the performance of different scenarios.
  - Low-Moderate Income (LMI) Assessment – Evaluated the utility costs, utility allowances, and cost-shifting resulting from heat pump adoption for regulated affordable housing and unregulated affordable housing.
- **Building Electrification U.S. Market Assessment for a Major Heat Pump Manufacturing Company (2021-2022)** Developed 1> a model to estimate the market penetration, projected sales growth, and cost analysis for space heating and water heating heat pumps under different federal and state policies. 2> a building electrification pathway model to evaluate the feasibility and impact of electrification with different policy scenarios and technology adoption across the U.S.
- **Ontario Municipal Employees Retirement System (OMERS) Battery Platform Diligence (2023)** Modeled large-scale battery operation and optimization to generate hourly energy and AS Revenue forecast for 6 projects in CAISO and ERCOT Market. Generated nodal-specific DA and RT energy price forecasting based on the E3 core zonal price assessment.
- **NYSERDA Zero Emission Vehicle (ZEV) Market Development Plan (2022)** Researched current and future state of the technology and developed consensus projections for needed/desired ZEV adoption before 2030, and consolidated policy details for near-term policy priorities for various vehicle types, fueling types and other cross-cutting policies focus specific target communities.
- **Confidential Top Technology Company Demand Side Management Market Assessment (2022)** Advised the client on the landscape and operation of demand side management (DSM) programs, distributed energy resources (DER), and energy efficiency (EE) efforts across a number of targeted markets/utilities for the US residential customer base. Consolidated

utility/market compensation mechanism within existing regulatory frameworks and identified the near-term market entrance opportunity for the client.

- **Southern California Edison Building Electrification Filing (2021-2022)** Evaluated building electrification impact on the residential and small commercial customers from 2024-2027 regarding a>greenhouse gas emissions (GHG) savings from energy and non-energy impacts, b>disaggregated service panel and circuit cost information for residential and small commercial, c>commercial building energy consumption estimation, d>. Small commercial and residential energy bill savings estimates.

WILLDAN Chicago, IL
Energy Engineer March 2018 – June 2021

- Led 68 clients in optimizing energy consumptions and financial analysis for buildings across the U.S.; helped clients to obtain more than $3.1 million energy-saving incentives from major utility companies
- Provided consulting services under a multi-stakeholder environment (i.e., utility providers, real estate investors) to propose energy efficiency solutions with a holistic approach that fulfills each stakeholder's requests
- Produced data-driven modeling and quantitative analysis by running building energy models with multiple energy-saving scenarios in 3 sprint phases throughout the project life cycle for 89 projects and presented the final energy cost reports to stakeholder groups

BAUMANN CONSULTING Washington, DC
Energy Performance Analyst August 2017 – March 2018

- Conducted an energy audit and analyzed energy usage to provide cost-reduction solutions for 1.1M+ square feet of real estate assets on a Michigan college campus; reduced annual utility bills by 20% with only a 3-year payback

WILLDAN Minnetonka, MN
John Weidt Research Fellow May 2016 – May 2017

- Developed an industry-focused statistically-significant model to support the firm's consulting services by conducting thorough probability and sensitivity analysis with 500,000+ simulation runs on infrastructure energy consumption across North America

Education

Georgia Institute of Technology Atlanta, GA
Master of Science, major in Architectural Technology July 2017

Iowa State University Ames, IA
Bachelor of Architecture December 2014