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**CALIFORNIA ENERGY COMMISSION**

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CEC-70 (Revised 11/2021)



*IN THE MATTER OF:*

*PECHO ENERGY STORAGE CENTER*

**Docket No. 21-AFC-01**

*IN THE MATTER OF:*

*GEM ENERGY STORAGE CENTER*

**Docket No. 21-AFC-02**

**PROPOSED JOINT DECISION REGARDING  
EXEMPTION FROM THE NOTICE OF INTENTION PROCESS**

The Committees designated to conduct proceedings on the respective applications for certification for the Pecho Energy Storage Center and the Gem Energy Storage Center, described below, hereby submit the attached "Joint Decision Regarding Exemption from the Notice of Intention Process" as its Proposed Decision on applicability of Public Resources Code section 25540.6.

Dated: May 27, 2022

***APPROVED BY:***

\_\_\_\_\_  
Andrew McAllister  
Commissioner and Presiding Member for the Pecho Energy Storage Center Committee, and  
Associate Member for the Gem Energy Storage Center Committee

Dated: May 27, 2022

***APPROVED BY:***

\_\_\_\_\_  
Kourtney Vaccaro  
Commissioner and Presiding Member for the Gem Energy Storage Center Committee, and  
Associate Member for the Pecho Energy Storage Center Committee

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CEC-70 (Revised 11/2021)

***IN THE MATTER OF:******PECHO ENERGY STORAGE CENTER*****Docket No. 21-AFC-01*****IN THE MATTER OF:******GEM ENERGY STORAGE CENTER*****Docket No. 21-AFC-02**

## **JOINT DECISION REGARDING EXEMPTION FROM THE NOTICE OF INTENTION PROCESS**

**I. INTRODUCTION**

On November 23, 2021, Pecho LD Energy Storage, LLC (Pecho LLC) filed an Application for Certification (AFC) with the California Energy Commission (CEC) to construct and operate the Pecho Energy Storage Center (Pecho).<sup>1</sup> On December 1, 2021, GEM A-CAES LLC (Gem LLC) filed an AFC with the CEC to construct and operate the Gem Energy Storage Center (Gem).<sup>2</sup> This Decision will refer to Pecho LLC and Gem LLC collectively as the Applicants and their AFCs collectively as the Applications.

The Warren-Alquist State Energy Resources Conservation and Development Act (Warren-Alquist Act)<sup>3</sup> grants the CEC the exclusive jurisdiction to certify all sites and related facilities in the state,

<sup>1</sup> The Application and all filed documents related to the Pecho proceeding are available via the "Docket Log (21-AFC-01)" link on the [Pecho proceeding's web page](https://www.energy.ca.gov/powerplant/caes/pecho-energy-storage-center) at <https://www.energy.ca.gov/powerplant/caes/pecho-energy-storage-center>. The Application comprises many separate documents filed in the docket beginning November 23, 2021, e.g., the introduction is TN 240712-1.

<sup>2</sup> The Application and all filed documents related to the Gem proceeding are available via the "Docket Log (21-AFC-02)" link on the [Gem proceeding's web page](https://www.energy.ca.gov/powerplant/caes/gem-energy-storage-center) at <https://www.energy.ca.gov/powerplant/caes/gem-energy-storage-center>. The Application comprises many separate documents filed in the docket beginning December 1, 2021, e.g., the introduction is TN 240751-2.

<sup>3</sup> Public Resources Code, § 25000 *et seq.* All subsequent references are to the Public Resources Code unless otherwise specified.

whether a new site and related facility or a change or addition to an existing facility. A “site” is any location on which a facility is constructed or is proposed to be constructed.<sup>4</sup> A “facility” is any electric transmission line or thermal power plant, or both, regulated according to the provisions of the Warren-Alquist Act.<sup>5</sup> Subject to exceptions, a “thermal power plant” is any stationary or floating electrical generating facility using any source of thermal energy, with a generating capacity of 50 megawatts or more, and any appurtenant facilities.<sup>6</sup>

As a general rule, each person proposing to construct a thermal power plant or electric transmission line on a site must submit to the CEC a notice of intention (NOI) to file an application for certification of the site and related facility or facilities.<sup>7</sup> The NOI proceeding “shall be an attempt primarily to determine the suitability of the proposed site to accommodate the facilities and to determine the general conformity of the proposed sites and related facilities with the standards of the [CEC] . . .”<sup>8</sup> Each NOI must contain at least three alternative sites and related facilities, at least one of which shall not be located in whole or in part in the coastal zone.<sup>9</sup>

In the NOI proceeding, the CEC prepares and makes public a summary and hearing order on the notice of intention to file an application.<sup>10</sup> Then, the CEC conducts an adjudicatory hearing<sup>11</sup> and issues a final report no later than 300 days after the filing of the notice,<sup>12</sup> which is then subject to an additional hearing or hearings commenced no later than 30 days after the final report.<sup>13</sup> The CEC shall issue its decision on the NOI not later than 12 months after the notice is filed, or at any later time as is mutually agreed upon by the CEC and the applicant.<sup>14</sup>

In reviewing an NOI, the CEC must make specific findings regarding, among other things, the acceptability and relative merit of the alternative sites and facilities designated in the NOI.<sup>15</sup> The CEC may not approve an NOI unless it finds at least two alternative sites as acceptable, or only one acceptable site under specific circumstances.<sup>16</sup> If the CEC approves an NOI based on acceptability of at least one or more sites, then an AFC may be filed.<sup>17</sup> An AFC proceeding considers whether a particular site and related facility are suitable for certification.<sup>18</sup> The CEC

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<sup>4</sup> § 25119.

<sup>5</sup> § 25110.

<sup>6</sup> § 25120.

<sup>7</sup> § 25502.

<sup>8</sup> § 25502.

<sup>9</sup> § 25503.

<sup>10</sup> §§ 25502, 25510.

<sup>11</sup> § 25513.

<sup>12</sup> § 25514.

<sup>13</sup> § 25515.

<sup>14</sup> § 25516.6.

<sup>15</sup> § 25514.

<sup>16</sup> § 25516.

<sup>17</sup> §§ 25516, 25519.

<sup>18</sup> § 25519; see §§ 25517-25529 (AFC statutory requirements).

conducts an adjudicatory hearing and issues a written decision on the AFC, stating its findings.<sup>19</sup> The CEC must issue its written decision within 18 months of the filing of an AFC, or within 12 months if the AFC is filed within one year of the CEC's approval of the NOI, or at any later time as is mutually agreed by the commission and the applicant.<sup>20</sup>

However, Public Resources Code section 25540.6 (Section 25540.6) identifies types of power plants that are exempted from the requirement to file an NOI. They are: a power plant employing cogeneration technology, natural gas-fired technology, or a solar thermal power plant;<sup>21</sup> a modification of an existing facility;<sup>22</sup> a power plant that is only technologically or economically feasible to site at or near the energy source;<sup>23</sup> a thermal power plant with a generating capacity of up to 100 MW;<sup>24</sup> or a power plant designed as a demonstration project, up to 300 MW. Exempted power plants may proceed directly to file an AFC.<sup>25</sup> CEC shall issue a final decision for any power plant which qualifies for an exemption, within 12 months after the filing of the AFC of the power plant and related facility, or at any later time as is mutually agreed by the CEC and the applicant.<sup>26</sup>

The question before the CEC is whether the Pecho and Gem power plants are exempt from the NOI process under Section 25540.6(a)(3) as power plants that are only technologically or economically feasible to site at or near the energy source. This is a matter of first impression, as the CEC has not previously considered this statutory exemption for any proposed power plant, nor has the CEC yet considered a project employing the advanced compressed air energy storage technology employed by Pecho and Gem. The Applicants submitted arguments and evidence supporting their contention that Pecho and Gem qualify for the exemption and thus may proceed as AFCs.<sup>27</sup> CEC staff (Staff) asserts that the Applicants' position, including its interpretation of Section 25540.6(a)(3), as applied to Pecho and Gem is reasonable, although Staff states there can be more than one reasonable interpretation, and Staff has proffered a different interpretation of the Section 25540.6(a)(3).<sup>28</sup>

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<sup>19</sup> § 25523.

<sup>20</sup> § 25522.

<sup>21</sup> § 25540.6(a)(1).

<sup>22</sup> § 25540.6(a)(2).

<sup>23</sup> § 25540.6(a)(3).

<sup>24</sup> § 25540.6(a)(4).

<sup>25</sup> § 25540.6(a)(5).

<sup>26</sup> § 25540.6(a).

<sup>27</sup> TN 241935 and TN 242223 (Pecho); TN 241936 and TN 242224 (Gem).

<sup>28</sup> TN 242926 (Pecho) and TN 242927 (Gem), transcript of the April 25, 2022 Joint Committee Conference, at page 23, lines 1–6 (23:1–6).

Based on substantial evidence provided by the Applicants in the record of the Pecho and Gem proceedings,<sup>29</sup> and as discussed below, we find that the Applicants met their burden of establishing that Pecho and Gem are exempt from the NOI process pursuant to Section 25540.6(a)(3). The Applicants have provided sufficient information to support a finding that it is only technologically or economically feasible to site the electrical generating facilities for Pecho and Gem at or near two of the interrelated components of the energy source: the geological formations necessary to construct a purpose-built underground storage cavern and the nodes on the grid with sufficient capacity for the bidirectional power flow of charging and discharging electricity.

This finding is not approval of the construction and operation of Pecho and Gem, nor a determination on the acceptability of the sites and related facilities, nor a predetermination of findings necessary to certify them.<sup>30</sup> The CEC will review Pecho and Gem under its AFC process,<sup>31</sup> which provides a thorough review and analysis of all aspects of a proposed power plant including the site and related facilities. During the AFC process, the CEC conducts a comprehensive examination of a project's potential economic, public health and safety, reliability, engineering, and environmental ramifications. The CEC will conduct an independent assessment of a reasonable range of alternatives to the project that could lessen or avoid any adverse effect of each power plant, as required under the CEC's certified regulatory program.<sup>32</sup> The AFC process allows for and encourages public participation so that members of the public may become involved either informally or on a formal level as intervenor parties who have the opportunity to present evidence and cross-examine witnesses.

Additionally as to Pecho, the California Coastal Commission will issue a report during the AFC process indicating its decision whether the location is suitable for a facility like Pecho.<sup>33</sup> On January 12, 2022, Coastal Commission staff filed a comment letter stating Pecho is proposed to be located at a site within the coastal zone that the Coastal Commission has designated as being unsuitable for thermal power plants and summarizing related law.<sup>34</sup> A joint letter from Staff and Coastal Commission staff to the Applicant further explained that, because Pecho is proposed within an area designated as unsuitable for thermal power plants, the CEC cannot certify Pecho unless the Coastal Commission determines that Pecho would be consistent with the primary uses of the land and

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<sup>29</sup> Under the CEC's regulations, the hearing record consists of: (1) all documents, filed comments, materials, oral statements, or testimony received into evidence by the committee or commission at a hearing; (2) public comment, including comments from other government agencies, offered orally at a hearing, or written comments received into the record at a hearing; (3) any materials or facts officially noticed by the committee or commission at a hearing; and (4) all transcripts of evidentiary hearings. (Cal. Code Regs., tit. 20, § 1212(b)(1).)

<sup>30</sup> See Cal. Code Regs., tit. 20, § 1748.

<sup>31</sup> Cal. Code Regs., tit. 20, § 1741 et seq.

<sup>32</sup> § 25541.5; see also Cal. Code Regs., tit. 20, § 1745.5(b)(1)(B).

<sup>33</sup> §§ 25526, 30413(b) and (d).

<sup>34</sup> TN 241152 (Pecho).

would not cause any substantial adverse environmental effects. The Coastal Commission will report its findings to the CEC after a hearing on the matter.<sup>35</sup>

## II. BACKGROUND

### A. Project Descriptions

#### 1. Pecho<sup>36</sup>

Pecho would be located in unincorporated San Luis Obispo County with the mailing address of 2284 Adobe Road, Morro Bay, California 93442.<sup>37</sup> The site is currently leased for agricultural operations and is designated prime agricultural land located in an agricultural zone within the coastal zone of San Luis Obispo County. The site is under a Williamson Act Contract.<sup>38</sup>

Pecho would be a nominal 400-megawatt (MW) energy storage center, deploying Hydrostor Inc. (Hydrostor) Advanced Compressed Air Energy Storage (A-CAES) technology. The Application states that Hydrostor's A-CAES technology would provide long-duration, quick-starting, flexible, controllable generation with the ability to ramp up and down through a wide range of electrical output to facilitate the integration of renewable energy into the electrical grid in satisfaction of California's Renewables Portfolio Standard (RPS) and climate objectives, by displacing older and less efficient generation.<sup>39</sup>

Hydrostor's A-CAES technology stores compressed air in a purpose-built underground storage cavern. During the "charge cycle," electricity from the grid will be used to drive each facility's air compressors, converting the electrical energy from the grid into potential energy in the form of compressed air. The air is then stored within the underground storage cavern and kept at a near-constant air pressure from the weight of water flooded into the cavern through a hydraulic conduit from the surface level water storage compensation reservoir. Heat energy from the air compression process is captured and stored via heat exchangers in the thermal energy management system. To generate electricity during the "discharge cycle," compressed air is discharged from the underground storage cavern. The cool high-pressure air exiting the underground storage cavern is reheated using the heat stored by the thermal management system

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<sup>35</sup> TN 242624, pp.1-2 (Pecho).

<sup>36</sup> The information in this section is taken from the Application documents: TN 240712-1 (Pecho), TN 240712-2 (Pecho), and 240712-19 (Pecho) unless otherwise indicated.

<sup>37</sup> TN 240712-19, p. 5-6-10 Pecho).

<sup>38</sup> "The Williamson Act is intended to conserve agricultural land by having local government establish and regulate agricultural preserves and execute land conservation contracts with landowners restricting the owners' uses. [Citations.] ` In return for accepting restrictions on the land, the landowner is "guaranteed a relatively stable tax base, founded on the value of the land for open space use only and unaffected by its development potential." ' ' ( *Cleveland National Forest Foundation v. County of San Diego* (2019) 37 Cal.App.5th 1021, 1030-1031.)

<sup>39</sup> TN 240712-1, p. 1-1 (Pecho).

and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air expansion turbine-generators which efficiently convert the stored potential energy back into electricity that is delivered to the grid.

Pecho would be designed to charge at up to 400 MW for up to 14 hours and deliver up to 3,200 MW-hours (MWhs) over an 8-hour period when discharging at nameplate capacity.

Pecho would require, among other things, construction of: four all-electric air compressor trains and four 100-MW air-driven power turbine generators housed inside a 100-foot-tall, 65-foot-wide by 1,075-foot-long main turbine hall and compressor building; a purpose-built underground compressed air storage cavern 2,000 feet deep; a sealed air conduit to facilitate injection, storage, and release of compressed air for power generation; an aboveground 27-acre hydrostatically compensating water reservoir capable of holding about 500 acre feet of water to regulate the air pressure in the underground storage cavern via hydraulic conduit; auxiliary facilities; onsite 230-kiloVolt (kV) substation; and a 3.4-mile electrical interconnection to the Pacific Gas and Electric Company's existing Morro Bay Switching Station.

## **2. Gem<sup>40</sup>**

Gem would be located in unincorporated Kern County on two parcels with the mailing address of 8684 Sweetser Road, Rosamond, California, 93560. The site is currently undeveloped desert land in an area zoned Estate and within the Willow Springs Specific Plan area of Kern County.

Gem would be a nominal 500-MW energy storage center, which would deploy Hydrostor's A-CAES technology as described regarding Pecho above. Gem would charge at up to 500 MW for up to 14 hours and deliver up to 4,000 MWhs over an 8-hour period when discharging at nameplate capacity.

Gem would require, among other things, construction of: five all-electric air compressor trains and five 100-MW air-driven power turbine generators housed inside a 100-foot tall, 65-foot-wide by 1,365-foot-long main turbine hall and compressor building; a purpose-built underground compressed air storage cavern approximately 2,000 feet deep; a sealed air conduit to facilitate injection, storage, and release of compressed air for power generation; an aboveground 31-acre hydrostatically compensating water reservoir capable of holding about 565 acre feet of water to regulate the air pressure in the underground storage cavern via hydraulic conduit; auxiliary facilities; onsite 230-kV substation; and a 10.9-mile interconnection to the Southern California Edison Whirlwind Substation or a 3.5-mile interconnection to the future Los Angeles Department of Water and Power Rosamond Substation.

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<sup>40</sup> The information in this section is taken from the Application documents, TNs 240751-2 (Gem), 240751-12 (Gem) and 240770 (Gem).



## **B. Procedural History**

### **1. Executive Director’s December 22, 2021 Recommendations**

On December 22, 2021 for Pecho and December 30, 2021 for Gem, the CEC’s Executive Director filed recommendations to the CEC Commissioners on the adequacy of the data submitted by the Applicants to support each AFC (Executive Director’s Recommendations).<sup>41</sup> Among other things, the Executive Director’s Recommendations stated that, in these proceedings, more investigation is needed to determine whether either or both of the Applications might be exempt from the NOI process under Public Resources Code Section 25540.6; specifically whether Pecho and Gem are thermal power plants that are only technologically or economically feasible to site at or near the energy source.<sup>42</sup> The Executive Director’s Recommendations stated that, until Staff reaches a definitive conclusion about an exemption, Staff will treat the Applications as appropriately filed as AFCs.<sup>43</sup> The Executive Director’s Recommendations then explained that heat is a necessary thermal component of the generation process.<sup>44</sup>

### **2. Orders Adopted during the January 26, 2022 Business Meeting**

On January 26, 2022, the CEC adopted orders in the Pecho and Gem proceedings that, among other things, directed the Applicants and Staff to file information regarding the threshold question of whether the filing qualifies for an exemption from the NOI process.<sup>45</sup>

The CEC’s January 26, 2022 orders also appointed committees (Committees) to preside over any proceedings arising from the applications filed.<sup>46</sup>

### **3. Public Notice of Pecho and Gem**

On February 7, 2022, Staff filed the “Notice of Receipt, Application for Certification, Pecho Energy Storage Center,” in English and in Spanish.<sup>47</sup> Notice was also mailed to the main branch of the

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<sup>41</sup> TN 241075 (Pecho); TN 241097 (Gem). The relevant parts of these documents are substantially similar, so this Decision refers only to the Pecho TN unless otherwise noted.

<sup>42</sup> TN 241075, p. 2 (Pecho).

<sup>43</sup> TN 241075, p. 2 (Pecho).

<sup>44</sup> TN 241075, p. 2 (Pecho).

<sup>45</sup> Filed in the dockets for both proceedings: TN 241290, p.2 (Pecho) and TN 241291, p.2 (Gem).

<sup>46</sup> TN 241290, pp. 2–3 (Pecho); and TN 241291, pp. 2–3 (Gem). On January 28, 2022, hearing officers were assigned to each proceeding: Ralph Lee and Susan Cochran for Pecho (TN 241319), and Reneé Webster-Hawkins and Susan Cochran for Gem (TN 241318). On March 24, 2022, the CEC adopted orders amending the committee assignments for each case, appointing committees consisting of Andrew McAllister, Commissioner and Presiding Member for Pecho and Associate Member for Gem, and Kourtney Vaccaro, Commissioner and Presiding Member for Gem and Associate Member for Pecho: TN 242448 (Pecho) and TN 242449 (Gem).

<sup>47</sup> TN 241443 (English) and TN 241444 (Spanish) (Pecho). The Notice of Receipt provided, among other things, a description of Pecho including its location, and provided agency contacts for additional information including how to

local library,<sup>48</sup> and it was published in the local newspaper.

On February 28, 2022, Staff filed and mailed the “Notice of Receipt, Application for Certification, Gem Energy Storage Center,” in English and Spanish.<sup>49</sup> Notice was published in English language<sup>50</sup> and Spanish language<sup>51</sup> local newspapers. Notice was provided to Native American individuals and groups.<sup>52</sup>

#### **4. The Applicants’ February 9, 2022 Joint Response**

On February 9, 2022, the Applicants filed a single Joint Response to the CEC’s January 26, 2022 orders, which included declarations and briefs supporting an NOI exemption applicable to both Pecho and Gem.<sup>53</sup> In the Joint Response, the Applicants claimed that Pecho and Gem are exempt from the NOI process under Public Resources Code section 25540.6(a)(3) as facilities that are only technologically or economically feasible to site at or near the energy source.<sup>54</sup> The Applicants sought an order “affirming the applicability of the exemption from the NOI process.”<sup>55</sup>

The Applicants contended Pecho and Gem meet the Section 25540.6(a)(3) exemption because they are only technologically or economically feasible to site at or near two types of energy sources: (1) stored energy, which relies on “suitable geological formations required for the construction and operation of the subsurface air storage caverns” and (2) electrical energy, which is a “robust physical grid location capable of both interconnecting the project’s full generation capacity as well as facilitating the full bidirectional power flow of the project (charging and discharging).”<sup>56</sup>

The Applicants further contended that the second energy source, the specific location on the grid, is a “locational value” that is both technically critical and economically important, taking advantage of “excess renewable energy that exceeds daily peak needs” to create stored energy, and that

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participate in the proceeding. Staff also mailed a Request for Agency Participation in the Review of Pecho. (TN 241445 and TN 242192 (Pecho) [clarification].)

<sup>48</sup> TN 241446 (Pecho).

<sup>49</sup> TN 241982 (English) and TN 242191 (Spanish) (Gem). The Notice of Receipt provided, among other things, a description of Gem including its location, and provided the CEC’s contact information for additional information including how to participate in the proceeding. Staff also mailed a Request for Agency Participation in the Review of Gem. (TN 242326 (Gem).)

<sup>50</sup> TN 242487 (Gem).

<sup>51</sup> TN 242632 (Gem).

<sup>52</sup> TN 240771, Appen. 5.3A (Gem).

<sup>53</sup> Applicants filed virtually identical documents in both proceedings: TN 241502 (Pecho); TN 241503 (Gem). The relevant parts of these documents are substantially similar, so this Decision refers only to the Pecho TN unless otherwise noted.

<sup>54</sup> TN 241502, p. 1 (Pecho).

<sup>55</sup> TN 241502, p. 9 (Pecho).

<sup>56</sup> TN 241502, pp. 1–2 (Pecho).

“target locations” for grid locations are “assessed on the likely future economic value” based on “the forecast price differential between on-peak and off-peak power prices.”<sup>57</sup>

Additionally, the Applicants contended that Pecho and Gem meet the exemption’s legislative purpose of eliminating barriers to development of environmentally acceptable electrical generation for California.<sup>58</sup> Finally, the Applicants stated that the NOI process is “anachronistic” and “not necessary,” and should not bar these facilities.<sup>59</sup>

## **5. Staff’s February 23, 2022, Responses to the Applicants’ February 9 Joint Response**

On February 23, 2022, Staff responded to the Applicants’ February 9 Joint Response.<sup>60</sup> Staff agreed that the only potentially applicable exemption to the NOI process is under Section 25540.5(a)(3) for a thermal power plant that is only technologically or economically feasible to site at or near the energy source. In its response, Staff did not dispute the Applicants’ information, but rather disputed whether that information was sufficient under Section 25540.6(a)(3) to establish that Pecho and Gem qualify for that NOI exemption.

As an initial matter, Staff noted that each power plant was a “thermal power plant” because the generation process requires heating the air as it decompresses and expands to power the turbine generators to generate electricity.<sup>61</sup> However, Staff disagreed with the Applicants’ interpretation of Section 25540.6(a)(3). Staff noted that the CEC has not previously interpreted Section 25540.6(a)(3), and that no court has opined on its application or interpretation. Staff contended that the plain language of Section 25540.6(a)(3) is unambiguous and requires that, in order to qualify for the exemption, the Applicants must show “that there are only a limited number of sites in California where these types of facilities could be located either from a technological or economic basis.”<sup>62</sup> Staff contended that, without this information, Staff could not recommend whether Pecho and Gem qualify for the NOI exemption.<sup>63</sup> Staff recommended in its filing that the CEC order the Applicants to provide specific additional information to determine whether Pecho and Gem qualify for the exemption, including:

- A discussion of the specific geological requirements for the technology, including site characteristics to support the technology and constraints on the placement of the facilities;

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<sup>57</sup> TN 241502, p. 2 (Pecho).

<sup>58</sup> TN 241502, p. 8 (Pecho).

<sup>59</sup> TN 241502, p. 9 (Pecho).

<sup>60</sup> Applicants filed virtually identical documents in both proceedings: TN 241935 (Pecho); TN 241936 (Gem). The relevant parts of these documents are substantially similar, so this Decision refers only to the Pecho TN unless otherwise noted.

<sup>61</sup> TN 241935, pp. 3, 5 (Pecho).

<sup>62</sup> TN 241935, p. 5 (Pecho).

<sup>63</sup> TN 241935, p. 5 (Pecho).

- An estimate of the number of such sites in California and their availability for the proposed use;
- Analyses showing the economic feasibility of the project based on its proximity to renewable resources;
- Analyses of the economic feasibility of the technology at the proposed location or the infeasibility at other sites; and
- Scale-up analyses for the technology that show the factors in deciding the MW capacity and the expected reliability of the power plants.<sup>64</sup>

Additionally, Staff recommended that the CEC find that the term “energy source” in Section 25540.6(a)(3) includes the underground storage caverns the Applicants will build to contain the compressed air, but not the grid connections from which the facilities would draw electricity to compress the air.<sup>65</sup>

## **6. Applicants’ March 9, 2022 Joint Reply to Staff’s February 23, 2022 Responses**

On March 9, 2022, the Applicants filed a Joint Reply to Staff’s February 23, 2022 response.<sup>66</sup> In response to Staff’s statement that additional information was required to evaluate whether the Applications qualify for an NOI exemption under Section 25540.6(a)(3), the Applicants pointed generally to the information in the alternatives sections of the AFCs.<sup>67</sup> The Applicants also submitted further evidence to supplement the information already in the record explaining the geological requirements for the purpose-built underground storage cavern and related engineering considerations for close proximity between the cavern and the A-CAES topside facilities.<sup>68</sup> Additionally, the Applicants contended:

Section 25540.6 does not require that an applicant prove that the site is the *only* or one of a “limited number of sites in California where these types of facilities could be located.” Instead, Section 25540.6(a)(3) looks only at the relationship of the location of the powerplant to the energy source.<sup>69</sup>

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<sup>64</sup> TN 241935, pp. 6 – 8 (Pecho).

<sup>65</sup> TN 241935, p. 6 (Pecho); TN 241936, p.6 (Gem).

<sup>66</sup> Applicants filed virtually identical documents in both proceedings: TN 242223 (Pecho); TN 242224 (Gem). The relevant parts of these documents are substantially similar, so this Decision refers only to the Pecho TN unless otherwise noted.

<sup>67</sup> TN 242223, p. 7 (Pecho).

<sup>68</sup> TN 242223 (Pecho).

<sup>69</sup> TN 242223, p. 6 (emphasis in original) (Pecho).

The Applicants contended their interpretation of Section 25540.6(a)(3) is the plain meaning, and that Staff was reading-in irrelevant requirements. The Applicants contended their interpretation was reasonable and that the NOI process is obsolete in a deregulated energy market.<sup>70</sup> The Applicants did not provide an estimate of the number of feasible sites in California, the economic feasibility of the Pecho and Gem in relation to available renewable resources, or scale-up analyses of the chosen MW capacity or reliability.

## **7. Joint Committee Conference**

On April 15, 2022, the Committees issued a notice of a Joint Committee Conference to be held on April 25, 2022.<sup>71</sup> At the Joint Committee Conference, the Committee members described Pecho and Gem, solicited questions or comments from the Staff and the Applicants (collectively Parties), took public comment, and adjourned to closed session to deliberate on the issues presented by the Applications, including the potential qualification of Pecho and Gem for exemption from review under the NOI process.

During the Joint Committee Conference on April 25, 2022,<sup>72</sup> Staff stated that after reviewing and considering Applicants' filings, Staff no longer believed that the reliability and scale-up information that Staff had previously requested was necessary or related to the determination of whether the exemption applies.<sup>73</sup> Staff recognized that the exemption in Section 25540.6(a)(3) is subject to a number of reasonable readings, and that the Applicants' position is reasonable.<sup>74</sup> Staff expressed ongoing concern about the sufficiency of information about whether the Pecho and Gem site features are unique or limited.<sup>75</sup> Staff restated the issue as whether the NOI exemption applies to the feasibility of siting a power plant at or near an energy source that does not already exist.<sup>76</sup> In other words, does the analysis of the feasibility of siting Pecho and Gem at or near purpose-built underground storage caverns that still need to be excavated – along with the construction of Pecho and Gem's other features – affect the applicability of the exemption.

No reportable actions resulted from the closed session.

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<sup>70</sup> TN 242223, p. 7 et seq. (Pecho).

<sup>71</sup> In English, TN 242692 (Pecho) and TN 242693 (Gem); in Spanish, TN 242690 (Pecho) and TN 242691 (Gem).

<sup>72</sup> The transcript was filed in the dockets for both proceedings: TN 242926 (Pecho); TN 242927 (Gem).

<sup>73</sup> *Id.* at page 22, lines 12-23 (22:12-23).

<sup>74</sup> *Id.* at 23:1-6.

<sup>75</sup> *Id.* at 22:25 to 23:10.

<sup>76</sup> *Id.* at 24:1 to 25:2.

### III. STANDARD OF REVIEW

The Warren-Alquist Act requires any person proposing to construct a thermal power plant to first file an NOI and receive approval through the NOI process before filing an AFC,<sup>77</sup> unless the power plant is exempt from the NOI process.<sup>78</sup>

Section 25540.6 identifies types of power plants that are exempted from review under the CEC's otherwise required NOI process. The Applicants bear the burden of establishing, by a preponderance of the evidence,<sup>79</sup> that an exemption under Section 25540.6 applies to Pecho or Gem. The CEC must determine whether substantial evidence in the record supports its findings and conclusions.<sup>80</sup>

### IV. DISCUSSION

The Applicant and Staff cite only to Section 25540.6(a)(3) as the basis for exempting Pecho and Gem from the NOI process. The issue the CEC must decide is whether Section 25540.6(a)(3), which applies to "[a] thermal powerplant which it is only technologically or economically feasible to site at or near the energy source," also applies to Pecho and Gem. This is a matter of first impression, as the CEC has not previously considered the applicability of this exemption to any proposed power plant.

#### **A. Public Resources Code Section 25540.6(a)(3) Looks at the Physical Relationship of a Power Plant to the Energy Source.**

Our aim is to effectuate the Legislature's purpose for the law.<sup>81</sup> Here, the Parties proffer different interpretations of what it means to be "only technologically or economically feasible to site at or near the energy source." The Applicants contend, "Section 25540.6(a)(3) looks only at the relationship of the location of the power plant to the energy source,"<sup>82</sup> in other words, only at the relationship of the physical location of the power plant to the energy source necessary for the power plant designed by the applicant. Staff initially contended that the exemption requires Applicants to show "that there are only a limited number of sites in California where these types of facilities could be located either from a technological or economic basis."<sup>83</sup> However, Staff

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<sup>77</sup> §§ 25502, 25519(a).

<sup>78</sup> § 25540.6.

<sup>79</sup> Evid. Code, §§ 115, 500; § 25519(b); Cal. Code Regs., tit. 20, §§ 1723.5, 1745; see *Southern Cal. Jockey Club v. California Horse Racing Bd.* (1950) 36 Cal.2d 167, 177.

<sup>80</sup> See *Southern Cal. Jockey Club*, *supra*, 36 Cal.2d at p. 177.

<sup>81</sup> *People v. Canty* (2004) 32 Cal.4th 1266, 1276.

<sup>82</sup> TN 242223, p. 6 (Pecho).

<sup>83</sup> TN 241935, p. 5 (Pecho).

subsequently agreed that Section 25540.6(a)(3) may be subject to more than one reasonable interpretation, and that the Applicants' interpretation is reasonable as applied to Pecho and Gem.<sup>84</sup>

We considered the Parties' arguments, as well as the entire record before us in evaluating whether Applicants have presented substantial evidence to support the requested exemption. As discussed below, we base our determination on the totality of materially relevant facts and evidence presented in the Applications and in subsequent filings.

Beginning with the text of Section 25540.6(a)(3) and construing the words in their statutory context,<sup>85</sup> the language "only . . . feasible . . . at" shows the exemption applies when there is an interdependence or limitation on where a power plant may be located based on the location of the energy source required by the specific technology employed by the power plant. Here, and as discussed below, the totality of combined features and requirements of the A-CAES technology employed by Pecho and Gem, including the energy sources necessary for the A-CAES technology to successfully and reliably generate electricity, are factors in our determination that the proposed facilities are only technologically or economically feasible to site at or near the energy sources.

## **B. The Pecho and Gem Power Plants Are Only Technologically or Economically Feasible to Site At or Near the Energy Sources That Are Necessary for Their A-CAES Technology to Operate.**

In applying the statute to the facts before us, we first must determine what reasonably constitutes "energy sources" within the meaning of Section 25540.6(a)(3), and then determine if the proposed power plants "are only technologically or economically feasible to site at or near" the energy sources. We take each in turn.

### **1. The Geological Formations Capable of Holding Purpose-Built Underground Storage Caverns, and the Grid Electrical Energy, are Collectively "The Energy Source" Within the Meaning of Section 25540.6(a)(3).**

In discerning the reasonable scope of "energy source" under Section 25540.6(a)(3) in the specific context of Pecho and Gem, the Applicants contend Pecho and Gem rely on two types of "energy sources": (1) stored energy, which relies on "suitable geological formations required for the construction and operation of the subsurface air storage caverns"; and (2) electrical energy, which is "robust physical grid location[s]," for each power plant capable of charging it.<sup>86</sup> Staff agrees that the underground storage caverns built to contain the compressed air are "energy sources" within

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<sup>84</sup> TN 242926, at 23:1–6 (Pecho).

<sup>85</sup> *California Sch. Bds. Assn. v. State Bd. of Educ.*, 186 Cal.App.4th 1298, 1315 (2010), as modified on denial of reh'g (Aug. 24, 2010).

<sup>86</sup> TN 241502, p. 2, and Decl. Hildebrand, Feb. 9, 2022, ¶¶ 6–9 (Pecho); TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 6 (Pecho).

the meaning of the exemption.<sup>87</sup> Staff also acknowledges that the grid connections may be interpreted to be “energy sources” within the exemption because energy from the grid initially powers the storage process,<sup>88</sup> although Staff proposes that the CEC find that the grid connections are not “energy sources.”<sup>89</sup>

The Warren-Alquist Act does not define “energy source.” But it does define “energy” simply and broadly as “work or heat that is, or may be, produced from any fuel or source whatsoever.”<sup>90</sup> Looking to other contextual clues in the Warren-Alquist Act, “energy source” is similarly broadly applied. Outside of the context of thermal power plants, the Warren-Alquist Act refers to non-thermal energy as “energy sources”<sup>91</sup> and even uses the phrase to refer to electricity.<sup>92</sup> And the CEC’s regulations use the phrase for, among other things, the electricity used to heat water.<sup>93</sup>

Here, Pecho and Gem each would apply specific interrelated technologies and sources of energy in close proximity to generate electricity: a specified purpose-built underground storage cavern, in geological conditions capable of containing compressed air that later would be released from the caverns and reheated to drive the production of electricity;<sup>94</sup> above-ground equipment powered by electricity from the grid to compress air into the purpose-built underground storage caverns;<sup>95</sup> a thermal management system to capture the heat from the compressed air and later re-use it to heat the expanding air in order to generate electricity;<sup>96</sup> and a water reservoir and hydraulic conduit system that uses gravity and hydrostatic pressure to maintain and regulate appropriate air pressure in the underground storage cavern.<sup>97</sup> Together, these technologies and sources of energy, are what make Pecho and Gem technologically feasible.

Given the engineering solutions presented in these Applications, we view the multiple sources of energy required for these facilities to generate electricity as “the energy source” within the meaning of Section 25540.6(a)(3). In other words, Pecho and Gem are “only technologically feasible” as dispatchable energy storage facilities if they are near both the geological formations which can reliably store compressed air in the purpose-built underground storage cavern, and the

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<sup>87</sup> TN 241935, p. 6 (Pecho).

<sup>88</sup> TN 241935, p. 6 (Pecho).

<sup>89</sup> TN 241935, p. 6 (Pecho).

<sup>90</sup> § 25109.

<sup>91</sup> § 25000.1(a).

<sup>92</sup> § 25300(c) (“ . . . including electricity, natural gas, petroleum, and alternative energy sources . . . ”)

<sup>93</sup> Cal. Code Regs., tit. 20, § 1602(f) (“electric instantaneous water heater”).

<sup>94</sup> See Declaration of Curt Hildebrand, dated February 9, 2022 (Decl. Hildebrand, Feb. 9, 2022), ¶¶ 7; TN 242223, Declaration of Curt Hildebrand, dated March 8, 2022 (Decl. Hildebrand, Mar. 8, 2022), ¶¶ 7–12; TN 241935, p. 5; TN 241502.

<sup>95</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 11 – 16 (Pecho).

<sup>96</sup> See TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶ 10 (Pecho); TN 242223, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 6f (Pecho); TN 240712-2, p. 2-9 (Pecho); TN 240770, p. 2-10 (Pecho) .

<sup>97</sup> See TN 242223, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 6a, 7, 11 (Pecho); TN 240712-2, p. 2–9 (Pecho); TN 240770, p. 2-10 (Pecho).



above-ground electrical generation equipment including the thermal management system, and near specific grid connections that can support the bidirectional flow of electricity to charge and discharge electrical energy<sup>98</sup> Without the stored energy in purpose-built underground storage caverns, and the electrical energy supplying the thermal component of the power plants, Pecho and Gem would not operate.<sup>99</sup> We conclude the multiple sources of energy required for Pecho and Gem to generate electricity are collectively “the energy source.” The Applications and supplemental declarations submitted by Mr. Hildebrand are substantial evidence that each component of the energy source is necessary to Pecho and Gem<sup>100</sup> and we find no substantial evidence to the contrary. Thus, we find that these components collectively constitute “the energy source” within the meaning of Section 25540.6(a)(3).

To be clear, we are not deciding that a specific geological formation or a specific node or substation on an electrical grid, standing alone would constitute an energy source within the meaning of Section 25540.6(a)(3). Any future application of this exemption will depend on the specific facts before us.

## **2. Pecho and Gem Are Only Technologically or Economically Feasible to Site at or Near the Energy Sources.**

Having identified the energy source as the multiple sources of energy required for Pecho and Gem to store and generate electricity, the next step is to determine whether it is “only technologically or economically feasible to site” the facilities near the energy sources.

Certain components of the energy source are proposed to be constructed at the locations proposed for Pecho and Gem, and the proposed power plants require particular site features that are not necessarily limited to any particular location, while others are inherent to particular locations. The Applicants present two arguments to show that Pecho and Gem are only technologically or economically feasible to site at or new the energy source.

The Applicants’ first argument is that constructing the reservoir further away from the underground storage cavern is not feasible.<sup>101</sup> The materially relevant facts in the record to support this conclusion include: angled shafts are technologically limited because drilling

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<sup>98</sup> As discussed below, the facilities also need to be located in proximity to a water reservoir to provide hydrostatic pressure for the power plants to be technologically feasible. (See TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 7 (Pecho).)

<sup>99</sup> Although neither Staff nor Applicants make this argument, another potential energy source is from the potential and kinetic energy from the gravitational and hydrostatic pressure provided by the nearby water stored in the reservoir. (See TN 242223, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 6a, 7, 11 (Pecho); TN 240712-2, p. 2–9 (Pecho); TN 240770, p. 2-10 (Pecho).)

<sup>100</sup> E.g., Decl. Hildebrand, Feb. 9, 2022, ¶¶ 6–16 (Pecho); TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 6–12 (Pecho).

<sup>101</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 7 (Pecho).

technologies have a maximum drilling angle;<sup>102</sup> angled shafts would add significantly to the costs because they are longer and are one of the single largest cost items;<sup>103</sup> and moving the reservoir farther away would require large diameter piping that would cause significantly additional disruption to the ground level.<sup>104</sup> Thus, the key facts in the record shows that the reservoir must be located vertically atop the underground storage cavern for the cavern to adequately harness the hydrostatic pressure of the water.

Moreover, the materially relevant facts show that the thermal management system must be readily available to heat the compressed air as it is released from the underground storage cavern to avoid low temperatures and liquid condensation affecting the electrical generation turbines.<sup>105</sup> The evidence supports Applicants' contention that locating the thermal management system remotely from the underground storage cavern would result in loss of efficiency and similar significant thermal energy losses.<sup>106</sup> Additionally, the record contains evidence to show that it is technologically and economically infeasible to site the A-CAES facilities beyond 200 meters from the geologic formations that would contain the underground storage caverns.<sup>107</sup>

The record also shows that the underground storage caverns can only be constructed in suitable geological settings, which are present at the proposed locations of Pecho and Gem.<sup>108</sup> The underground storage cavern needs physical piping for the conveyance of air to and from the A-CAES topside facility, and for the hydraulic conduit connections for the conveyance of water to and from the water reservoir.<sup>109</sup> The air shaft is a pressure bearing pipe of significant importance with unique corrosion concerns; lengthening the air shaft to accommodate remote topside facilities would make maintenance and inspection unnecessarily challenging.<sup>110</sup> Piping pressurized air and water over long distances would cause a loss to efficiency.<sup>111</sup> Based on these characteristics of the components of Pecho and Gem, we find it is only technologically and economically feasible to construct the A-CAES topside facility and reservoir near the geologic formations that would contain the underground storage caverns.<sup>112</sup>

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<sup>102</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 9 (Pecho).

<sup>103</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 9 (Pecho).

<sup>104</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 11 (Pecho).

<sup>105</sup> TN 240712-2, p. 2-12 (Pecho); TN 240770, p. 2-12 (Gem).

<sup>106</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶ 10 (Pecho); TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 7–12 (Pecho).

<sup>107</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 12 (Pecho).

<sup>108</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 6–9 (Pecho); TN 242223, Decl. Hildebrand, Mar. 8, 2022, ¶ 6 (Pecho).

<sup>109</sup> TN 241402, Decl. Hildebrand, Mar. 8, 2022, ¶ 7 (Pecho).

<sup>110</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 12 (Pecho).

<sup>111</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶ 10 (Pecho); TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶¶ 7–12 (Pecho).

<sup>112</sup> TN 241502, Decl. Hildebrand, Mar. 8, 2022, ¶ 10 (Pecho).

Finally, the Applicants have submitted materially relevant facts to explain how grid connections that allow sufficient bidirectional power flow are also necessary.<sup>113</sup> Specifically, the Applicants provide information about the need for proximity to specific locations on the electrical grid: for Pecho at the California Independent System Operator-controlled Morro Bay Switching Station and for Gem at the Southern California Edison Whirlwind Substation.<sup>114</sup> The Applicants underscore that “mere system power” is not the relevant energy source, but rather the “locational value” that each of these specific nodes possesses to support the bidirectional power flow of electrical energy required for the charging and discharging cycle.<sup>115</sup> The Applicants connect the technological feasibility with the relevant costs of Pecho and Gem, folding economic and market factors into the locational value of the selected facility sites.<sup>116</sup> Based on these facts, we consider the feasibility of siting the power plant not just near the geologic formations identified by the Applicants for constructing the purpose-built underground storage caverns, but also at or near specific grid connections that can support the bidirectional flow of electricity for the success and reliability of the A-CAES facilities to charge and discharge electrical energy.

Thus, substantial evidence in the record supports the finding that Pecho and Gem are only technologically or economically feasible if each of the necessary components of the power plants and their related facilities, including their energy sources, are located at or near each other. For these A-CAES facilities, the Applicants have met their burden of establishing by substantial evidence that it is only technologically or economically feasible to site the electrical generating facilities for Pecho and Gem at or near two of the interrelated components of the energy source: the geological formations necessary to construct a purpose-built underground storage cavern and the nodes on the grid with sufficient capacity for the bidirectional power flow of charging and discharging electricity. In the absence of evidence to the contrary in the record, we find that Pecho and Gem qualify for an exemption from the NOI requirement under Section 25540.6(a)(3).

We find that the exemption to the NOI process in Section 25540.6(a)(3) applies to Pecho and Gem. So, we decline to consider the Applicants’ arguments that applying the exemption to Pecho and Gem would be consistent with a broader legislative policy objective of removing barriers to environmentally responsible electrical generation in California,<sup>117</sup> or whether the NOI process is anachronistic and obsolete.<sup>118</sup>

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<sup>113</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 11–12, 15–16 (Pecho).

<sup>114</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 12–16 (Pecho); TN 241502, p. 7 (Pecho).

<sup>115</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 12–16 (Pecho); TN 241502, p. 7 (Pecho).

<sup>116</sup> TN 241502, Decl. Hildebrand, Feb. 9, 2022, ¶¶ 12–14 (Pecho); TN 242225, p. 5 (Pecho); TN 242224, p. 5 (Gem).

<sup>117</sup> TN 241502, p. 8 (Pecho).

<sup>118</sup> TN 241502, p. 9 (Pecho); TN 242223, p. 7 et seq. (Pecho).

## V. FINDINGS AND CONCLUSIONS

Based on the record of this proceeding, we find:

- Pecho and Gem each depend upon specific interrelated technologies and sources of energy located in close proximity to each other to generate electricity. Without the stored energy in a purpose-built underground storage cavern and the grid connection supplying electrical energy to the above-ground components, including the compressors and thermal management system, Pecho and Gem would not operate.
- The purpose-built underground storage caverns are a necessary component of Pecho and Gem as proposed and can only be constructed and operated in suitable geological settings exhibiting qualities such as stability and low permeability, which have been determined by Applicants to exist at the sites proposed for Pecho and Gem.
- The purpose-built underground storage caverns and the grid electrical energy are collectively “the energy source” within the meaning of section 25540.6(a)(3).
- Pecho is only technologically or economically feasible to site at or near the energy source; the totality of combined features and requirements of the A-CAES technology employed by Pecho, including the energy sources necessary for the A-CAES technology to successfully and reliably generate electricity, are factors in our determination that the proposed power plant is only technologically or economically feasible to site at or near the energy source.
- Gem is only technologically or economically feasible to site at or near the energy source; the totality of combined features and requirements of the A-CAES technology employed by Gem, including the energy sources necessary for the A-CAES technology to successfully and reliably generate electricity, are factors in our determination that the proposed power plant is only technologically or economically feasible to site at or near the energy source.

We therefore conclude that Pecho and Gem are exempt from the NOI process under Public Resources Code section 25540.6(a)(3).

We hereby direct Staff to process the applications as AFCs, including reviewing the filings for data adequacy pursuant to section 1704 and Appendix B of title 20 of the California Code of Regulations.