STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

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June 11, 2013

Agenda ID #12162
and
Alternate Agenda ID #12179
Ratesetting

TO PARTIES OF RECORD IN APPLICATION 07-06-031

Enclosed are the proposed decision of Administrative Law Judge (ALJ) Vieth previously designated as the presiding officer in this proceeding and the alternate proposed decision of Commissioner Peevey. The proposed decision and the alternate proposed decision will not appear on the Commission's agenda sooner than 30 days from the date they are mailed.

Pub. Util. Code § 311(e) requires that the alternate item be accompanied by a digest that clearly explains the substantive revisions to the proposed decision. The digest of the alternate proposed decision is attached.

This matter was categorized as ratesetting and is subject to Pub. Util. Code § 1701.3(c). Upon the request of any Commissioner, a Ratesetting Deliberative Meeting (RDM) may be held. If that occurs, the Commission will prepare and publish an agenda for the RDM 10 days beforehand. When an RDM is held, there is a related *ex parte* communications prohibition period. (See Rule 8.3(c)(4).)

When the Commission acts on these agenda items, it may adopt all or part of the decision as written, amend or modify them, or set them aside and prepare its own decision. Only when the Commission acts does the decision become binding on the parties.

Parties to the proceeding may file comments on the proposed decision and alternate proposed decision as provided in Pub. Util. Code §§ 311(d) and 311(e) and in Article 14 of the Commission's Rules of Practice and Procedure (Rules), accessible on the Commission's website at www.cpuc.ca.gov. Pursuant to Rule 14.3, opening comments shall not exceed 15 pages.

Comments must be filed pursuant to Rule 1.13 either electronically or in hard copy. Comments should be served on parties to this proceeding in accordance with Rules 1.9 and 1.10. Electronic and hard copies of comments should be sent to ALJ Vieth at xjv@cpuc.ca.gov and Commissioner Peevey's advisor Audrey Lee at al4@cpuc.ca.gov. The current service list for this proceeding is available on the Commission's website at www.cpuc.ca.gov.

/s/ KAREN V. CLOPTON
Karen V. Clopton, Chief
Administrative Law Judge

KVC:jt2

Attachment

ATTACHMENT

DIGEST OF DIFFERENCES

ALJ Vieth's Proposed Decision denies the City of Chino Hills' petition for modification of Decision (D.) 09-12-044 regarding Segment 8A of the Tehachapi Renewable Transmission Project. The Proposed Decision finds that while underground construction of UG5 (a single circuit, two cables per phase design), is feasible and could be completed on a timely basis, the cost is prohibitive and should not be borne by ratepayers at large for the benefit of the City and its residents. The Proposed Decisions concludes that actual cost of undergrounding, given uncertainty in the record about the need for reactive compensation and before offset for the value of real property that Chino Hills has offered to contribute, would be either a low of about $268 million (without reactive compensation) or a high of about $296 million (with reactive compensation). Both sums use a 13% multiplier to calculate environmental compliance costs, which reduces those costs by half, and both reduce the overall contingency from 35% to 20%, as Chino Hills recommends; neither sum includes an allowance for Southern California Edison's Company's 6.5% corporate overhead charge. The Proposed Decision does not assign a value to Chino Hills' proposed real property offset but concludes that the actual value is a much more modest amount than Chino Hills' estimate.

President Peevey's Alternate Proposed Decision grants the City of Chino Hills' petition and orders Southern California Edison to construct an underground, single circuit, cross-linked polyethylene (XLPE) system, UG5, in Segment 8A. The Alternate Proposed Decision concludes that the burden imposed on Chino Hills and its residents by 3.5 miles of the aboveground transmission line, with towers approaching 200 feet tall, is unfair, is contrary to community values under Pub. Util. Code Sec. 1002 and warrants undergrounding. The Alternate Proposed Decision estimates the reasonable cost of constructing UG5 at approximately $224 million, which includes an offset of approximately $17 million for the City's proposed contribution of most of the real property needed for construction of an underground transmission line. The sum excludes an allowance for reactive compensation, uses a 10% multiplier to calculate environmental compliance costs and reduces the overall contingency from 35% to 15%, the same applied to the transmission line construction project as a whole. The sum does not include an allowance for Southern California Edison's Company's 6.5% corporate overhead charge.

ALJ/XJV/jv1 **PROPOSED DECISION** Agenda ID #12162
Alternate Agenda ID #12179
Ratesetting

Decision **PROPOSED DECISION OF ALJ VIETH** (Mailed 6/11/2013)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of Southern California Edison Company (U338-E) for a Certificate of Public Convenience and Necessity Concerning the Tehachapi Renewable Transmission Project (Segments 4 through 11).	Application 07-06-031 (Filed June 29, 2007)

(See Attachment A for Appearances)

DECISION DENYING THE CITY OF CHINO HILLS' PETITION FOR MODIFICATION OF DECISION 09-12-044 REGARDING SEGMENT 8A OF THE TEHACHAPI RENEWABLE TRANSMISSION PROJECT AND RELEASING STAY

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DECISION DENYING THE CITY OF CHINO HILLS' PETITION FOR MODIFICATION OF DECISION 09-12-044 REGARDING SEGMENT 8A OF THE TEHACHAPI RENEWABLE TRANSMISSION PROJECT AND RELEASING STAY

1. Summary

Today's decision denies the petition for modification of Decision (D.) 09-12-044, filed October 28, 2011, in which the City of Chino Hills (Chino Hills) seeks undergrounding of a 500 kilovolt transmission line in a City right of way in lieu of the previously approved aboveground design. Today's decision follows evidentiary hearings, briefs and the Commission's preparation and release of an Addendum to the Final Environmental Impact Report.

We find, on balance, that while underground construction of UG5--the single circuit, two cables per phase design--is feasible and could be completed on a timely basis--the cost is prohibitive and should not be borne by ratepayers at large for the benefit of a few. We conclude that the actual cost, given the current uncertainty about the need for reactive compensation, would be either a little more than $268 million or a little less than $296 million. Both of these sums use a 13% multiplier for environmental compliance costs, which reduces those costs by half; both also reduce the overall contingency from 35% to 20%, consistent with Chino Hills's recommendation. Neither sum includes an allowance for Southern California Edison's Company's 6.5% corporate overhead charge. Nor does either sum represent an offset for the value of real property that Chino Hills has offered to contribute, which would reduce costs but by a much more modest amount than Chino Hills has calculated.

On a per mile basis, these estimates represent a high approaching $85 per mile and a low approaching $77 per mile. For each of the 220 houses that borders the right-of-way, the cost is on the order of $1.2-$1.3 million per house.

To the extent that undergrounding costs elsewhere provide a benchmark of sorts, the cost to underground UG5 is higher.

At present, construction of much of Segment 8A, the portion of Segment 8 that passes through Chino Hills, is stayed. Because this decision denies Chino Hills' petition, we release the stay and authorize SCE to resume work to complete Segment 8.

2. Background and Procedural History

We summarize the major events that precede today's decision, repeating and updating similar recitations found in prior rulings and decisions in this docket.

Decision (D.) 09-12-044, dated December 24, 2009, grants Southern California Edison Company (SCE) a Certificate of Public Convenience and Necessity (CPCN) to construct the 500 kilovolt (kV) transmission line and related facilities that comprise Segments 4 through 11 (the Project) of the larger Tehachapi Renewable Transmission Project (TRTP). D.09-12-044 requires SCE to design and build in accordance with the Environmentally Superior Alternative and subject to the mitigation measures and other conditions the decision adopts. The Project interconnects with previously constructed portions of the TRTP and runs approximately 173 miles through portions of three counties in southern California--Kern, Los Angeles and San Bernardino.

D.09-12-044 includes the following summary description of the TRTP's purpose and identifies its component parts, including the Project:

> The TRTP is designed to provide access to up to 4,500 megawatts (MW) of renewable energy generation, primarily wind energy, from the Tehachapi Wind Resource Area in Kern County and to deliver it to load in Los Angeles and San Bernardino counties. We approved Segment 1 in Decision (D.) 07-03-012 and Segments 2-3 in

> D.07-03-045, which together form the Antelope Transmission Project (ATP), which will deliver approximately 700 MW of the total TRTP carrying capacity. (D.09-12-044 at 2.)

As part of D.09-12-044, the Commission determined that review of the Project had occurred in compliance with the California Environmental Quality Act (CEQA) and therefore, consistent with lead agency responsibilities under CEQA, the Commission certified the Final Environmental Impact Report (FEIR). The Commission also determined that the Project complied with the Commission's electromagnetic field (EMF) guidelines.

Though the Federal Energy Regulatory Commission (FERC) sets transmission rates, Pub. Util. Code §1005.5(a) authorizes the Commission to determine the maximum reasonable and prudent cost associated with a CPCN for utility plant of more than $50 million.[1] D.09-12-044 concludes that $1.523 billion (in 2009 dollars) is a reasonable maximum cost for the Project (or approximately $1.785 billion, when an allowance for funds used during construction, known as AFUDC, is included). This maximum cost includes the Commission-approved contingency factor for the Project, 15%.[2]

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[1] Unless otherwise noted, all subsequent statutory references mean the Pub. Util. Code.

[2] These maximum cost figures are preliminary. D.09-12-044 directs SCE to file an advice letter to update Project costs based on a final detailed engineering design-based construction estimate for the final route and SCE's opening brief reports:

> As of January 2013, SCE had completed approximately 80% of the physical construction of Segments 4-11, which amounted to approximately $1.288 billion at that time. Since then, SCE has been completing much of the final engineering for the remaining work of the Approved Project. Accordingly, SCE continues to refine and

Footnote continued on next page

In January 2010, several parties, including the City of Chino Hills (City or Chino Hills), filed applications for rehearing D.09-12-044; these remain pending. Thereafter, on October 17, 2011, SCE filed a petition for modification of D.09-12-044 in response to Project design changes the Federal Aviation Authority (FAA) has required as air safety mitigations. Today's decision does not address SCE's petition, which we anticipate will be resolved shortly, once the environmental review is complete.[3]

Today's decision addresses the petition for modification Chino Hills filed on October 28, 2011. Chino Hills' concerns focus exclusively on Segment 8A, which as approved by D.09-12-044, in major part consists of 3.5 miles of above-ground, double-circuit 500 kV transmission line borne by towers, some nearly 200 feet-tall, sited in the 150 foot-wide right-of-way (ROW) that passes through a residential area in the City.[4] Chino Hills' petition opposes construction of this

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> update its cost estimate for the Approved Project, which is anticipated to be at least $1.767 billion. When escalated for inflation, the total project cost estimate for segments 4-11 increases to approximately $1.932 billion (in 2013 dollars). (SCE Opening Brief at 55.)

[3] The Commission issued a Draft Supplemental EIR in April 2013, which reviews the impacts of the FAA mitigations.

[4] Some references in evidence or the parties' briefs identify the height as 195 feet. ROW cross section schematic drawings in the FEIR compare the Segment 8A tower height for the 500 kV and 220 kV lines. (See FEIR, Vol. 1, Figures 2.2-40, 2.2-41 and 2.2-42.) These figures show that the tower height for the 500 kV line varies depending upon its specific location along the segment and whether the construction is light weight steel lattice (these range from 153.5-198.5 feet) or tubular steel pole (these range from 150-195 feet).

part of the Project and asks the Commission to reopen the record to reconsider alternatives.

Since the filing of Chino Hills' petition, the Commission has issued four decisions in this docket to stay construction along Segment 8A.[5] The Commission issued the initial stay on November 10, 2011; it provides: "D.09-12-044 is stayed to the extent it applies to Segment 8A of the TRTP pending the Commission's resolution of Chino Hills' Application for Rehearing." (D.11-11-020, Ordering Paragraph at 2.) Later that month, D.11-11-026 corrected clerical errors in the initial stay decision. The third stay decision, dated March 22, 2012, narrowed the stay at SCE's request to apply only to: "those portions of Segment 8A of the TRTP that lie within the City of Chino Hills or that would become necessary or obsolete if the Commission were to select one of the 21 identified Alternatives to those portions of Segment 8A [being considered as part of the review of Chino Hills petition]." (D.12-03-050, Ordering Paragraph 2 at 6.)

The fourth stay decision, dated March 25, 2013, reduced the scope of the stay further to apply to:

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[5] Chino Hills actually filed a second petition for modification on October 31, 2011, which seeks a stay along Segment 8A during the pendency of the petition it filed October 28, 2011. That stay petition is pending; rather, the Commission's initial stay granted the motion for partial stay Chino Hills had filed previously, at the same time as its application for rehearing pursuant to Rule 16.1(e). The subsequent stay decisions also tie the stay to the continued pendency of Chino Hills' rehearing application. Chino Hills' petition indicates the City's intent to withdraw that application if the Commission not only reopens the record (which it has done) and "if such a process led to a solution that sufficiently ameliorates the harm to the City and its individual residents…" (Chino Hills petition at 17.)

> [T]hose portions of Segment 8A of the TRTP that lie within the City of Chino Hills except for the specific access road work inside the City that the City has agree [sic] upon or that would become unnecessary or obsolete if the Commission were to select one of the underground options." (D.13-03-019, Ordering Paragraph 2 at 6.)

An Assigned Commissioner's ruling, filed the same day as the Commission's initial stay decision, directed SCE to prepare and serve written testimony, by January 10, 2012, on alternatives to overhead construction in Segment 8, as well as mitigation for the impacts of the overhead line.[6] The ruling directed SCE to report on the "feasibility, cost and timing" of the alternatives, and to present "refreshed data" for any alternatives examined prior to issuance of D.09-12-044 "that could be considered viable today." (November 11, 2011 Assigned Commissioner's Ruling at 3.) At a subsequent prehearing conference held on January 18, 2012, SCE was directed, at the Assigned Commissioner's request, to develop and serve additional written testimony on single circuit options that could be placed underground in the existing ROW in Chino Hills.

Following notification that mediation between SCE and Chino Hills had concluded without settlement, the Assigned Commissioner filed a scoping memo that set evidentiary hearing on the petition and delimited the scope for hearing.[7] The scoping memo directed SCE to prepare and serve written testimony that

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[6] *Assigned Commissioner's ruling Directing Southern California Edison Company to Prepare Alternatives for Routing the Portion of the Segment 8 that Traverses Chino Hills,* filed November 11, 2011 (November 11, 2011 Assigned Commissioner's Ruling).

[7] *Scoping Memo and Ruling of Assigned Commissioner*, filed July 2, 2012 (scoping memo).

more fully examined two undergrounding alternatives based on preliminary engineering, both of them utilizing a single circuit, cross-linked polyethylene (XLPE) cable placed in conduit in the existing ROW along Segment 8A, one alternative incorporating three cables per phase and the other, two cables per phase. The Assigned Commissioner also set a timetable for prepared testimony from Chino Hills and other interested parties and stated:

> My objective is to ensure that the Commission has adequately explored the multiple issues that concern Segment 8A in Chino Hills so that it may reach a timely and lawful resolution that affirms a viable route for the project within that segment, releases the construction stay, and enables the delivery of electric generation over the TRTP on the schedule currently anticipated. (Scoping memo at 3.)

Further, he explained his rationale for eliminating other, non-underground alternatives:

> I also have excluded all options through the Chino Hills State Park since construction in the park continues to be infeasible, for reasons discussed in D.09-12-044. Further, discussion at the prehearing conferences has confirmed no party actively supports such development. Not only does the California Department of Parks and Recreation's opposition continue (together with a number of other parties), but Chino Hills, which formerly was a primary proponent, no longer is advancing that result. (Scoping memo at 5.)

An amended scoping memo, filed several months later, revised the schedule to provide a two-track approach to resolution of Chino Hills' petition.[8]

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[8] *Amended Scoping Memo and Ruling of Assigned Commissioner*, filed November 15, 2012 (amended scoping memo).

D.13-02-035 resolves the first track.[9] In order to insulate the Project's projected commercial operation from construction delays attributable to Segment 8A, D.13-02-013 authorizes SCE to undertake specified preconstruction activities in advance of the Commission's decision on undergrounding. D.13-02-013 imposes a $4.95 million cost cap on those preconstruction activities and in addition, recognizes that SCE might incur contract cancellation charges of as much as $28 million should the Commission determine not to underground Segment 8A.

On April 5, 2013, DRA filed a motion to amend the scope of the proceeding to reexamine the transmission planning assumptions that underlie construction of the TRTP through Chino Hills. The motion did not include a power flow study or other support and by ruling on April 22, 2013, the Assigned Commissioner denied the motion. The Commission held four days of evidentiary hearing several days later, on April 22-25, 2013. The assigned Administrative Law Judge (ALJ) served as the presiding officer at hearing and five parties participated actively: SCE, Chino Hills, the Division of Ratepayer Advocates (DRA), The Utility Reform Network (TURN), and Independent Energy Producers (IEP); all but IEP sponsored witnesses. Nine parties filed opening briefs on May 6, 2013, the five parties already mentioned and the following four: Edison Electric Institute (EEI), Center for Energy Efficiency and Renewable Technologies (CEERT), California State Parks Foundation (CSPF) and

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[9] *Interim Decision on Rate Recovery of Reasonable Costs Associated with Specified Preliminary Activities Necessary to Ensure Timely completion of Segment 8A of the Tehachapi Renewable Transmission Project*, D.13-02-035.

Terra-Gen Power, LLC (Terra-Gen). On May 13, 2013, SCE, Chino Hills, DRA, TURN and CEERT filed reply briefs, whereupon the Commission submitted this matter for decision.

At hearing, the ALJ granted motion to receive a limited amount of confidential, commercially sensitive documentary evidence under seal, admitted that evidence under seal and subsequently, granted motions to file under seal specific references to that evidence in SCE's opening brief and Chino Hills' reply brief.

3. Legal and Policy Framework

Before examining the evidence and argument on whether the Commission should modify D.09-12-044 to order a design change that would require the undergrounding of 3.5 miles of Segment 8A of the Project, we review the legal and policy framework for considering this matter.

3.1. Jurisdiction, Burden of Proof

SCE is an electrical corporation under §218. Under § 701, which is broadly applicable to SCE and every other public utility in this state, the Commission "may supervise and regulate … and do all things … which are necessary and convenient" in the exercise of its lawful authority over such entities. Section 1708 authorizes the Commission to "rescind, alter, or amend any order or decision made by it" after providing proper notice to the parties and an opportunity to be heard. As many parties observe in their briefs, citing numerous past Commission decisions, this is an extraordinary remedy. It must be exercised with care and in keeping with fundamental principles of res judicata since "Section 1708 represents a departure from the standard that settled expectations should be allowed to stand undisturbed." (D.92058 (1980) 4 CPUC 2d 139 at 149-150.)

Chino Hills filed the petition for modification of D.09-12-044 that is before us today. As petitioner, Chino Hills has the burden of proof and must establish by a preponderance of the evidence that the design approved for Segment 8A should be changed to require construction of its preferred alternative instead. Chino Hills expressly recognizes this obligation.

3.2. Rule 16.4

Rule 16.4 of the Commission's Rules of Practice and Procedure governs the filing of petitions for modification. In the context of this petition, we review the requirements that address justification and timing.

Regarding justification, Rule 16.4(b) provides:

> A petition for modification of a Commission decision must concisely state the justification for the requested relief and must propose specific wording to carry out all requested modifications to the decision. Any factual allegations must be supported with specific citations to the record in the proceeding or to matters that may be officially noticed. Allegations of new or changed facts must be supported by an appropriate declaration or affidavit.

Regarding timing, Rule 16.4(d) requires that if a petition is not "filed and served within one year of the effective date of the decision proposed to be modified," the petitioner must explain the reason for the delay.

In response to these requirements, Chino Hills' petition alleges that construction in the ROW itself has produced new facts that support reopening the record and moreover, that the lack of a decision on its application for rehearing effectively has left the City with no other option but to seek relief by petition. The City's petition alleges:

> [S]ince the issuance of the Commission's decision almost two years ago, and the resulting construction of the transmission structures through Chino Hills, *additional facts*

> have surfaced which render certain of the findings of fact and conclusion[s] of law contained in the Decision erroneous as they apply to the Commission's approved [Project] … By way of this Petition, Chino Hills seeks to modify those findings and conclusions and obtain the Commission's agreement to reopen the record of the proceeding in order to more fully explore less destructive alternatives for routing the section of the TRTP that traverses Chino Hills, and to adopt additional mitigation measures to address the severe environmental and economic damage inflicted on Chino Hills and its residents as a result of the construction of the TRTP. (Chino Hills' petition at 2, emphasis added.)

To be sure, in order to build the 500 kV line, SCE first had to remove the infrastructure associated with an existing, de-energized 220 kV line—a line erected in the 1940s, before any houses were built along the ROW. Chino Hills acknowledges that the shorter, 75 foot- tall lattice towers were indeed part of the existing environment, but contends that the actual impacts on the City and its residents of the partially constructed, new tubular steel pole towers and even taller, new lattice towers constitute "new facts":

> These monolithic structures cut a huge swath through the City, and have had a staggering impact on the City as they are located right outside the residents' backdoors … the new steel monoliths transform the open space along the right-of -way to an eyesore. The visual, economic and societal impact of the line has been far more significant than what the City or the Commission envisioned at the time that the CPCN was issued. [fn omitted] The transmission structures erected in Chino Hills, contrary to Commission findings, have ruined the quality of life for residents in the City, [fn omitted] have divided the community, [fn omitted] and destroyed the property value of those who reside along the 150 foot wide right-of- way. [fn omitted] (Chino Hills' petition at 4.)

The petition acknowledges that the FEIR includes photographic simulations of the new, much taller pole and lattice towers and expressly states that they will have a significant and unavoidable impact; however, the petition claims that "the analysis in the FEIR does not do justice to the jarring imprint which the mammoth transmission structures have had on the viewscape." (Chino Hills' petition at 5.) Pointing to SCE's post-D.09-12-044 request for Project design changes to include mitigations the FAA requires to ensure aircraft safety (marker balls on conductor wires and tower lighting), Chino Hills' petition argues, "[s]uch warning devices will compound the already drastic visual intrusions of the towers and transmission lines in the community." (Chino Hills' petition at 6.)

In support of these contentions, Chino Hills' petition includes a declaration by the City Manager, Michael S. Fleager, and letters opposing continued aboveground construction along Segment 8A in the City. The petition also attaches proposed revisions to D.09-12-044's findings of fact, conclusions of law and ordering paragraphs. Chino Hills' evidence and briefs do not pursue its more attenuated arguments (economic blight, etc.) but continue to focus on the visual impacts on City residents, particularly those who live along the ROW, and on the potential feasibility of undergrounding XLPE cable in conduit in the ROW.

Briefs filed by SCE, DRA and CEERT all argue that Chino Hills has failed to meet the procedural requirements of Rule 16.4 and that we should simply deny Chino Hills' petition on those procedural grounds. DRA concisely sums up these parties' arguments that Chino Hills does not show new facts:

> Chino Hills [petition] appears to argue that it is one thing to read the description of the project in a report and a completely new and different "fact" to see the towers

> installed. By this rationale, every city TRTP passed through has a reasonable basis for seeking modification of D.09-12-044 and requesting that the line be placed underground as it passes through those cities as well." (DRA opening brief at 8.)

As various briefs note, since the filing of Chino Hills' petition, all sitting Commissioners have visited the ROW at issue; these visits were reported in the notices of ex parte contact filed and served pursuant to §1701.3(c). Many, though not all, of the letters and emails sent to the Commission or our Public Advisor from members of the public and from elected officials have urged us to examine this matter further. Essentially, we are asked to do these things—to review the visual impacts objectively; to review Chino Hills' claim that those visual impacts unfairly impose on the City too large a burden for the new transmission infrastructure that is being installed to benefit all Californians; and to review whether undergrounding using XLPE technology could and should be done instead.

Review of prior decisions indicates that the Commission has not applied the justification and timing requirements of Rule 16.4 and its predecessor, Rule 47, in a mechanical way if that would thwart justice. Though we find no reported case identical to the matter before us, precedent is clear that even where the Commission has determined that a petition was not the appropriate procedural remedy, on occasion and for public policy reasons, it has considered

the substantive merits and after that review, has either granted or denied the petition.[10]

We do not wish to impose an overly literal application of Rule 16.4 here. We conclude, on balance, that the magnitude of the harm alleged in the petition and the weight of the proffered evidence warrant reopening of the record so that we may reach a determination on the merits. Thus, we find that we may entertain the petition and we turn, therefore, to the fully developed evidentiary record and the parties' post-hearing briefs to assess the facts and consider applicable law and controlling policy.

3.3. Other Governing Law

Several statutes govern the Commission's examination of any utility proposal to construct a transmission line in California to carry renewable generation to load centers: §1001, which requires a utility to obtain a CPCN prior to commencing construction; §1002, which requires explicit consideration of four factors, community values plus three that the Commission develops as part of our CEQA review—recreational and park values, historical and aesthetic values, and influence on the environment; and §399.2.5, which streamlines the showing required of a transmission line deemed "necessary to facilitate achievement" of

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[10] For example, the Commission has entertained substantive review of a petition for modification that might have been dismissed for procedural defects when the petition "raised important public-policy concerns" (71 CPUC 2d 144, 153 [D.97-02-051]; 74 CPUC 2d 582, 585 [D.97-08-065]). Similarly, the Commission has held that a petition for modification need not be deferred pending resolution of an application for rehearing of similar issues where to do so would "serve no useful purpose…" (2003 Cal. PUC LEXIS 81 * 9).

California's Renewables Portfolio Standard (RPS). (§399.2.5(a).) Pursuant to D.07-03-012, a transmission line that relies upon §399.2.5 must establish the following: (1) it brings to the grid renewable generation that otherwise would remain unavailable; (2) the area within the line's reach plays a critical role in meeting RPS goals; and (3) the cost of the line is appropriately balanced against the certainty of the line's contribution to economically rational RPS compliance. D.09-12-044 complies with each of these statutes and as several parties contend, so must any Segment 8A alternative. We consider these issues in our Section 4 analysis of the evidentiary record and the parties' briefs. We defer discussion of CEQA to Section 5.

3.4. Transmission Planning Policy Considerations

In reviewing the petition, we must consider the history and objectives of transmission planning policy in California. CEERT's brief forcefully recounts the long and complex path travelled forward to the present:

> [T]he TRTP, from CPCNs granted by the Commission from its initial to final segments, [fn omitted] is the product of many years of open and transparent work, cooperation, and planning with active participation by multiple stakeholders, from this Commission, the California Independent System Operator (CAISO), and the California Energy Commission (CEC) to both investor- and publicly-owned utilities, including SCE; local government; environmental organizations; transmission planning experts, and those involved in the research and development of electric generation from California's renewable energy resources. These initiatives include the Tehachapi Collaborative Study Group and the Renewable Energy Transmission Initiative (RETI), both specifically referenced in D.09-12-044. (CEERT opening brief at 4-5.)

CEERT continues:

> What these initiatives represent are not only "independent assessments for the need" for projects like the TRTP, [fn omitted] but also the dedicated effort that has been required to provide a thorough and well-supported plan for transmission upgrades to access renewables-rich resource areas in California to meet this State's clean energy goals, including both Renewable Portfolio Standard (RPS) procurement targets and greenhouse gas (GHG) emission reductions, in a timely, cost-effective manner. (CEERT opening brief at 5.)

CEERT cautions that the Commission risks undermining all of this progress if it considers undergrounding in Segment 8A:

> Granting this relief will also create an adverse precedent for all future transmission projects where the collective public interest, State policy, and ratepayer cost responsibility will be put at risk and undermined by undertaking changes or making investments to meet demands of discrete individuals or individual communities that fail to account for the overall environmental benefits and costs of a chosen path or facilities. [fn omitted] CEERT opening brief at 9.)

SCE, EEI, IEP and Terra-Gen largely share this perspective, as do DRA and TURN, though the parties stress separate points. IEP and Terra-Gen, in particular, urge the Commission to resolve Chino Hills' petition promptly to ensure timely completion of the TRTP. Our Section 4 analysis, which follows the focus in the November 11, 2011 Assigned Commissioner's Ruling on feasibility, cost and timing, discusses these issues against the backdrop of California's transmission planning progress and renewable energy goals. However, today's decision is not the appropriate forum to address the merits of requests by IEP and Terra-Gen that the Commission take steps, now, to hold developers and generation owners harmless from the costs of any curtailment that some parties speculate might occur in 2015.

3.5. Social Policy/Environmental Justice

In addition to the transmission planning issues discussed above in subsection 3.4, we must consider social policy and environmental justice issues, along with §1002's community values factor. D.09-12-044, in weighing the record developed in the CPCN proceeding against state policies that promote the use of existing ROWs for transmission infrastructure upgrades and establish significant renewable resource development targets, states: "Any individual community's preference to avoid development of transmission infrastructure in its boundaries cannot outweigh these important statewide policy goals and the need for the Project." (D.09-12-044 at 19.)

Exhibit (Ex.) CH-86 provides photographs that demonstrate (as do the photographic simulations in the FEIR's Maps & Figures Series Volume), that the new poles and towers in Segment 8A are very tall indeed. But is Chino Hills' situation unique? D.09-12-044 concludes it is not. On the one hand, the decision recognizes "the uncontested fact that only one other 500 kV transmission line in the United States is in a 150 foot ROW…" (D.09-12-044 at 51, citing Chino Hills' brief and evidence in the CPCN proceeding.) But it also observes, "… the affected residents chose to purchase their homes alongside an existing ROW with transmission towers and wires, and therefore, have diminished expectation of a view without transmission lines." (D.09-12-044 at 49.)

TURN cautions us to be cognizant of the impact of our review on other communities besides Chino Hills:

> The Commission must consider the economic and environmental justice implications of allowing a single city along the TRTP to underground the transmission line at great cost to ratepayers while not ordering the same treatment for other communities impacted by the TRTP.
>
> ….

> As of April 2013, the City of Chino Hills has spent $3.8 million on this proceeding, with approximately $2 million on this undergrounding phase. [fn omitted] While Chino Hills may be able to afford to participate in this proceeding and advocate for undergrounding in its own borders, the question is whether other cities could afford to do the same. [fn omitted] The Commission should tread carefully to avoid a two-tiered approach to transmission planning, where communities with the financial wherewithal to pursue such challenges are able to avail themselves undergrounding options, but the vast majority of communities that cannot afford to challenge transmission siting cannot. (TURN opening brief at 8 (unnumbered).)

Our task requires us to objectively assess visual impacts that tend to affect most human beings in a subjective way, at least in part. Accordingly, we return to the certified FEIR and its workpapers to review the information there about the multiple variables that contribute to visual impact at a particular point along the Project ROW. Similarities and differences among Chino Hills, Duarte and Chino/Ontario are instructive.

The FEIR confirms that the 150 foot ROW along Segment 8A is the narrowest along the Project route. (FEIR, Vol. 1, Figures 2.2-40, 2.2-41, 2.2-42.) As shown in the FEIR's cross section drawings, the centerline of the double circuit 500 kV transmission towers is 75 feet from the ROW edge. For tubular steel pole towers, the cross arms end about 45 feet from the ROW edge; for lattice towers, the distance from the ROW edge is about 40 feet. Approximately 220 residential structures line the ROW along the 3.5 mile section proposed for undergrounding, an average of 63 per mile. (See FEIR, road story workpapers, pages 10- 17 (of 21).)

Along a section of Segment 7 that passes through Duarte, as shown in the FEIR's cross section drawings, the ROW is slightly wider at 200 to 212 feet (this

actually is a reduction in the pre-Project ROW width of 200-250 feet); however, two transmission lines run through the ROW, one double circuit 500 kV and the other 220 kV. (FEIR Vol. 1, Figures 2.2-19, 2.2-20.) The 500 kV towers are the same height as those in Segment 8A, but because they share the ROW with a 220 kV line, placement is different. The centerline of the lattice towers is only 55 feet from the ROW edge, which means the end of their cross arms is nearer to the ROW edge, also. The centerline of the tubular steel pole towers is 50-60 feet from the ROW edge, which places the end of their cross arms only 20-30 feet from the ROW edge. Approximately 94 residential structures border the ROW along this roughly one mile section. (See FEIR, road story workpapers, pages 1-5 (of 36).)

The route through Chino and into Ontario includes the separation of Segment 8A and Segment 8B and the width of the ROW varies. (FEIR, Maps and Figures Series Volume, Project Location Strip Map 2.2-1y.) However, in two places the aboveground double circuit 500 kV transmission line design is not very different from the Chino Hills situation. As shown in the FEIR's cross section drawings, the ROW in these areas is 150-200 feet wide and contains lattice or tubular steel pole towers of the same height as in Chino Hills. While the ROW is wider, the towers are not placed in the center of the ROW but 50-85 feet from one side of it. Because the lattice tower cross arms are wider than in Chino Hills (they extend 30.5 feet beyond the center of the tower, rather than 22.5 feet), the cross arm ends approach 19.5-54.5 feet from the ROW edge. Twenty-two residential structures are just south of the ROW along the approximately 0.3 mile segment between Mile Post (MP) 29.4 and MP 29.7 in Chino. Another 36 residential structures border an approximately 0.5 mile

stretch between MP 33.3 and 33.8 in Ontario. (See FEIR, road story workpapers, respectively pages 3-6 (of 36) and 23-24 (of 26).)

The affected section in Chino Hills is longer than elsewhere and, as a total, more residences border the ROW, but the housing density is greater in Duarte and Chino/Ontario. Certainly the Chino Hills' community, or at least part of it, has been more vocal in its opposition but this, alone, is not a basis for deciding the merits. It can be difficult to measure the views of a community at large.

On the facts reviewed above, we could conclude that Chino Hills is not unique.

4. Major Non-CEQA Issues

To answer the ultimate issue raised by Chino Hills' petition, whether the Commission should modify D.09-12-044 to order a design change that would require the undergrounding of 3.5 miles of Segment 8A of the Project, we must examine the three factual issues first posed by the November 11, 2011 Assigned Commissioner's Ruling and subsequently developed in the scoping memo and amended scoping memo: the feasibility, timing and cost of the several underground options as compared to the approved aboveground design.[11] Full assessment of these three issues necessarily requires a multi-faceted review of the evidence, governing law and applicable public policy.

The underground alternatives reviewed in the hearings on Chino Hills' petition all consist of XLPE cable placed in conduit in the Segment 8A ROW at

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[11] The November 11, 2011 Assigned Commissioner's Ruling refers to these issues in a different order (feasibility, cost, timing) but as an aid to discussion, today's decision examines "cost" last.

issue. While the record contains extensive evidence on multiple options/ alternatives to the approved overhead line, ultimately five were carried forward in detail under the names shown in Table 1, below.[12]

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[12] Ex. SCE-99, prepared testimony served on January 10, 2012, in response to the November 11, 2011 Assigned Commissioner's Ruling, includes refreshed data on the Chino Hills State Park alternatives, describes four additional aboveground options based on shorter structures, and includes five XLPE double circuit underground options (some beneath City streets) in addition to refreshed data on the previously considered GIL alternative. For various reasons, most were not deemed feasible and only the five in Table 1 were examined further.

Ex. SCE-100, prepared testimony served on February 1, 2012, in response to the Assigned Commissioner's further direction, describes six XLPE single circuit underground options (some beneath City streets).

Table 1: **Options for XLPE Cable Underground in Conduit in Chino Hills ROW** ***(Cost Estimates as Developed by SCE and Chino Hills[13])***					
Option Name	**Circuits**	**Cables/ Phase**	**Other Components**	**SCE Cost Estimate[14]**	**Chino Hills Cost Estimate**
UG1	2	3		$726M	
UG2	1	3	ducts & vaults for 2nd circuit	$533M	
UG3	1	2	ducts & structures for 3rd cable & 2nd circuit	$486M	
UG4	1	3		$420M	$169M[15]
UG5	1	2		$372M	$147M[16]

Chino Hills asks the Commission to approve UG5 and to set a cost cap for construction based the City's cost estimates. (As footnote 13 states, the parties' estimates are not "apples to apples" comparisons.) Though Chino Hills'

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[13] We discuss costs in Section 4.3 but observe here that the costs listed in Table 1 are not "apples to apples" comparisons of total direct and indirect costs.

[14] See Ex. SCE-106R at 71 (Table 2, Column E.) SCE's estimates are for XLPE 5000 kcmil cable, represent 2013 constant dollar, include 35% contingency and 6.5% corporate overhead and exclude Allowance For Funds Used During Construction (AFUDC).

[15] See Ex. CH-91 at 58 (Table 9, UG4-4000 kcmil segmental copper conductor 3 cables/phase). Chino Hills includes 20% contingency.

[16] See Ex. CH-91 at 57 (Table 8, UG5-4000 kcmil segmental copper conductor 2 cables/phase); in Confidential Attachment B to its reply brief, Chino Hills' revises the total to $147 million (up from $146 million) to correct for several errors/omissions. Chino Hills includes 20% contingency.

prepared testimony discusses a single circuit, single cable alternative, referred to as Option 12+1, the City does not recommend it as a solution. Chino Hills developed Option 12 + 1 as a tool to compare and contrast ampacity values (see Section 4.1.2, below, for discussion of this term) and some cost components.

SCE remains opposed to consideration of Chino Hills' petition and, in that context, does not support any Segment 8A undergrounding option. However, if the Commission requires undergrounding, SCE urges the Commission to select UG2.

4.1. Feasibility

No party contends that it is technically impossible to construct a 500 kV transmission line utilizing XLPE cable technology, underground in conduit, in the Chino Hills' ROW. The concerns expressed generally go to various technical and reliability issues, which we discuss as construction feasibility issues in Subsection 4.1.1., and the transmission planning considerations we discuss in Subsection 4.1.2.

4.1.1. Construction Feasibility

Chino Hills and SCE both offer evidence that while high voltage XLPE cable technology transmission lines are not prevalent, largely due to the cost of underground versus aboveground installation options, 400 kV and 500 kV transmission lines are operational in Europe, Russia and Asia; high voltage lines of 345 kV and less are operational in the United States at present. Most of the high voltage lines are relatively short but a few are much longer, such as an installation in Moscow of more than 40 miles. The evidence suggests these underground lines were built to solve specific locational problems (river crossings, access to urban zones, etc.) SCE claims that the gradient of the Chino Hills ROW (up to 20% in some places) poses construction challenges as

compared to flat terrain, but this is largely a costing issue, which we discuss in subsection 4.3.

The record contains conflicting characterizations by Chino Hills and other parties about whether XLPE technology actually has evolved since development of the record on which D.09-12-044 is based. There is some new information however. The installation dates cited in the record for operational high voltage XLPE cable worldwide range from approximately 1996 to 2010. Chino Hills and SCE disagree about whether this period is sufficient to draw firm conclusions about technological reliability and more particularly, how to interpret failure risk, including how long an outage might extend while repairs are underway. They agree that splice joints and other cable accessories tend to pose the primary risk for failure of this underground technology, not the XLPE cable itself. SCE witness Mosier, of Power Delivery Consultants, Inc., provided these statistics: "Between the years 2000 to 2005, 68 internal failures were reported on high voltage XLPE cable accessories, as opposed to 26 internal failures on high voltage XLPE cable excluding failure from third party damage." (Ex. SCE-106R at 37.)

No transmission system is free of all failure risk, of course. Chino Hills points to Ex. SCE-19, received in evidence in the CPCN hearings, which reports that SCE experienced 45 failures of 500 kV transmission towers from all causes between 1969 and 2007, a few of them single events that affected as many as ten towers. Chino Hills argues: "Forty five failures in 38 years is a significant failure rate relative to the failure rates for XLPE cable components for high voltage applications …" (Chino Hills reply brief at 35.)

Both SCE and Chino Hills refer to an industry-recognized technical paper, CIGRE Bulletin 379 (EX. CH-100), for an estimate of likely maintenance periods for XLPE outages. Chino Hills witness Aabo, of Power Cable Consultants, Inc.,

testified that the average repair time for XLPE outage repairs is 20 days, as stated in a summary section of the CIGRE bulletin; SCE's witness Mosier focused on a table earlier in the same part of the report, which breaks average repair time down for land installations of different voltages and, for 220 to 500 kV lines in ducts/troughs/tunnels, lists the average repair time as 45 days. (Compare CH-100 at 42, 47.) SCE argues that to build in reliability that would reduce the risk of a major outage on Segment 8, any underground option should include three cables per phase, in effect to provide a spare cable, which would permit two cables per phase operation to continue should one cable installation or its attendant splice joints fail. Conceptually, while this indeed would provide additional engineering security, it substantially would increase cost.

4.1.2. Transmission Planning

Though SCE and Chino Hills recommend different underground options for Segment 8A, they each advance a single circuit option – UG5 for Chino Hills and UG2 for SCE (though as noted previously, SCE's unequivocal preference is to finish construction of the aboveground line). The record established here supports the parties' separate assessments that a single circuit line is adequate to meet near term energy and capacity demands for Segment 8A, including the interconnection of 4,500 MW of new wind generation in the TWRA.[17] CAISO

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[17] The FEIR certified by D.09-12-044 developed and screened all Project alternatives in the CPCN proceeding against their ability to meet three primary project objectives:

1. Provide the electrical facilities necessary to reliably interconnect and integrate in excess of 700 MW provided by the ATP and up *to a cumulative total of approximately 4,500 MW of new wind*

Footnote continued on next page

states that "… a minimum of two cables per phase could provide sufficient capacity to meet the needs forecasted when TRTP was originally studied" though it prefers a double circuit line to avoid the need for future expansion. (Ex. SCE-106R, Attachment KKK, April 11, 2013 letter from CAISO to President Peevey and ALJ Vieth, served on the service list for A.07-06-031.)

Thus, while SCE, Chino Hills and other parties disagree about whether the Commission should require undergrounding in Segment 8A in lieu of continued construction of the aboveground line, transmission planning concerns do not appear to dictate the threshold decision. On balance however, they do tend to suggest the selection of some underground options as more prudent than others given the inevitable uncertainty in long-term planning. Below, we review the record on need (or why D.09-12-044 approved a double circuit versus a single circuit design), as well as other transmission system dynamics, including ampacity and curtailment risk.

Need

If a single circuit 500 kV transmission line will suffice for Segment 8, at least in the near term, why does the approved Project include a double circuit

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generation in the TWRA currently being planned or expected in the future, thereby enabling SCE and other California utilities to comply with the California RPS goals in an expedited manner (i.e., 20 percent renewable energy by year 2010 per California Senate Bill 107).

2. Further address the reliability needs of the CAISO-controlled grid due to projected load growth in the Antelope Valley.
3. Address the South of Lugo transmission constraints, an ongoing source of concern for the Los Angeles Basin. (D.09-12-044 at 25-26, emphasis added.)

design in Segment 8A? Chino Hills witness Shirmohammadi, of Shir Power Engineering Consultants, Inc., referred to the overhead double circuit design as a "pig in a python" given the single circuit on either side. (Tr. Vol. 16 at 2645.) He explained that the design for most high voltage overhead transmission lines "is almost always dictated not by power flow requirements but by Corona (Audible Noise, Radio Interface, etc.) and EMF (both Electric and Magnetic field effects)." (Ex. CH- 90 at 12.) Thus, according to Shirmohammadi, the major reason for Segment 8's double circuit overhead design is minimization of these Corona and EMF effects in a residential neighborhood.

SCE does include evidence and argument that reducing planned capacity by substituting a single circuit 500 kV underground line for the approved overhead double circuit risks making Segment 8 a bottleneck, but as noted previously, SCE ultimately concedes that a single circuit line is adequate in the near term. In support of its argument for a longer term planning and construction horizon, SCE points to analysis of the TRTP in the critical transmission planning document, CAISO South Regional Transmission Plan for 2006, Part II (CSRTP-2006), which observes that benefits of the TRTP include:

> "Provision for the future expansion of transmission capability to integrate planned renewable resources in Inyo and northern San Bernardino counties…" Ex. CH-90, Attachment B at 9.)

SCE not unreasonably argues that this reference suggests that "the double-circuit design of Segment 8 was *also* intended [to] provide system reliability and options for low-cost expansion as additional capacity is needed to transmit generation from the Tehachapi Area to lead centers in the Los Angeles Basin." (SCE reply brief at 25, fn 118, emphasis in original.)

That future expansion was built into the design seems particularly likely considering that "SCE is currently evaluating the potential upgrade of the Mesa Substation to 500 kV to provide needed additional transmission capability above that provided by TRTP." (SCE opening brief at 59.) At present, the Vincent – Mesa line, which consists of Segment 11, and the Vincent –Mira Loma line, which consists of Segments 6, 7 and 8, are entirely separate paths.[18] SCE's witness Chacon testified: "If the Commission were ultimately to approve a single-circuit design [for Segment 8A], then what would happen when the time came to upgrade Mesa 500 kV, is that a second circuit [through Segment 8A] would have to be included in to the CPCN licensing process for the Mesa 500 kV substation conversion." (Tr. Vol. 13 at 2049-2050.)

How long a single circuit in Segment 8A will be adequate is a point of heated disagreement. Formulating an answer requires projections about many unknowns and SCE enumerates some of them: "(1) potential future increases to California's RPS goals above the current 33% by 2020 level; (2) in basin generation retirements; and (3) system load growth in Southern California consistent with system load growth in the past." (SCE opening brief at 59.) We consider this further in the context of curtailment, below.

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[18] CSRTP-2006, Figure 2.1, an illustrative diagram of the Tehachapi Transmission Project Plan of Service, explicitly contemplates this option. The lower left corner includes a "Future Mesa-Serrano 500 kV" described as "Continue 500 kV double circuit from Mesa towards the existing Mira Loma Serrano 500 kV transmission lines." (Ex. CH-90, Attachment B at 24.)

Ampacity

Ampacity refers to the load a transmission cable can carry safely without overheating during either normal operating conditions or emergency operating conditions, the former defined as a time period, such as four hours, one hour, thirty minutes or as little as fifteen minutes. To be a feasible option, an underground line must have a sufficient ampacity rating. SCE witness Chacon stated:

> Among all the emergency operations situations, the 4 hour emergency operation is the most limiting factor for a proposed cable system rating. Operating a cable system above its emergency load will cause the cable and its accessories to heat up to an unsafe and unproven temperature that could result in the reduction of the cable system design life and/or system failure. (Ex. SCE-103 at 36.)

SCE witness Rong, of Black and Veatch Corporation, explained that various factors can affect the ampacity of an underground cable, depending upon the construction method, including "… soil ambient temperature at the installation depths and thermal resistivity of native soil, backfill material, and duct bank concrete." (Ex. SCE-104R at 45.) According to Rong, "[c]onsidering the complexity of the ampacity calculation and the impacts to the calculation from the different input parameters …"it is not surprising if different parties' ampacity values vary somewhat. (Ex. SCE-106R at 27.)

While SCE and Chino Hills offer evidence on a range of ampacity calculations based on various inputs and point to alleged computational errors made by one witness or another, in the end this debate is not material to our

decisionmaking. Both parties ultimately concede that a single circuit line could carry at least 2000 amps.[19]

Curtailment Risk

Various parties pose concerns about curtailment risk in two different contexts; one is curtailment resulting from a delay in the commercial operation of the TRTP and the other is curtailment resulting at some time in the future if Segment 8A (presuming its construction as a single circuit line) should cease to provide adequate capacity. The record includes three analyses that purport to assess curtailment risk in some way. They are very different in content, approach and underlying objectives. Two of them involve computer modeling and parties voice the usual issues about accessibility and transparency; witnesses for both SCE and Chino Hills acknowledge that the choice of inputs influences modeling results.

SCE witness Ulrich sponsored the least complicated assessment, a spreadsheet that he termed a "simplified analysis" of the potential for curtailment without Segment 8 and the corresponding monetary cost of that curtailment. (Ex. SCE- 99 at 14.) The spreadsheet assumes 2200 MW of capacity on the TRTP without Segment 8; it does not consider any scenarios where either

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[19] SCE states: "Accordingly, any underground configuration must be capable of safely and reliably carrying at least 2,000 amps under normal conditions." (SCE opening brief at 65.) Chino Hills responds with reference to its preferred underground alternative: "Accordingly, even if one accepted SCE's premise that any underground configuration must be capable of safely carrying 2000 amps under normal conditions, UG5 well exceeds that requirement." (Chino Hills reply brief at 29.)

the approved project or an underground alternative is operational. For every hour within a year, the spreadsheet projects how much solar and wind would be generated based on the operating profiles for these resources, compares the MW total to 2200, counts any excess as a curtailment and then, values all curtailed generation at $100/MW hour. Application of this methodology produces curtailment values approaching $80 million in 2015, something over $80 million in 2016 and nearly $140 million in 2017-2019. (Ex. SCE- 99 at 14.)

Chino Hills witness Shirmohammadi faulted the study's simplicity, which he claimed produced "skewed" results. (Ex. CH-90 at 20.) According to Shirmohammadi, major flaws are its failure to "determine transmission access priority based on the same algorithms that are actually used to operate the transmission grid…" and its application to every hour of the calendar year of "transmission system limits that are calculated at *one instant in time* when the transmission is most constrained" in the Tehachapi area. (Ex. CH-90 at 20, emphasis in original.) Shirmohammadi's valid criticisms render the study's findings questionable, but they do not establish that the risk of curtailment is a complete myth.

SCE witness Chacon sponsored a nomogram[20] analyses that projects regular curtailment of renewables if the TRTP is not built as a double circuit, overhead line but then projects some curtailment, even with full build out as

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[20] Chacon defined "[o]perational nomograms" as "sets of operating and scheduling rules used by transmission planners and grid operators to ensure that simultaneous operating limits based on two or more different variables are respected. (Ex. SCE 104R at 19-20.)

approved by D.09-12-044, if all generation in the CAISO queue up through Queue Cluster 4 should come online.[21] The nomogram analysis does not compare the double circuit overhead line with any underground options. The analyses is not a production cost model; it does not attempt to duplicate actual dispatch conditions, factor in demand or link curtailment risk to time (month/year) in any obvious way. Chacon stated that "[t]he nomograms developed are not intended to articulate a deliverability value but a maximum system capability to be within a safe and reliable operating condition." (Tr. Vol. 13 at 1963.)

According to Chacon, the nomograms represent limits placed on the interaction of two load variables that "involve the volume of generation imports into the Los Angeles load basin from the Northern Area and from the Lugo Area."[22] (Ex. SCE 104R at 20.) Chacon explained: "What we ended up doing is developing models that represent stress conditions on the system and moved the stress points by reducing northern area resources at the expense of Lugo area resource imports to identify … the maximum system capability…" (Tr. Vol.13 at 1960.)

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[21] "A queue cluster represents a group of generation projects seeking interconnection that submitted their interconnection requests with the timeframe open for a particular queue … queue clusters are sequential; for example, Queue Cluster 4 follows Queue Cluster 3. (Ex. SCE 103 at 14, fn 17.)

[22] Chacon described the "Northern Area" as "the area that is north of the Vincent 500 kV substation, as well as the area that is west of Vincent primarily the Ventura County, as well as the – what we call the Big Creek corridor." (Tr. Vol. 13:1943.)

The record does not reflect what factors were used to impose the stress conditions that create the limits. However, the study portrays the resulting limits in graph form and overlays them with scatter points that represent the maximum potential generation for every hour of the year.[23] Chacon testified that the scatter points were developed by extrapolating to the over 9,500 MW of potential generation in the CAISO queue "what the system performance would yield if history repeated itself and the generation profiles for wind and solar… [followed] … 2011 historical data." (Tr. Vol. 13 at 1967.) However, SCE admits that the likelihood is quite remote that every generation project in Queue Cluster 4 (or any other queue cluster) actually will be built.

Chino Hills' pointed summary of the input choices used in both the Ulrich and Chacon studies underscores that both appear to be designed to produce results that are quite unlikely: "Take an extreme condition when the transmission system is heavily loaded, or constrained, and assume it occurs every hour of the year—then dump as many renewables into the system as possible, while assuming no variation in non-renewable generation or imports." (Chino Hills Reply Brief at 43.) As SCE's briefs reiterate, however, Chino Hills bears the burden of proof.

Chino Hills offers the most complex study in the record. Sponsored by Chino Hill witness Kulkarni, of Nexant , this third analysis is a production cost

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[23] See SCE 104-R, Figure 7 at 31.

model, designed to assess the impact on the TRTP of a Segment 8A construction delay through the end of 2016 and an outage or partial outage of UG5 in 2022.[24]

For 2016, the Nexant study shows no curtailment of renewable generation in SCE's Northern Area (Tehachapi) even under a scenario where Segment 8A was assumed to be unavailable all year and the San Onofre Nuclear Generating Station (SONGS) was assumed to be off line. While the study shows some curtailment within the CAISO-controlled grid outside of Tehachapi (5.24% to 8.91%, depending upon scenario), this curtailment was not sensitive to Segment 8A. It occurred even when Segment 8A was input as a double circuit configuration, online throughout 2016.[25]

For 2022, Nexant added scenarios to test the double circuit and UG5 configurations against an "aggressive renewables" future. Nexant assumed attainment of the 2020 RPS goal (33%) plus the addition of enough wind and solar thermal generation to raise the proportion of renewable energy in SCE's service territory to 51.9%. Mirroring the 2016 results, the Nexant study shows no curtailment in 2022 in the Tehachapi area under 2020 RPS attainment scenarios. While the study shows some curtailment in areas outside of Tehachapi in 2022, the availability of Segment 8A makes little difference to the result. Under

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[24] According to Nexant the study was performed "using the PLEXOS model that Nexant licenses from Energy Exemplar and Nexant's CAISO nodal model and WECC databases. The PLEXOS model uses a methodology similar to one that the CAISO uses in actual operation to simulate commitment and dispatch of generation to meet load, subject to generation, system and transmission constraints in a feasible and economical manner. " (CH-92, attached Nexant study at 1.)

[25] See CH-92, attached Nexant study at Tables 8 and 9.

aggressive renewable scenarios, the study shows a small curtailment in 2022 in seven months (ranging from 0.01% to 0.59%) presuming a UG5 partial outage in those months. Outside of Tehachapi, the aggressive renewable scenarios show a higher level of curtailments than in 2016 (between 8.62% and 23.39%, depending upon scenario) but Segment 8A has a very small impact on those results.[26]

At hearing SCE sought to establish numerous errors in the Nexant study and its opening and reply briefs continue to challenge the study as flawed and unreliable. According to SCE, among other things Kulkarni did not provide "benchmarking" data to verify the model's ability to duplicate historical operations, permitted multiple violations of CAISO dispatch guidelines, included unrealistic generation resource assumptions and ignored infeasibility warnings produced by the model. Chino Hills vigorously contests some of the challenges and claims the others either make no real difference to the results or would reinforce them, citing Kulkarni's responses under cross-examination. However, what the record does not contain, given the compressed schedule, is an actual showing on what results the model would produce if corrected for these alleged data errors.[27]

The record includes, then, two simplistic studies that warn of the potential for significant near-term curtailment without Segment 8, but do not assess curtailment risk with Segment 8 operational, and a third, more sophisticated

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[26] See CH-92, attached Nexant study at Tables 13 and 14.

[27] Chino Hills conceded at least one potential database error, the characterization of Morro Bay Power Unit 3 as providing non-spinning reserves if, as suggested at hearing, it takes up to twelve hours to start.

study (not without input errors) that finds no curtailment attributable to Segment 8A in 2016 and very little in 2022, though some curtailment occurs in the Tehachapi area as a whole.

In addition, the record indicates that some curtailment has occurred recently in the Tehachapi area but the reasons are unclear. Asked about curtailments mentioned in Ex. SCE-127, [28] Chino Hills witness Shirmohammadi responded:

> Curtailment has happened. I did not know they happened to Terra-Gen, but they happened to a client – to generators that belonged to a client of mine.
>
> ….
>
> I think I can openly say that it had nothing to do with Chino Hills, by the way. I can say that part. What caused it, it's confidential information.
>
> ….
>
> There is a concern. This one was just some mess up. (Tr. Vol. 16 at 2625-2626.)

Interestingly, SCE concludes discussion of curtailment in its reply brief this way:

> Whether or not an individual instance of curtailment can be tied directly to construction of Segment 8A through Chino Hills is not at issue here. What is at issue here is the sensitivity of the Tehachapi area as a whole to the lack of

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[28] Ex. SCE-127 is the April 17, 2013 Notice of Ex Parte Communication filed by Terra-Gen, which includes an October 24, 2012 letter from Terra-Gen to Ed Randolph, Director of the Commission's Energy Division. Terra-Gen states at page 1 of the letter that "… recent congestion in 2012 has caused over $28 million in curtailment losses for Terra-Gen's Alta projects alone."

> available transmission and the fact that there is currently too much generation and not enough transmission capacity, resulting in curtailment of renewable generation. (SCE reply brief at 49.)

Actually, we think SCE misses the point. There is no dispute that the TRTP needs to be finished. But SCE itself, which urges us to allow it to move ahead to finish construction of the overhead line, no longer contends that UG1 is the only underground option that can be considered. To the contrary, SCE states that if we require undergrounding, we should replace the aboveground design for Segment 8A with UG2, which would be constructed initially as a single circuit line, with the second circuit not coming on line before 2021 (as we discuss in Section 4.2). While the record does not persuasively answer how long a single circuit Segment 8A will suffice, the only logical conclusion is that SCE agrees with Chino Hills that under current planning forecasts, an operational, single circuit Segment 8A will not cause curtailment before 2021.

4.2. Timing: Construction Schedule and Implications for the Project's Commercial Operation

Though the partially-constructed aboveground project in Segment 8A could be completed in about four months, the capacity needed in the near term in Segment 8A could be constructed underground in time for the Project to reach commercial operation in late 2015 or early 2016.

SCE's construction schedules for underground alternatives UG1 through UG5 all show that a single circuit (or the first circuit of two) could be in-service

by late 2015 or early 2016.[29] For both UG1 and UG2, the duct bank for the second circuit could be completed by 2017 [and] [t]he second circuit would be placed in-service in 2021 or later, as needed." (Ex. SCE-104R at 98 and 104, respectively.) SCE's witness Adamson qualified the late 2015/early 2016 assessment, however, and stated that while this "in-service date is technically feasible" it is "based on heroic efforts and optimistic assumptions, providing a best case scenario." (Ex. SCE-104R at 1 and 3, respectively.)

SCE lists a number of things that could affect the schedule adversely, including: supplemental environmental review; work stoppages attributable to the discovery of nesting birds or protected artifacts; delays by various governmental agencies in issuing permit amendments; the need to obtain additional property rights from private land owners for construction in the ROW; and the risk that one or more contractors and suppliers fails to perform or deliver as required. Chino Hills argues that SCE overstates these risks. To be sure, a number of specific items in each category have been resolved, soon will be or probably pose less risk than SCE suggests (for example, the Commission timely approved an interim decision, D.13-02-035; timely filed a proposed decision on the issues before us today; and regarding property rights, Chino Hills holds approximately two-thirds of the land in the ROW, which it proposes to grant to SCE in fee and SCE may condemn the rest, should the property owners, who presumably are the most direct beneficiaries of undergrounding, actually resist it.) Chino Hills also argues that because SCE's detailed schedules

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[29] See Ex. SCE-104R, Attachments NN.

actually build in a time allocation for each of these things, effectively they have been planned for and so, can be discounted as potential sources of delay. In this respect we think that Chino Hills overstates the case.

The schedule it tight and provides little cushion but it is possible indeed.

4.3. Cost

4.3.1. Estimates for Undergrounding Segment 8A

Neither feasibility nor timing bars consideration of an underground alternative to the approved design for Segment 8A and we examine the record on the final issue, cost. First, we acknowledge that SCE estimates the cost to complete Segment 8A as an aboveground ground, double circuit transmission line at approximately $4 million. Table 1 at the beginning of Section 4, above, lists the cost estimates by SCE and Chino Hills witnesses that range from a low of $147 million to a high of $726 million but as these are not based on an "apples to apples" comparison of direct and indirect costs, they merely provide a starting point for a comparative analysis.[30]

As we have seen, in the near term Segment 8A does not require the capacity that a double circuit line would provide (even if UG3 or UG4 were constructed, SCE forecasts no need to actually bring an operational, second circuit online before 2021). Therefore, we focus on single circuit options and begin by examining the cost estimate for UG5, the least costly option and the one that Chino Hills endorses.

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[30] SCE stresses that its cost estimates should be adjusted further to include a quantification, on a present value revenue requirement basis, of the costs necessary to eventually yield a double circuit underground option.

For UG5, Chino Hills' cost estimate is approximately $147 million and SCE's cost estimate is more than double, at approximately $372 million. Again, we stress that these estimates do not permit clear comparisons. For one thing, the two parties' estimating objectives were different and rely upon different levels of precision. SCE's witnesses described its Request for Information and Request for Proposal process that resulted in firm, fixed price bids in response to detailed cable and civil specifications. The bids, received sometime in December 2012, contain fixed prices, good for 180 days from their receipt. (Tr. Vol. 2260-2262.) At hearing, Chino Hills witness Aabo did not dispute the quality or thoroughness of SCE's bid process. On the other hand, Aabo's process, admittedly much less formal, was not designed to produce bid documents nor obtain bids, but to provide an independent test of SCE's numbers. SCE, however, is too quick to dismiss Chino Hills' showing as a "back-of –the envelope engineering effort." (SCE opening brief at 100.) While Chino Hills fails to persuade us that its UG5 estimate is accurate enough to form the basis for a cost cap, it does leave us with unanswered questions that suggest SCE's estimate could be lower—though still too high to make an underground option viable.

In qualitative terms, Chino Hills' estimate does not include any allowance for three cost items, tower foundation removal, fiber optic cable in the conduit and geotechnical work (it contends none of these are necessary) and compared to SCE, it significantly minimizes five other cost items (or groups of costs). According to Confidential Attachment B to Chino Hills' reply brief (filed under seal), Chino Hills accepts SCE's estimates in three areas: contract management support/overhead (Chino Hills groups a number of cost items together here), uncontested items (a grouping of miscellaneous costs) and tower removal.

The eight areas of difference (that is, where Chino Hills produced a lower estimate or no estimate at all), in order of their dollar value impact on the total estimate, are the following: appropriate contingency, cable construction, environmental costs, reactive compensation, real property acquisition, tower foundation removal, fiber optic cables and geotechnical work. Confidential Attachment B to Chino Hills' reply brief summarizes these differences quantitatively. The dollar value of these individual differences varies greatly-- the sum of the two largest differences (contingency, cable construction) is roughly the same as Chino Hills' entire estimate of $147 million; the two smallest ones are a little over half a million dollars each. We examine the highest value items first.

Chino Hills is persuasive that SCE's use of a 35% contingency is too high and should be reduced to 20%, which is still greater than the 15% D.09-12-044 authorizes for the Project. Based on the figures in Table 2 of Ex. SCE-106R, a 20% contingency reduces SCE's UG5 estimate to about $310 million (presuming no other changes and before any allowance for SCE's corporate overhead).[31]

Chino Hills is less persuasive that cable construction costs can and should be reduced. For one thing, though Chino Hills' estimates are based upon use of 4000 kcmil cable, size alone does not seem to account for the large difference in cable costs; Chino Hills' evidence comparing costs for 4000 kcmil and 5000 kcmil cable, in Table 8 of Ex. CH-91, shows a relatively minor difference of approximately $6 million. The record reflects that 5000 kcmil has a higher

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[31] See SCE-106R, Table 2 at 71; see also SCE-104R, Table 5 at 65.

carrying capacity and that 4000 kcmil is lighter in weight, but provides little other information except that following issuance of D.13-03-019, SCE has "some partial contracts" in place for testing and acquisition of 5000 kcmil cable. (Tr. Vol. 13 at 1913.) We have no basis to conclude that SCE should have made a different choice or that a different choice would greatly reduce total costs.

Likewise unpersuasive on this record is Chino Hills' suggestion that construction costs clearly can and should be reduced by eliminating two sets of splice vaults, the restraint vaults (Aabo proposed a different method of anchoring the cable to prevent gradient-induced creep) and telecommunications vaults. Though all expert witnesses agreed that cable splices tend to be the weak points in XLPE cable installations and logically, fewer splices might improve reliability, Chino Hills has not established that the ROW grade can accommodate longer cable lengths, necessitating fewer splices and splice vaults. Nor has Chino Hills shown that a different restraint vault system can and should be used. SCE rebutted Aabo's suggestion that the fiber optic cables and related vaults were not related to monitoring of the underground system. In sum, Chino Hills fails to establish that the cable construction category contains inflated costs.

Environmental compliance costs and reactive compensation are the next largest cost categories in dispute; each constitutes roughly one-third of the monetary value assigned to either contingency or cable construction. These costs, for different reasons, appear less certain than cable construction.

With respect to environmental compliance, SCE states that it "reviewed the actual costs of environmental measures (i.e., mitigation, monitoring, compliance, reporting, etc.) as a ratio of the overall costs." (SCE reply brief at 119.) SCE's witness Heiss testified that environmental compliance costs incurred for Segment 8 were "26% of labor and equipment." (Tr. Vol. 14 at 2281.) Heiss applied the

same factor to undergrounding 3.5 miles of Segment 8A. According to SCE, this is well within the usual range, 23-28%, for costs incurred on other major transmission projects. While Chino Hills used a much lower factor, 2.25%, based on costs the City incurred for a road-widening project, the record does not establish that this project is comparable to installing UG5. We conclude that SCE's cost is overly high in two respects. One, Chino Hills persuades us that 26% is excessive given the environmental work done to date and the substantial familiarity with the 3.5 mile ROW. Two, we think SCE has not reasonably considered the impact that higher cost underground materials have on a costing method based on application of multiplier. For these reasons we conclude that a factor reduced by about one-half, to 13%, should be adequate.

Regarding reactive compensation, SCE's underground design includes installation of switchable inductive shunt reactance. This would provide reactive compensation to prevent electricity flash-over in case one end of an underground Segment 8A should be opened, while the other remained closed. SCE witness Chacon explained the problem as follows: "… overhead lines, because of their design aspects, do not have as much line-charging current as compared to an underground cable system. The underground cable system has, by far, a whole lot more line-charging current that we need to address and plan for." (Tr. Vol. 13 at 2053.) Chino Hills' witness Shirmohammadi disagreed about the likelihood of CAISO operating the line in this way or the risk of operator error, but concluded that at any event the problem could be managed adequately "so far as the transition station Basic Insulation Level (BIL) is designed to accommodate the slightly higher voltages, if at all needed." (Ex. CH-90 at 26.) Chacon agreed theoretically, but argued that additional time would be required to create a new BIL standard, which "requires time and may therefore result in

potential delay to the project timelines." (Ex. SCE-106R at 53.) Essentially, the record is inconclusive on this point; without a persuasive showing, we can neither discount nor disregard SCE's cost estimate for reactive compensation but we certainly would require greater substantiation before approving a sum approaching $25 million for this purpose.

Quantitatively (with reference to Confidential Attachment B to Chino Hills' reply brief, which reflects cost figures drawn from SCE-Ex. 104C), adjusting SCE's base estimate for 13% and then adding a 20% contingency reduces SCE's estimate to just under $296 million (before any allowance for SCE' corporate overhead). Were we also to exclude SCE's estimate for reactive compensation , apply a 13% multiplier for environmental compliance and reduce the contingency to 20%, SCE's estimate for UG5 would drop to approximately $268 million (without corporate overhead).

The total cost difference between the Chino Hills and SCE estimates on the four lowest cost items is a little more than $10 million. Some small adjustments may be warranted there. For example, SCE's estimated cost of real property acquisition does not acknowledge Chino Hills' proposal to transfer in fee to SCE the City's ownership interests in two-thirds of the ROW and land for the two transition stations. But even presuming that all of that $10 million should be used to further reduce SCE's UG5 estimate, and we do not find so on this record, the result would be still be much higher than Chino Hills' estimate. The record does not support Chino Hills' estimate that UG5 can be built for $147 million.

4.3.2. Chino Hills' Proposed Financial Contributions

The scoping memo directs Chino Hills to "identify and clearly quantify any financial commitment it is prepared to make to minimize the total additional cost of an underground option as compared to the project initially approved for

Segment 8A." (Scoping memo at 5.) Ex. CH-93 provides a summary of Chino Hills' response and indicates how the City values each one:

1. Eastern Transition Station property (Old City Yard), $3,562,353, transfer in fee to SCE;
2. Western Transition Station property, $731,634, transfer in fee to SCE;
3. ROW property (about two-thirds of the privately owned ROW in Segment 8A), $29,729,680, transfer in fee to SCE;
4. Initial Hardscape on ROW, $410,310;
5. Maintenance of Hardscape on ROW for 20-year expected life then replaced, $31,216,428 over 40-year expected project life;
6. Maintenance of open space areas of ROW over 40-year expected project life; $649,281 over 40-year project life
7. Loss of Old City Yard, $14,494,164;
8. AT&T Licensing Agreement (transfer to SCE 15 years remaining in 20-year term), $440,098; and
9. Verizon Licensing Agreement (transfer to SCE 16 years remaining in 30-year term), $484,400.

Chino Hills totals these nine items at $81,718,338. The actual economic offset against undergrounding costs is much smaller, however. Only the first three have the potential to reduce the capital costs to ratepayers of undergrounding Segment 8A. SCE disputes the City's valuation of each, particularly the land in the ROW, which will have limited value for other proposes (or perhaps none) if a 500 kV transmission line is buried in it. Nonetheless, each of these three items provides a real, though modest, cost reduction. Most of the other items, with the exception of the loss to Chino Hills of the Old City Yard, probably would reduce SCE's expenses in some way or could provide additional revenue sources, though SCE suggests that landscaping

over the ROW may not be possible and questions its desirability. Chino Hills does not establish why the economic consequences to the City of establishing a new corporation yard should be a ratepayer concern.

Both Chino Hills and SCE discussed at hearings and reference in their briefs a decision of the Colorado Commission that authorized undergrounding of a 115 kV transmission line (which replaced a 69 kV line) as long as the local community reimbursed the utility for the difference between underground construction and construction of the line aboveground. The cost difference is not quantified in the decision, nor is there an explicit description of how the costs are to be apportioned, but it is clear the costs are not to be spread across ratepayers at large. The Colorado Commission ordered that "total costs for construction overhead and underground shall be obtained by adding the costs of construction to the cost of right-of way acquisition, including any diminution of remaining property values" as determined in separate negotiations or arbitrations. (Ex. SCE-118, *Tri-State Generation and Transmission Assoc, Inc.*, Docket No. 03A-192E, Decision C05-0627(Colo. P.U.C.), 2005 WL 1724690.)

4.3.3. Conclusion on Cost

Using Chino Hills' own summary of the major cost categories and the differences between the parties' estimates, and evaluating the record developed on those cost items, we conclude that $147 million is not a credible estimate for undergrounding UG5. The actual cost, before offset for the reasonable value of Chino Hills' real property contribution (which we have not determined), would approximate either $268 million or $296 million, depending upon the need for reactive compensation. Neither sum includes an allowance for SCE's corporate overhead. On a per mile basis, this cost varies from a high approaching $85 per mile to a low approaching of $77 per mile; on a per house basis, this cost is on the

order of $1.2-$1.3 million of reach of the 220 houses on the ROW. To the extent that undergrounding costs elsewhere provide a benchmark of sorts, the cost to underground UG5 is higher.

We note that Chino Hills' argument for the comparative reasonableness of its own undergrounding estimate relies upon the undergrounding costs the Commission approved for the Sunrise Powerlink in D.08-12-058.[32] Extrapolating that cost to $363 million for 8 miles (which is approximately $45.38 million per mile), Chino Hills observes that the original cost cap for Sunrise was $1.883 billion and then states: "In comparison, Chino Hills' estimate of approximately $150 million for undergrounding out of a total TRTP cost of between $1.7-2.1 billion [fn omitted] appears to represent an even smaller percentage of total project costs." (Chino Hills reply brief at 26.) To be sure, Chino Hills' estimate, $147 million, translates to a cost of approximately $42 million per mile over 3.5 miles, but we have concluded that Chino Hills' estimate is unrealistic.

When the aboveground double circuit line can be finished for about $4 million, adding more than a quarter of a billion dollars to the total cost of the Project also raises concern about whether it could continue to meet the streamlined need standard codified by §399.2.5(a). As noted in Section 3.3, below, D.07-03-012 interprets that standard to require, among other things, that "the cost of the line is appropriately balanced against the certainty of the line's

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[32] D.08-12-058 explains that the cost cap for Sunrise adds $91 million to cover undergrounding costs for 2 additional miles of a 220 kV double circuit transmission line beneath Alpine Boulevard and then extrapolates the cost per quarter mile along the entire 8 mile route. (See D.08-12-058 at 275 and fn 690.)

contribution to economically rational RPS compliance." Undergrounding Segment 8A would significantly increase the costs of the Project. We cannot conclude that it is reasonable and in the public interest to underground Segment 8A on the cost record developed here.

5. CEQA

CEQA does not require the Commission to undertake environmental review before rejecting Chino Hills' undergrounding proposal.[33] However, we commenced additional environmental review pursuant to CEQA Guidelines §15162 to determine whether to ensure that any decision approving undergrounding in Segment 8A would require preparation of a subsequent or supplemental EIR. Commission staff and our environmental consultant prepared an Addendum to the FEIR for the Project, which is available at: ftp://ftp.cpuc.ca.gov/gopher-ta/environ/tehachapi_renewables/EnvironmentalReview_ALL.pdf

Utilizing the identification system and process adopted by D.09-12-044, we identify the Addendum and receive it into the record of this proceeding, as follows:

- Reference Exhibit C – Addendum to the Final EIR for the Tehachapi Renewable Transmission Project, October 2009

6. Conclusion; Release of Construction Stay on Segment 8A

We find that the 3.5 mile section of Segment 8A of the Project is not dissimilar from several other sections along the Project route and that undergrounding that section at ratepayer expense is not reasonable. Therefore, we deny Chino Hills' petition, filed October 28, 2011, and release the stay of

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[33] See Pub. Res. Code §21080(b)(5); CEQA Guidelines §15270.

construction on Segment 8A. Because we deny this petition, Chino Hills' additional request for a stay (the petition for modification of D.09-12-044 filed October 31, 2011) is denied also.

7. Comments on Proposed Decision

The proposed decision of the Administrative Law Judge (ALJ) was mailed to the parties in accordance with Section 311 of the Pub. Util. Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure.

8. Assignment of Proceeding

Michael R. Peevey is the assigned Commissioner and Jean Vieth is the assigned ALJ in this proceeding.

Findings of Fact

1. Chino Hills' October 28, 2011 petition for modification of D.09-12-044 contends that the actual impacts on the City and its residents of the partially constructed, new tubular steel pole towers and even taller, new lattice towers in the 150 foot wide City ROW constitute "new facts." The towers approach 200 feet tall.
2. Chino Hills' application for rehearing of D.09-12-044 is pending.
3. The FEIR provides factual data for reassessment of the multiple variables that contribute to visual impact at a particular point along the Project ROW; similarities and differences among Chino Hills, Duarte and Chino/Ontario are instructive. The FEIR confirms that the ROW in Chino Hills is the narrowest; the route also is the longest and affects the most residential structures. Housing density is greater elsewhere and likewise, elsewhere the tower cross arms are closer to the edge of the ROW.

4. The fact that the Chino Hills' community, or at least part of it, has been extremely vocal in its opposition to the approved Project design in Segment 8A is not a basis, without more, for deciding the merits.

5. Chino Hills recommends UG5 (single circuit, 2 cables/phase); SCE does not support undergrounding but if the Commission orders a design change in Segment 8A, SCE recommends UG2 (single circuit, 3 cables/phase).

6. No party contends that it is technically impossible to construct a 500 kV transmission line utilizing XLPE cable technology, underground in conduit, in the Chino Hills' ROW.

7. Construction of an XLPE 500 kV underground transmission line is feasible.

8. High voltage XLPE cable technology transmission lines of 400 kV and 500 kV are operational in Europe, Russia and Asia; high voltage lines of 345 kV and less are operational in the United States at present. Most of these operational lines and appear to have been built to solve specific locational problems (river crossings, access to urban zones, etc.)

9. Splice joints and other cable accessories tend to pose the primary risk for failure of high voltage underground technology using XLPE cable, not the cable itself. CIGRE Bulletin 379 lists the average repair time for land installations of 220 to 500 kV lines in ducts/troughs/tunnels as 45 days.

10. Separate assessments by Chino Hills and SCE establish that a single circuit line is adequate to meet near term energy and capacity demands for Segment 8A, including the interconnection of 4,500 MW of new wind generation in the TWRA.

11. On balance, the evidence establishes that the double circuit 500 kV above ground design for Segment 8A was intended to serve at least two different objectives: reduction in Corona (Audible Noise, Radio Interface, etc.) and EMF

(both Electric and Magnetic field effects), as well as low-cost, future transmission expansion such as the future, potential upgrade of the Mesa Substation to 500 kV.

12. While how long a single circuit in Segment 8A will be adequate is a point of heated disagreement, SCE forecasts no need to actually bring an operational, second circuit online before 2021.

13. Both parties ultimately concede that a single circuit line could carry at least 2000 amps.

14. The record offers three analyses of curtailment risk, each very different in content, approach and underlying objectives. SCE's evidence includes two simplistic studies that warn of the potential for significant near-term curtailment without Segment 8, but do not assess curtailment risk with Segment 8 operational. Chino Hills' evidence includes a sophisticated production cost study (not without input or modeling errors) that finds no curtailment attributable to Segment 8A in 2016 and very little in 2022, though some curtailment occurs in the Tehachapi area as a whole.

15. While the record indicates that some curtailment has occurred in the Tehachapi area recently, the reasons are unclear.

16. While the record does not persuasively answer how long a single circuit Segment 8A will suffice, the only logical conclusion is that SCE agrees with Chino Hills that under current planning forecasts, an operational, single circuit Segment 8A will not cause curtailment before 2021.

17. The capacity needed in the near term in Segment 8A could be constructed underground in time for the Project to reach commercial operation in late 2015 or early 2016.

18. The SCE and Chino Hills costs estimates for the various underground options, including UG5, are not based on an "apples to apples" comparison of direct and indirect costs

19. SCE's bid process included a Request for Information and Request for Proposal process that resulted in firm, fixed price bids in response to detailed cable and civil specifications; the bids, received sometime in December 2012, contain fixed prices, good for 180 days from their receipt. Chino Hills' costing process, admittedly much less formal, was not designed to produce bid documents nor obtain bids but to provide an independent test of SCE's numbers.

20. Chino Hills' Reply Brief, Confidential Attachment B, shows that Chino Hills accepts SCE's cost estimates in three areas: contract management support/overhead (as specified in the attachment), uncontested items (miscellaneous costs specified in the attachment) and tower removal.

21. Chino Hills is persuasive that SCE's use of 35% contingency is too high and should be reduced to 20%, which is still greater than the 15% D.09-12-044 authorizes for the Project.

22. Chino Hills does not establish that SCE's costs for cable construction are inflated. Among other things, Chino Hills has not shown that SCE's estimates should be based upon 4000 kcmil cable rather than 5000 kcmil, or that a different choice would greatly reduce total costs, or that SCE's design should eliminate two sets of two sets of splice vaults, the restraint vaults and telecommunications vaults.

23. Chino Hills is persuasive that 26% is an excessive multiplier (applied to all labor and equipment) to estimate environmental compliance costs, given the environmental work done to date and the substantial familiarity with the 3.5

mile ROW; we conclude that a factor of about half that, or 13%, should be adequate.

24. SCE concedes that a Basic Insulation Level standard could be used instead of reactive compensation (which it costs at close to a quarter of a million dollars) at the transition station but does not provide a timeline for developing the standard or implementing it as an alternative.

25. Quantitatively (with reference to Confidential Attachment B to Chino Hills' reply brief, which reflects cost figures drawn from SCE's exhibits), adjusting SCE's estimate to reduce its environmental compliance factor to 13% and then adding a 20% contingency, reduces SCE's estimate to just under $296 million (before any allowance for SCE' corporate overhead). Were we also to exclude SCE's estimate for reactive compensation before applying the 13% environmental compliance multiplier and then adding a 20% contingency, the estimate would drop to approximately $268 million (without corporate overhead).

26. The total cost difference between the Chino Hills and SCE estimates on the four lowest cost items (as shown in Confidential Attachment B to Chino Hills' reply brief) is a little more than $10 million. But even presuming that all of that $10 million should be used to further reduce SCE's UG5 estimate, which we do not find, the result would be still be much higher than Chino Hills' UG5 estimate. Chino Hills' estimate that UG5 can be built for $147 million is not realistic.

27. The actual economic offset against undergrounding costs of Chino Hills' proposed financial contributions is much smaller than Chino Hills's estimate of $81,718,338. Only the proposed transfer to SCE of real property in fee (the land for the transition stations and the two-thirds of the ROW that Chino Hills owns)

has the potential to reduce the capital costs to ratepayers of undergrounding Segment 8A through a modest, but real, cost reduction.

28. Depending upon the need for reactive compensation, an undergrounding cost of either $268 million or $296 million (without allowance for SCE's corporate overhead) provides, on a per mile basis, a low of about $77 per mile and a high of about $85 per mile. To the extent that undergrounding costs elsewhere in California provide a benchmark of sorts, the cost to underground UG5 is higher.

29. On the cost record developed, it is neither reasonable nor in the public interest to underground Segment 8A.

30. Because construction of underground options UG1 through UG5 would not trigger any of the conditions set forth in CEQA Guidelines §15162, preparation of an Addendum is appropriate pursuant to CEQA Guidelines §15164.

31. The Addendum to the Final EIR for the Tehachapi Renewable Transmission Project, October 2009, should be identified Reference Exhibit C.

Conclusions of Law

1. Precedent establishes that the Commission has not applied the justification and timing requirements of Rule 16.4 and its predecessor, Rule 47, in a mechanical way if that would thwart justice; thus, even where the Commission has determined that a petition was not the appropriate procedural remedy, on occasion and for public policy reasons, it has considered the substantive merits and after that review, has either granted or denied the petition.

2. Chino Hills' petition for modification of D.09-12-044, filed on October 28, 2011, meets the procedural requirements of Rule 16.4 of the Commission's Rules of Practice and Procedure, as interpreted by Commission precedent, and should be considered on the merits.

3. As petitioner, Chino Hills has the burden of proof to establish by a preponderance of the evidence that its petition, filed October 28, 2011, should be granted; accordingly, Chino Hills must show that the design D.09-12-044 approved for Segment 8A should be changed to require construction of Chino Hills' preferred alternative instead.

4. Because we find that Segment 8A is not dissimilar from several other sections along the Project route and that undergrounding Segment 8A at ratepayer expense is not reasonable, Chino Hills' petition, filed October 28, 2011, should be denied. Because we deny the October 28, 2011, petition, Chino Hills' subsequent petition (the additional request for a stay), filed October 31, 2011, should be denied also.

5. The Addendum to the Final EIR was prepared consistent with CEQA, should be approved and should be received as Reference Exhibit C.

6. The construction stay on Segment 8A should be released.

7. This order should be effective immediately to avoid delay in completion of the TRTP.

O R D E R

IT IS ORDERED that:

1. The *Petition of the City of Chino Hills to Modify Decision 09-12-044 to Reopen the Record with Regard to Segment 8 of the Proposed Route*, filed on October 28, 2011, is denied as moot.

2. The *Petition of the City of Chino Hills to Modify Decision 09-12-044 to Stay Construction of Transmission Facilities in Segment 8A*, filed on October 31, 2011, is denied.

3. The Addendum to the Final EIR for the Tehachapi Renewable Transmission Project, October 2009, is approved and received as Reference Exhibit C.

4. The partial stay of construction on Segment 8A of the Tehachapi Renewable Transmission Project, as ordered by Decision (D.)11-11-020, D.11-11-026, D.12-03-050 and D.13-03-019, is released so that Southern California Edison Company may resume construction and complete Segment 8A in accordance with the design approved by D.09-12-044.

This order is effective today.

Dated _____, at San Francisco, California.

Attachment A

Service List

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Last Updated on 07-JUN-2013 by: JVG

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